THE IMPACT OF SMART CLASSROOMS TO IMPROVING TEACHING QUALITY IN GUIZHOU VOCATIONAL COLLEGE OF INDUSTRY & COMMERCE

YARAN LIU

MASTER OF PUBLIC ADMINISTRATION IN PUBLIC ADMINISTRATION

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A THESIS SUBMITTED IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF PUBLIC ADMINISTRATION
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ชื่อเรื่อง ผลกระทบของห้องเรียนอัจฉริยะต่อการปรับปรุงคุณภาพการสอนในวิทยาลัยอาชีวศึกษาอุตสาหกรรมและพาณิชย์กุ้ยโจว

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บทคัดย่อ

วัตถุประสงค์ของการวิจัยนี้คือ 1) เพื่อทำความเข้าใจสถานการณ์ของคุณภาพการสอนในห้องเรียนปกติของวิทยาลัยอาชีวศึกษาอุตสาหกรรมและพาณิชย์กุ้ยโจว 2) เพื่อวิเคราะห์ปัจจัยที่มีผลต่อคุณภาพการสอนในห้องเรียนปกติของวิทยาลัยอาชีวศึกษาอุตสาหกรรมและพาณิชย์กุ้ยโจว 3) เพื่อค้นหาผลกระทบของห้องเรียนอัจฉริยะต่อคุณภาพการสอนในวิทยาลัยอาชีวศึกษาอุตสาหกรรมและพาณิชย์กุ้ยโจว การศึกษานี้เลือกทฤษฎีคุณภาพการศึกษา ทฤษฎีการจัดการการศึกษา และทฤษฎีการประเมินการสอน 3 ทฤษฎี ใช้การวิเคราะห์เชิงปริมาณ โดยแบบสอบถามเปิดเผย สถานะปัจจุบันของคุณภาพการสอนในห้องเรียนปกติของวิทยาลัยอาชีวศึกษาอุตสาหกรรมและพาณิชย์กุ้ยโจว ปัจจัยหลักที่มีผลต่อคุณภาพการสอนในห้องเรียนปกติ และผลกระทบของห้องเรียนอัจฉริยะต่อคุณภาพการสอนได้รับการวิเคราะห์

ผลการวิจัยพบว่า ร้อยละ 60 ของผู้ตอบแบบสอบถามเชื่อว่าคุณภาพการสอนในห้องเรียนปกติของวิทยาลัยอาชีวศึกษาอุตสาหกรรมและพาณิชย์กุ้ยโจวในปัจจุบันอยู่ในสภาพที่ดี แต่ยังมีช่องว่างสำหรับการปรับปรุงอีกมาก ข้อเสนอแนะเชิงลบส่วนใหญ่มุ่งเน้นไปที่ผลกระทบเชิงบวกของประสบการณ์การทำงาน ทักษะการเรียนรู้ด้วยตนเองนอกห้องเรียน และปฏิสัมพันธ์ในห้องเรียนของนักเรียน การนำห้องเรียนอัจฉริยะมาใช้เป็นวิธีที่มีประสิทธิภาพในการแก้ปัญหาเหล่านี้

คำสำคัญ : ห้องเรียนอัจฉริยะ, คุณภาพการสอน, วิทยาลัยอาชีวศึกษาอุตสาหกรรมและการพาณิชย์กุ้ยโจว

Title THE IMPACT OF SMART CLASSROOMS TO IMPROVING TEACHING QUALITY IN GUIZHOU VOCATIONAL COLLEGE OF INDUSTRY & COMMERCE

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ABSTRACT

The purposes of this research were: 1) to understand the teaching quality situation in regular classrooms in Guizhou Vocational College of Industry and Commerce, 2) to analyze the factors affect the teaching quality in regular classrooms in Guizhou Vocational College of Industry and Commerce, 3) to find the impact of smart classroom on teaching quality in Guizhou Vocational College of Industry and Commerce. This study selected three theories of Educational Quality Theory, Educational Management Theory, and Teaching Assessment Theory. This study employed quantitative analysis, the questionnaire revealed the current status of regular classroom teaching quality in Guizhou Vocational College of Industry and Commerce, the main factors effect regular classroom teaching quality, and the impact of smart classrooms on teaching quality were analyzed.

The results revealed that: 60% of the respondents believe that the current teaching quality of regular classrooms at Guizhou Vocational College of Industry and Commerce is in good condition, but still has considerable room for improvement. Negative feedback mainly focuses on the positive impact of professional experience, self-study skills outside the classroom, and students' classroom interaction. The introduction of smart classrooms provides an effective way to solve these problems.

Keywords : Smart classroom, Teaching quality, Guizhou Vocational College of Industry and Commerce

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CHAPTER 1
INTRODUCTION

Research background

In the rapidly evolving era of technology, education is undergoing a transformation through the integration of innovative tools and methods. One significant development is the introduction of smart classrooms, which utilize digital technology to provide a personalized and intelligent interactive space for teaching activities.

By combining physical and digital spaces, as well as local and remote elements, smart classrooms enhance the relationship between individuals and the learning environment. This enables natural interaction between people and their surroundings within the learning space, fostering personalized, open, and ubiquitous learning (Hongyun, 2021). The emergence of smart classrooms signifies a paradigm shift in educational practices, offering unprecedented opportunities to enhance teaching quality and engagement within academic institutions.

With the application of new information technologies such as the internet of things, artificial intelligence, cloud computing, and big data in teaching, various classroom solutions tailored for interactive teaching between teachers and students have emerged. Numerous educational institutions have established their own versions of smart classrooms, each contributing to the adjustment and transformation towards an intelligent teaching structure (Xuanling, 2019).

Similar to many institutions worldwide, Guizhou Vocational College of Industry and Commerce faces the challenge of adapting its teaching methods to meet the evolving needs and expectations of students who have grown up in the digital age. Traditional lecture-based pedagogies often struggle to fully engage these tech-savvy learners, potentially impacting the overall effectiveness of education. As a response to this challenge, the exploration of the impact of smart classrooms on teaching quality becomes not only timely but imperative.

Guizhou Vocational College of Industry and Commerce completed the majority of its smart classroom transformation during the second semester of 2022. According to the reported results (Notification of Teaching Satisfaction Survey and Statistical Results (Guizhou Vocational College of Industry and Commerce, 1st semester, 2021-2022) from survey statistics, there has been an improvement in overall satisfaction at the college level, faculty level, and among teachers. The details are as follows:

Teaching Satisfaction Assessment Results for College Teachers (Student Ratings)

Category (student ratings)	Average mark / 1st semester	Average mark / 2nd semester
Full-time Teachers	91.658	93.5500
Adjunct Teacher	89.580	91.9633

Notification of Teaching Satisfaction Survey and Statistical Results
(Guizhou Vocational College of Industry and Commerce, 1st semester, 2021-2022)

Teaching Satisfaction Assessment Results for Each Faculty (Student Ratings)

Category (student ratings)	Average mark / 1st semester	Average mark / 2nd semester
Faculty of Comprehensive Health	92.116	95.8001
Faculty of Engineering	92.105	93.6276
Faculty of Big Data	91.615	92.2709
Faculty of Accounting	91.393	92.0919
Faculty of Humanities & Physical Education	90.897	91.9223
Faculty of Economics & Management	90.505	91.6397
Faculty of Marxism	89.881	91.5745

Notification of Teaching Satisfaction Survey and Statistical Results
(Guizhou Vocational College of Industry and Commerce, 1st semester, 2021-2022)

This study aims to reveal the multifaceted contribution of smart classrooms in Guizhou Vocational College of Industry and Commerce to improving the teaching quality, providing valuable insights for educators and learners into the tangible benefits that smart classrooms offer. By comprehensively studying the impact of smart classrooms on instructional methodologies, student engagement, collaborative learning, and overall learning outcomes, this research can elucidate the best strategies for effective utilization of smart classrooms in a vocational college environment.

Therefore, the impact of smart classrooms to improving teaching quality in Guizhou Vocational College of Industry and Commerce offers valuable insights to the institution's decision-makers, educators, and administrators regarding the practical implications of adopting smart classrooms.

Research Significance

Education, as a crucial engine for driving social progress and development, is facing increasingly complex and diverse challenges. In this era of rapid technological advancement, the swift rise of intelligent technologies is profoundly reshaping the landscape of the education sector. Guizhou Vocational College of Industry and Commerce, serving as a vital platform for nurturing future talents in Guizhou Province, urgently needs to explore innovative pathways to adapt to and lead this transformation. Through research into the current situation of regular classroom teaching at Guizhou Vocational College of Industry and Commerce and the factors impacting teaching quality, this study delves into how smart classrooms can leverage digital technologies and interactive platforms to construct a more engaging and innovative teaching environment, thereby facilitating interaction and collaboration between teachers and students.

Research Questions

1. What is the teaching quality situation in regular classrooms in Guizhou Vocational College of Industry and Commerce?
2. What are the factors affect the teaching quality in regular classrooms in Guizhou Vocational College of Industry and Commerce?
3. How does smart classrooms impact of teaching quality in Guizhou Vocational College of Industry and Commerce?

Research Objectives

1. To understand the teaching quality situation in regular classrooms in Guizhou Vocational College of Industry and Commerce.
2. To analyze the factors affect the teaching quality in regular classrooms in Guizhou Vocational College of Industry and Commerce.
3. To find the impact of smart classroom on teaching quality in Guizhou Vocational College of Industry and Commerce.

Scope and Limitations of the Research

1. This study is planned for conduct in the academic year 2023-2024. The scope of the survey questionnaire.
2. This study takes place in Guizhou Vocational College of Industry and Commerce as the survey object.

Expected Research Outcomes

The expected results of this study aim to provide a comprehensive understanding of the impact of smart classrooms in Guizhou Vocational College of Industry and Commerce, to provide practical recommendations for the college to enhance instructional interactions, enhance the learning experience, promote

personalized learning, enrich teaching resources, enhance teachers' professional development, and promote educational innovations, as well as to provide guidance for similar organizations that are looking for innovative educational pathways in smart classrooms environment.

Operational Definition of Terms

Guizhou Vocational College of Industry and Commerce is a full-time higher vocational institution officially established in February 2012. It was approved by the People's Government of Guizhou Province, registered with the Ministry of Education, and included in the national unified enrollment system. The college primarily offers full-time vocational education, encompassing higher vocational programs, self-study exam support, and various forms of vocational training.

Smart classroom means the classroom is built upon an "Internet of Things + Internet" information platform, with wireless routing as the core connection method. It establishes a "Wi-Fi + wired" integrated local area network that links all smart teaching devices, forming the network layer of the IoT architecture. Various teaching and auxiliary devices connect wirelessly to the information platform through standard Wi-Fi modules, creating a unified IoT platform that spans all three levels of the Internet of Things. Meanwhile, other equipment such as laptops, mobile phones, projectors, and interactive whiteboards also connect to the platform via Wi-Fi modules, becoming part of the IoT ecosystem. Additional teaching or research and development devices can likewise be integrated through standard Wi-Fi connections and, upon successful testing and verification, can be effectively utilized within the platform.

Teaching quality is the standard for assessing the outcomes of educational activities, encompassing factors such as teacher competence, student learning outcomes, and instructional materials and methods. High teaching quality implies that students can deeply comprehend knowledge, develop practical skills, actively engage in learning, and contribute to the enhancement of comprehensive abilities.

Smart classrooms differ significantly from regular classrooms in several key areas, including the teaching environment, instructional methods, resource management, and educational philosophy.

In terms of facilities, regular classrooms typically rely on basic multimedia tools like projectors and screens, offering limited functionality. In contrast, smart classrooms are equipped with advanced technologies such as smart boards, IoT devices, and centralized control systems. These allow for one-click equipment activation, automated recording, and multi-terminal access, greatly enhancing teaching efficiency; Regarding teaching methods, regular classrooms are often teacher-centered, with students passively receiving information and limited classroom interaction. Smart classrooms emphasize student-centered learning, promoting real-time feedback, classroom voting, group discussions, and other interactive formats. This increases student engagement and improves learning outcomes; In terms of resource utilization, regular classrooms depend mainly on textbooks and teacher-prepared materials, with little integration between in-class and after-class learning. Smart classrooms leverage cloud-based platforms to support flipped classrooms and self-paced review, enabling seamless and personalized learning experiences both inside and outside the classroom; For teaching management and data analysis, regular classrooms rely on manual operations with limited data support. Smart classrooms, however, use digital tools such as electronic attendance, remote equipment control, and learning behavior tracking to provide real-time insights. These features support teachers in refining their instruction and help students monitor their own progress; Finally, from a pedagogical standpoint, regular classrooms focus primarily on knowledge transmission, while smart classrooms aim to cultivate critical thinking, creativity, collaboration, and lifelong learning. This shift reflects a modern educational philosophy centered on student development and supports the transformation of teaching models in higher education.

CHAPTER 2

REVIEW OF LITERATURE AND RELATED STUDIES

This chapter aims to explore the impact of smart classrooms on improving teaching quality at Guizhou Vocational College of Industry and Commerce. In order to gain a comprehensive understanding of this impact, we will apply the theories of educational quality, Educational Management, and Teaching Assessment to construct a conceptual framework for analyzing the impact of smart classrooms to improving teaching quality.

1. Educational Quality Theory
2. Educational Management Theory
3. Teaching Assessment Theory
4. Smart Classroom
5. Related Research
6. Conceptual Framework

The Educational Quality Theory

Spinger Link (2017) explained the educational quality theory does not have a definitive originator. It is a field that spans widely and encompasses various aspects, with contributions from scholars and education experts at different times and contexts. Hence, it is challenging to pinpoint a single individual or moment as the exact origin of the educational quality theory. Early contributors include figures like Ronald Ames, who proposed theories on the assessment of actual outcomes in the 1970s. However, the development of this field has been gradual, involving numerous scholars and their contributions over time.

Donabedian (2005) made a significant contribution to defining the theory of educational quality by introducing the "Structure-Process-Outcome" model. This classic framework, initially employed in healthcare assessment, later played a crucial role in assessing both healthcare and educational quality. Donabedian emphasized

three key dimensions for assessment: Organizational Structure, Process Implementation, and Ultimate Outcome. Additionally, Benjamin S. Bloom's (1956) had a profound impact on defining educational quality by introducing the "Bloom's Cognitive Domain" model. This model significantly influenced the design of educational objectives, the assessment of student learning outcomes, and the enhancement of teaching quality. The combined contributions of Donabedian and Bloom provide a rich foundation for defining the educational quality theory.

Educational quality theory provides us with a framework for assessing educational outcomes, emphasizing quantifiable results such as student achievement, skills development, and competency mastery. By applying this theory, we will be able to quantitatively assess the influence of smart classrooms on students' academic achievements and overall capabilities.

The roots of the educational quality theory can be traced back to the late 19th century when societal attention towards educational goals increased. Friedrich Froebel was one of the key figures during the era of educational goals, advocating for child-centered education and emphasizing the cultivation of students' interests and creativity, influencing later educational theories.

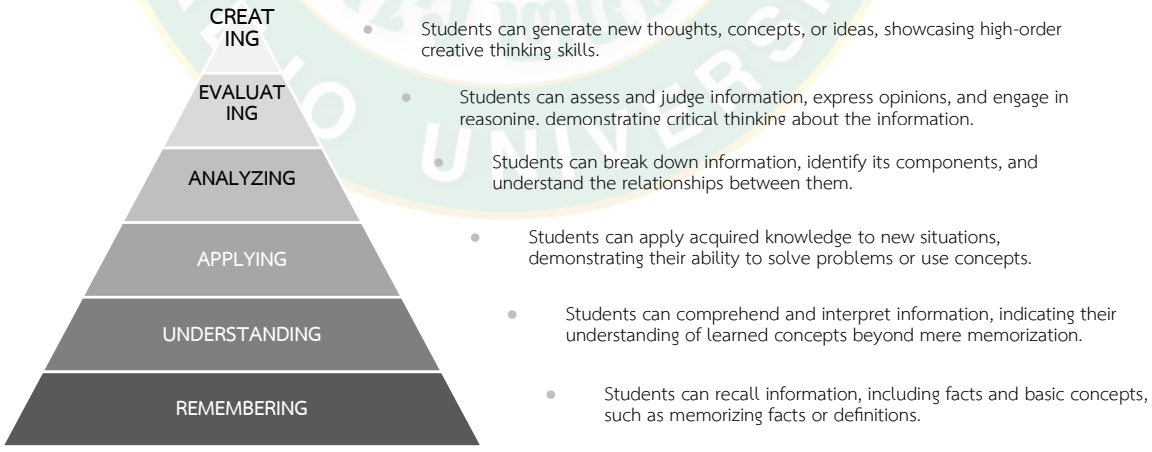

Figure 1 Revised Bloom's Taxonomy (Cognitive Domain

(Anderson and Krathwohl, 2000)

	REMEMBERING	UNDERSTANDING	APPLYING	ANALYZING	EVALUATING	CREATING
Factual Knowledge	List	Summarize	Classify	Order	Rank	Compile
Conceptual Knowledge	Describe	Interpret	Experiment	Explain	Assess	Plan
Procedural Knowledge	Tabulate	Predict	Calculate	Differentiate	Conclude	Compose
Meta-Cognitive Knowledge	Appropriate	Execute	Construct	Achieve	Action	Actualize

Figure 2 Knowledge and Cognitive Process Dimensions of Bloom's Taxonomy (Anderson and Krathwohl, 2000)

From the 1980s to the 1990s, the theory of educational quality gradually shifted from focusing on teaching processes to considering students' overall qualities and educational outcomes.

Ames (1972) presents groundbreaking work in educational quality theory, revolutionized the assessment paradigm by shifting the focus from traditional aspects like curriculum and teaching methods to the tangible outcomes of education – the actual performance of students. Ames argued that true educational quality could only be gauged by assessing the real-world achievements and capabilities of learners. Ames's empirical research methodology involved a comprehensive analysis of both quantitative and qualitative data, delving into the intricacies of student performance across various educational settings. By doing so, he not only identified areas for improvement but also proposed practical strategies for enhancing educational quality. Furthermore, Ames's contributions extended beyond the realms of academia, influencing educational policies and practices. His emphasis on outcome-oriented assessment prompted educators and policymakers to rethink their approaches, paving the way for a more student-centered and results-driven educational landscape.

Arrow (1984) theory focuses on the study of resource allocation in education from a societal perspective. He advocates for seeking a balance between efficiency and fairness, providing profound insights into the rational allocation of educational resources. Arrow's theory emphasizes the complexity of social choices in the allocation of educational resources. He believes that decision-makers, when facing different stakeholders, should consider both improving educational efficiency and ensuring social fairness and justice. This philosophy has guiding significance in formulating educational policies, helping decision-makers comprehensively balance various interests and ensure the fair distribution of resources. Arrow's research methods span multiple disciplines, including economics, sociology, and political science, offering a interdisciplinary perspective on the issue of educational resource allocation. His contributions not only advance the development of educational economics but also provide theoretical support for achieving an education system that is both fair and efficient.

Aliis (1993) concentrates on the concept of "learning outcomes orientation," emphasizing that assessing educational quality should revolve around students' academic achievements and personal development. His theory places importance on the tangible outcomes of learning as a central aspect of evaluating the effectiveness of education. Aliis's research delved into the practical application of learning outcomes orientation, showcasing how this approach can be effectively implemented in educational settings. By emphasizing the practical aspects of his theory, Aliis aimed to bridge the gap between theoretical concepts and their real-world applicability. This orientation towards learning outcomes has since become a significant aspect of discussions surrounding educational quality assessment.

In the framework of Kennedy (1997) report, she delved further into the examination of the effects and impacts of different educational policies. Through on-site observations and systematic evaluations of policy implementations, Kennedy focused on uncovering the effectiveness and shortcomings of policies in practical applications. Her research aimed to provide decision-makers with more specific and practical recommendations to guide them in more effectively formulating and adjusting educational policies. Additionally, Kennedy explored the varying impacts of

different policies on students, teachers, and the overall school community. She had a profound understanding of the challenges and issues that might arise during policy implementation and proposed solutions through case studies. These studies contribute valuable experiences to empirical educational research, making it more closely aligned with practical applications and providing more concrete guidance for educational policymakers.

In Murphy (2005) educational quality theory, his emphasis on the significance of school leadership goes beyond a mere acknowledgment of its importance. Murphy's extensive research delves into the multifaceted role that effective leadership plays in driving educational reform and, consequently, enhancing overall educational quality. His work provides a comprehensive exploration of the various dimensions of school leadership, ranging from strategic decision-making to fostering a positive school culture. Murphy's insights extend into the practical realm, offering detailed case studies that showcase successful instances of school management improvements attributed to effective leadership strategies. Through meticulous analysis and empirical evidence, Murphy advocates for leadership practices that not only address immediate challenges but also contribute to sustained positive transformations in educational institutions. Moreover, Murphy's research highlights the dynamic interplay between leadership and educational outcomes, underlining the impact that strategic leadership decisions can have on student achievement and overall school performance. By elucidating these intricate connections, Murphy's contributions deepen our understanding of the nuanced relationship between leadership effectiveness and educational quality. His body of work stands as a valuable resource for educational leaders seeking actionable strategies to drive positive change within their respective institutions.

Davis (2013) highlights the team aspect of educational leadership, suggesting that effective school management should not solely depend on individual leaders but harness the collective strength of a leadership team. His research delved into the practical applications of collaborative leadership, offering nuanced insights and practical recommendations for fostering effective teamwork within school leadership structures. Davis's work emphasized the interdependence and shared responsibilities

among leadership team members, advocating for a collaborative approach in decision-making and problem-solving. By examining real-world cases and scenarios, Davis provided a comprehensive understanding of how collaborative leadership can positively impact school culture, teacher morale, and overall educational quality. Furthermore, Davis's contributions extended to addressing the challenges and dynamics of team dynamics in diverse educational settings. His insights on fostering a culture of collaboration, communication, and mutual support within leadership teams have become foundational for school administrators seeking to enhance their institutions' overall effectiveness.

Shields (2013) focuses on the social responsibility of educational leadership, advocating for leaders to prioritize social justice and educational equality. His research on socially responsible leadership offers practical principles for leaders. In his theory, educational leaders are not just school administrators but also societal guides who should address and rectify inequalities existing in society. Shields' work highlights the responsibility of leaders in the education sector, presenting a series of perspectives on how leaders can promote social justice and equality. Through in-depth empirical research, he provides concrete guidance for leaders, especially in dealing with multiculturalism and issues of social justice. Moreover, Vas's research addresses educational leadership from a global perspective, offering practical advice for leaders in the era of globalization, particularly in dealing with diverse cultures and societal backgrounds. His work has a significant impact on contemporary theories and practices in educational leadership, guiding leaders to actively fulfill their social responsibilities and provide students with more equitable and equal educational opportunities.

Anderson et al. (2017) delves into the intricate relationship between educational leadership and school culture. Her research accentuated the pivotal role school leaders play in shaping and influencing the culture within educational institutions, providing practical recommendations and insights. Anderson's theory emphasizes that effective leadership extends beyond administrative tasks to the nuanced influence leaders can exert on the broader cultural aspects of a school. By investigating the dynamics of school culture and its connection to leadership, her

work offers practical advice for leaders seeking to navigate and shape the cultural environment within educational institutions. Furthermore, Anderson's research underscores the need for school leaders to be attuned to the cultural nuances within their institutions. It explores the ways in which leaders can foster a positive and inclusive culture that promotes learning and development. By delving into specific case studies and practical applications, her work provides actionable insights for leaders aiming to enhance educational quality through intentional cultural leadership.

Miller (2016) accentuates the importance of diverse approaches to educational assessment, advocating for comprehensive methods that go beyond traditional standardized tests. His research delved into alternative assessment strategies, offering fresh perspectives on evaluating educational outcomes. Miller's theory challenges the conventional reliance on standardized testing as the sole measure of educational achievement. By exploring and promoting alternative assessment methods, his work aims to provide a more nuanced understanding of students' capabilities and potentials. The emphasis on comprehensive assessment aligns with the evolving landscape of education, acknowledging the diverse ways in which students learn and demonstrate their knowledge.

Dunkerly and Wonh (2019) directs their attention to global perspectives on educational quality, proposing strategies to enhance educational quality within the context of globalization. Through their research, they made substantial contributions to understanding the intricate interplay between global forces and educational systems. Their theory recognizes the increasingly interconnected and interdependent nature of education in a globalized world. It emphasizes the need for educational systems to adapt and respond to global challenges, ensuring that students are equipped with the skills and knowledge required in an interconnected society. Furthermore, their research provides practical insights into how educational institutions and policymakers can navigate the complexities of globalization. By examining international education quality and the challenges posed by global dynamics, their work offers strategies to optimize educational outcomes in diverse cultural and socio-economic contexts.

Goodlad (1984) introduces a distinctive perspective to the educational quality theory, challenging the traditional emphasis on subject knowledge and advocating for a more comprehensive approach to educational goals. Goodlad's contribution revolves around the belief that educational objectives should extend beyond the mere transmission of subject-specific content. In his seminal work, he argued that educational goals should encompass the cultivation of students' holistic qualities, including critical thinking, creativity, and social skills. By questioning the prevailing focus on academic achievement alone, Goodlad prompted a paradigm shift in educational discourse. His ideas encouraged educators and policymakers to consider a broader set of outcomes, acknowledging the importance of fostering well-rounded individuals capable of navigating the complexities of the modern world. In essence, John Goodlad's contribution to the educational quality theory challenges the conventional notions of educational objectives, urging a more comprehensive and student-centered approach that goes beyond subject-specific knowledge.

Atkinson et al. (2007) makes a significant contribution to the educational quality theory by emphasizing the influence of families on student academic achievement and advocating for increased attention to family and societal factors. Atkinson's work, particularly highlighted in "Educational Quality: A Family Perspective", delves into the role of family dynamics and societal influences in shaping students' educational experiences. By emphasizing the need for a more comprehensive understanding of the factors impacting educational quality, Atkinson broadened the scope of the educational quality theory. Her perspective challenges the theory to extend its focus beyond institutional and instructional elements to incorporate the social context in which students learn. Recognizing the interconnectedness of educational outcomes with familial and societal dynamics, Atkinson's work contributes to a more holistic approach within the educational quality theory, enriching the discussion on the multifaceted nature of educational quality.

In conclusion, educational quality theory has undergone extensive research and contributions from various scholars over different periods. The theory has evolved from focusing on academic achievements and efficiency to encompass broader aspects such as social responsibility, leadership, and cultural development.

Looking ahead, Educational Quality Theory will continue to adapt to societal needs and student development, meeting the challenges of an ever-changing educational landscape.

The Educational Management Theory

Education Resources Information Center (2024) explained the educational management theory does not have a distinct founder. Its formation is a gradual process, involving contributions from multiple disciplines and continuous research into organizational and educational management issues.

Educational management theory, a pivotal domain for the efficient operation of educational institutions, has been distinctly defined by the contributions of various influential figures throughout history. Among them, Taylor (1911), renowned for his scientific management theory, played a crucial role in defining principles of efficiency and systematic approaches. Although initially applied in industrial settings, Taylor's concepts have found a defined resonance in educational management, underscoring the importance of well-defined processes and organizational efficiency. Another significant contributor is Weber (1921), whose bureaucratic theory has distinctly defined organizational structure and management principles. Initially formulated for governmental and business entities, Weber's principles of bureaucracy have been distinctly defined and extended to educational institutions. His emphasis on hierarchical structures, clearly defined roles, and adherence to rules has distinctly defined and influenced discussions and frameworks within the field of educational management. These figures, along with others, have distinctly defined the groundwork for the ongoing evolution of educational management theory. Their insights into efficiency, organizational structure, and systematic approaches continue to distinctly define discussions and practices in educational management, contributing to the effective administration of educational institutions.

Xiaofeng Li (Xiaofeng, 2003)considered the educational management theory can be divided into several distinct periods, each reflecting the characteristics and demands of the social, economic, and educational environments of its time. During

the early period of management theory, roughly from the late 19th century to the early 20th century, the emphasis was on the rise of industrialization and the scientific management of organizations. Scientific management theory highlighted the improvement of work efficiency through scientific methods, focusing on task specialization, efficiency, and organizational hierarchy to meet the organizational needs of the industrial era.

Also, he mentioned that the era of the Human Relations School, occurring around the 1920s to 1930s, witnessed the rise of social sciences, leading to a deeper exploration of interpersonal relationships within organizations and the social needs of employees. The emphasis shifted to the social and emotional needs of employees, emphasizing the importance of meeting these needs for enhancing work efficiency. The Behavioral Science period, spanning the 1940s to the 1950s, saw a shift in focus towards the examination of employee behavior, motivation, and leadership styles. This period introduced theories like X and Y, distinguishing different management perspectives for employees and highlighting the impact of employee participation and leadership styles on organizational performance, as well as understanding employee motivation.

Indeed Career Guide (2023) explained entering the modern management theory period, roughly from the 1950s to the present, educational management theory entered a more comprehensive and flexible stage. Emphasizing flexibility, change, and holistic management, modern management theory focuses on organizational learning, change management, and goal-oriented approaches to adapt to the challenges of the knowledge economy.

It also mentioned the recent period can be described as the Complexity and Adaptability period, covering the 21st century to the present. During this time, educational management theory has adapted to the challenges of globalization, technological development, and social diversity. Scholars are more focused on complexity theory, adaptive leadership, and educational innovation to address the ever-changing educational environment.

Theories of Educational Management is an important academic work on educational management written by Bush (1986) Bush has always insisted that educational management must be closely related to the purpose or objectives of education. In this work, Bush provides a detailed introduction to various theories of educational management, including structural models, system models, bureaucratic models, etc. These theories emphasize the official and structural elements of the organization. He believes that the process of determining organizational goals is at the core of educational management. In some environments, the goals are determined by the principal, usually working with senior colleagues and possibly a small number of non-professional stakeholders. However, in many schools, goal setting is a collective activity carried out by formal institutions or informal groups. The goals of schools are strongly influenced by external environmental pressures. Many countries have national curricula, which usually leave little room for schools to determine their own educational goals. Institutions may only have the residual task of interpreting external commands rather than determining goals based on self-assessment of student needs. The key question here is whether school administrators can modify government policies and develop alternatives based on the values and vision at the school level.

In his work, Bush explicitly links educational management theory with leadership models and applies them to policies and practices in various educational environments around the world. His work provides some conceptual frameworks for educational management practice and reflects a large amount of research linking theory with practice. Bush's theory also emphasizes the complexity and diversity of educational management. He believes that there is no single best way to manage educational institutions. Instead, he proposes a situational theory, emphasizing that educational managers need to choose and apply different management theories and strategies based on specific environments and situations. In addition, Bush also emphasizes the role and responsibilities of educational managers. He believes that educational managers not only need to have management skills, but also need to have leadership abilities, to guide and motivate the staff and students of educational institutions, to achieve the goals and objectives of education.

Bush's work has had a profound impact on the theory and practice of educational management. It provides a framework of theory and practice for educational managers, helping them to better understand and cope with the challenges of educational management. Theories of Educational Management is an important work that deeply studies the theory and practice of educational management, and is also a book that has made excellent contributions to the current theoretical discussion about management and leadership. It provides important resources for management and leadership development programs at various levels.

Ghasemy and Hussin (2014) divides educational management theories into five groups in his paper "Theories of Educational Management and Leadership: A Review". In this paper, Hussin presents a comprehensive classification of educational management theories, delineating five distinct groups that offer varied perspectives on the processes and dynamics inherent in educational management.

The first group, characterized as "Analytical rational" models, underscores the primacy of logical reasoning and data-driven decision-making, advocating for a systematic approach guided by empirical evidence in educational management practices. Conversely, "Practical rational" models prioritize efficiency and pragmatism, favoring the application of practical principles over strict adherence to theoretical constructs. Moving beyond rationalist frameworks, "Political" models conceptualize educational management as a political arena marked by the interplay of diverse stakeholders wielding varying degrees of power. These models accentuate the significance of negotiation, compromise, and power dynamics in navigating educational institutions. In contrast, "Phenomenological" models shift the focus towards subjective experiences and perceptions of individuals involved in educational management, asserting that understanding these subjective dimensions is pivotal for effective management strategies. Lastly, "Interactionist" models depict educational management as a dynamic process shaped by continuous interaction among different individuals and groups. These models underscore the importance of fostering effective communication, collaboration, and interpersonal relationships to facilitate the management of educational institutions. Hussin's classification offers a nuanced understanding of the multifaceted nature of educational management, acknowledging

its complexity and the diverse array of factors that influence decision-making and organizational dynamics.

By delineating these distinct theoretical perspectives, Hussin's framework underscores the need for a holistic and diversified approach in educational management practices, one that integrates rational analysis, practical considerations, political acumen, subjective experiences, and interpersonal interactions to effectively address the challenges and complexities inherent in educational settings.

Fullan (1992) Educational Change Theory, delves into comprehensive strategies and methodologies for bringing about transformative change within the education sector. Fullan, a renowned educational scholar, has significantly contributed to the discourse on educational reform and improvement. Central to Fullan's theory is the recognition that successful educational change requires a multifaceted approach that goes beyond mere structural modifications. He emphasizes the importance of addressing cultural, organizational, and instructional dimensions to create meaningful and sustainable transformations. Fullan's theory often highlights the significance of building a collaborative and shared vision within educational institutions. He argues that involving all stakeholders, including teachers, administrators, students, and the broader community, is crucial for the success of any educational change initiative. This collaborative approach fosters a sense of ownership and collective responsibility, aligning efforts toward common goals. Moreover, Fullan stresses the need for continuous professional development and capacity-building among educators. He contends that for educational change to be effective, there must be ongoing opportunities for teachers and leaders to enhance their skills, adapt to evolving pedagogical practices, and stay abreast of emerging educational trends. Technology integration is another key aspect of Fullan's theory, emphasizing the strategic use of technology to enhance teaching and learning experiences. He recognizes the role of technology as a catalyst for innovation and a tool for fostering greater engagement and personalized learning environments.

Fullan's Educational Change Theory is not merely theoretical but is grounded in practical applications. Through case studies and real-world examples, he illustrates how successful educational change initiatives have been implemented in diverse contexts. His work serves as a guide for educational leaders and policymakers seeking effective strategies to navigate the complexities of educational reform. Michael Fullan's Educational Change Theory provides a holistic framework for understanding and implementing meaningful change in education. Its emphasis on collaboration, continuous professional development, and technology integration reflects a nuanced approach to address the dynamic challenges within the education sector.

Okumbe (1998) provides useful reference material for students and scholars at the undergraduate and postgraduate levels in universities and advanced teacher training colleges. The book covers a cross-section of the body of knowledge, and encompasses concepts, theories, and practical dimensions on the process of educational management. This process consists of planning, procurement of resources, organizing, coordinating, influencing, stimulating, integrating, and evaluation in order to accomplish organizational goals and objectives. Not just a theoretical work, Okumbe's book is also a practical guide. It elaborates on various aspects of educational management, including decision making, financial management, human resource development, and more. The aim of the book is to help readers understand and apply the theories and practices of educational management to enhance the efficiency and effectiveness of educational organizations. The book is a valuable resource for readers with a deep understanding and practical experience in the field of educational management. It offers a comprehensive perspective to understand and apply the theories and practices of educational management, enabling readers to succeed in this field.

Müller and Wulf (2020) provide a systematic, multidisciplinary review of the antecedents of learning effectiveness in technology-supported management education, and highlights potential directions for future research. This paper provides a systematic, multidisciplinary review of antecedents of the effectiveness of technology-supported management learning and highlights potential directions for future research. Passive knowledge acquisition in physical classrooms is no longer the

hallmark of higher education. Instead, the introduction of new technologies allows for active knowledge construction in increasingly virtual spaces. Such changes in the learning environment affect the education of the managers of tomorrow. Nevertheless, research on technology-supported management learning and its implications for management educators is fragmented and inconsistent across research areas. This paper uses a systematic approach to structure and integrate results from the fields of educational psychology, educational technology, higher education, and management education. This allows us to derive a comprehensive overview of the antecedents of the effectiveness of technology supported management learning from the various disciplines. Our work reveals several areas that require further investigation, including: the best way to blend and flip formats for different management disciplines and content types; the selection, design, and richness of the technologies used; the instructor's teaching style, including feedback and deliberate confusion, and learners' affective states, such as their motivations and emotions, and the role of prior knowledge.

Coleman and Glover (2010) combining theory and practice to demonstrate the insights and skills needed by educational leaders in an increasingly diverse society. They primary objective is to showcase the insights and skills required by educational leaders in an increasingly diverse society. To achieve this, each chapter presents a real-life scenario. This approach enables readers to better understand and apply theories of educational leadership and management.

The content covers various aspects of educational leadership and management, including the values of leadership and management, social justice and equity, cultural diversity, and reflective practice. These themes are core components of educational leadership and management and are crucial for understanding and applying theories of educational leadership and management. The authors encourage readers to engage in reflective practice, especially when faced with difficult situations that may not have a "correct" answer. This approach helps readers better understand and navigate the challenges of educational leadership and management. This book provides a comprehensive perspective for understanding theories of educational

leadership and management, offers valuable insights for educational leaders, and suggests potential directions for future research.

Beñalet et al. (2023) and others deeply analyze the existing literature on educational strategic management. The paper uses the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework. This review depicts the demographic characteristics of the existing work on educational strategic management, focusing on geographical distribution, research methods, and the number of participants. In addition, it synthesizes important aspects of educational strategic management and integrates the suggestions found in the literature. The analysis of the demographic data of the literature reveals a significant lack of research in Asian and African countries, highlighting the need for a broader international perspective. Thematic analysis of eight articles from five countries identified four core themes about the characteristics of educational strategic management: optimized organizational structure, dynamic management capabilities, continuous pursuit of long-term goals, and responsive feedback mechanisms. This review distilled the suggestions from various sources into four basic elements of strategic management: environmental scanning, strategy formulation, strategy implementation, and evaluation and control. This comprehensive analysis provides valuable insights for school leaders seeking to enhance their educational institutions. It also emphasizes that future research efforts could explore various dimensions of educational strategic management, such as challenges and coping strategies.

In conclusion, the exploration of educational management theory reveals a rich tapestry of perspectives and approaches that have evolved over time to address the complex challenges inherent in educational leadership and administration. From classical theories emphasizing hierarchical structures and rational decision-making processes to more contemporary models highlighting the importance of flexibility, collaboration, and social dynamics, the field of educational management theory has undergone significant development.

As educational institutions continue to evolve in response to changing societal needs and technological advancements, the significance of effective educational management becomes increasingly pronounced. Thus, while Educational

Management Theory provides valuable insights and frameworks, it also underscores the need for ongoing adaptation and innovation in educational leadership and administration practices. By embracing a diverse array of theoretical perspectives and remaining responsive to emerging challenges, educational leaders can navigate the complexities of modern education systems and foster environments conducive to student success and institutional excellence.

The Teaching Assessment Theory

The formation of teaching assessment theory is a diverse and progressive process without a single founder or definer. Similar to educational management theory, it involves collaborative contributions from experts and scholars across fields such as education, psychology, and measurement. Throughout this evolution, numerous scholars have put forth their theories and perspectives, contributing valuable insights and methodologies to the development of teaching assessment theory.

The development of teaching assessment theory is an interdisciplinary endeavor, involving interaction and exchange among experts and scholars from various fields. Their research and theories constitute the foundation of teaching assessment theory, providing valuable intellectual resources to guide assessment practices in student learning and teaching.

Frontiers in Education (2022) explained the teaching assessment theory has gone through several key stages in history, each defined by distinct characteristics and approaches. In the early stage, represented by the late 19th to early 20th centuries, it focused on quantification and standardized testing, with figures such as Alfred Binet defining assessment through quantitative measures and standardized tests. In the behaviorism stage, during the mid-20th century, influenced by behaviorist psychology, figures like B.F. Skinner emphasized observable behaviors and responses, defining assessment within the framework of behaviorist principles.

Kirkpatrick (1959) proposed the "Kirkpatrick Model" a four-level framework for assessing the effectiveness of training and educational programs. This model includes four levels: Reaction, Learning, Behavior, and Results, providing a systematic method to assess the impact of training. The Kirkpatrick Model is designed to provide a systematic method for assessing the impact of training. It starts from the initial reaction of the participants to the training program, moves on to the learning they acquire from the program, then to the behavior change that occurs as a result of the training, and finally to the results or outcomes that can be attributed to the program. It ranges from the initial reaction of the participants to the ultimate influence of the acquired knowledge on the organization. The purpose of this model is to provide a systematic method to assess the effectiveness of training, from the initial reaction participants, to the degree to which they apply what they have learned in their work, and the ultimate impact of this knowledge on the organization. Despite criticisms regarding its simplicity and potential confusion among the levels, the model remains an important tool in the field of education and training assessment.

Stake (1976) is particularly known for his "Responsive Assessment" model, which emphasizes that assessment should focus on the actual situation and impact of teaching activities, rather than just the preset goals. This perspective has been instrumental in shifting the focus of assessment from a rigid, outcome-oriented process to a more flexible, process-oriented one that takes into account the complexities and nuances of the teaching-learning process.

Stake is also a leading figure in the field of case study research. His work in this area primarily focuses on qualitative research, especially on using case study methods to present the complexity of the assessment research process. In this work, Stake explores qualitative case study methods by drawing on various research methodologies including naturalism, holism, ethnography, phenomenology, and biographical research methods. His contributions have significantly enriched the field of case study research and have provided valuable insights into the conduct and interpretation of qualitative research.

Black and Wiliam (2010) consider that assessment should be seen as a tool to promote learning, not just a measure of students' knowledge and skills. They based on global research evidence that robustly demonstrates the improvement of students' test scores with the development of formative assessment. The significant improvement of students in this project further confirmed, providing ideas and suggestions for teachers, teacher trainers, school leaders, and other leaders to improve formative teaching assessment. Subsequent chapters discuss the problems teachers encountered when implementing new practices in the classroom and provide guidance for school management and local education authorities on promoting and supporting change. The authors provide valuable insights into the teaching assessment, as teachers describe in their own words how they have translated these ideas into practical action in their schools. They emphasize the importance of assessment in the educational process and provides a new perspective on assessment, that is, assessment is not just a measure of students' knowledge and skills, but a tool to promote learning.

Guskey (2000) proposed a comprehensive five-level model for assessing the effectiveness of teaching. This model includes students' learning outcomes, students' learning experiences, organizational support and change, teachers' beliefs and attitudes, and teachers' learning and development. Each level represents a different aspect of the teaching process, providing a holistic view of it.

Guskey's model emphasizes the importance of teacher professional development. It posits that changes in teachers' practices and beliefs are brought about through professional development, changes in classroom practices, and improvements in student learning outcomes. This perspective underscores the interconnectedness of teacher development, teaching practices, and student outcomes, and highlights the need for a comprehensive approach to teacher development and assessment.

In teaching assessment, Guskey's five-level model provides a powerful tool. It emphasizes the importance of student learning outcomes, which is the core of teaching assessment. By assessing student learning outcomes, teachers can understand whether their teaching is effective, which methods work well, and which

need improvement. The model emphasizes the importance of teachers' learning and development. Teacher professional development is key to improving teaching quality. By participating in professional development activities, teachers can learn new teaching strategies and techniques, thereby improving their teaching practices and student learning outcomes. Guskey's five-level model provides a comprehensive and in-depth framework for teaching assessment. It emphasizes the importance of teacher professional development, provides a holistic view of the teaching process, and highlights the interconnectedness of teacher development, teaching practices, and student outcomes. This model provides educators with a powerful tool to help them better understand and improve teaching, thereby improving student learning outcomes.

Boud and Falchikov (2007) that reconsiders assessment in higher education, particularly its impact on long-term learning. The central premise is assessment is a value-laden activity, surrounded by debates about academic standards, preparation for employment, measuring quality, and providing motivation. There is ample evidence to suggest that it is assessment, rather than teaching, that has the primary influence on student learning. It guides what is deemed important and serves as a motivator for learning. The authors propose that assessment should be seen as an act of informing judgement and present a way of integrating teaching, learning, and assessment to better prepare for lifelong learning.

The content includes discussions on the conceptual definition of assessment, the value, function, and purpose of assessment, the levels at which assessment occurs, an overview of assessment research literature, and Classroom Assessment Research, among other aspects. These provide a deep theoretical framework for understanding educational assessment and undoubtedly serve as a valuable reference for those engaged in educational assessment work. They emphasize the instructional potential of formative assessment and some classroom procedural applications inspired from formative assessment research that may help to improve instructional practices. These provide a deep theoretical framework for understanding educational assessment and undoubtedly serve as a valuable reference for those engaged in educational assessment work.

Hattie (2008) identifies a variety of factors that impact student learning outcomes. Hattie offers crucial insights into the factors influencing student learning outcomes. Drawing from extensive research, Hattie identifies and analyzes various elements that contribute to educational effectiveness. His findings serve as a valuable reference for both theoretical understanding and practical application in assessing teaching methods. "Visible Learning" provides educators with a comprehensive understanding of which factors have the greatest impact on learning. By synthesizing data from numerous studies, Hattie offers a framework for identifying strategies that are most effective in enhancing student achievement. Educators can use this research to inform their teaching practices, focusing on approaches that yield the greatest results. Hattie's work has profound implications for educational practices and policies. It encourages educators to prioritize evidence-based strategies and continuously evaluate the effectiveness of their teaching methods. Additionally, his research underscores the importance of collaboration and professional development within the educational community.

Griffin (2017) provides a comprehensive overview of teaching assessment, supporting the practical theory of learning, and formative assessment to support individual development and motivate learners. Griffin (2014) introduces a comprehensive and practical introduction to teaching assessment and learning in primary and middle school settings. It is based on contemporary, evidence-based research and views assessment as a source of data that can guide teaching strategies. Griffin proposes an assessment of a developmental model that emphasizes identifying what students are ready to learn, rather than "teaching to the test". This approach helps to improve student learning outcomes and sets goals for students based on developmental scales.

In addition, Griffin advocates for collaboration among teachers in professional learning teams, encouraging the sharing of assessment data and team interpretation to improve student learning outcomes. Each chapter includes an exercise for applying the course content to classroom practice, a response template for the exercise, and a guide on assessing the value of the exercise in professional learning teams. In addition, each chapter includes a short test for participants to check their

understanding of the course content. Griffin has a profound impact on the field of teaching assessment. It provides a practical approach to help teachers better understand and apply assessment to improve student learning outcomes. The theories and practical suggestions are based on rigorous research and provide valuable guidance for educators in teaching design, classroom practice, and teaching assessment.

James (2013) offer a comprehensive anthology on educational assessment, covering various theories and practices. The author emphasizes the complexity of assessment in education, advocating for a holistic approach that integrates multiple assessment methods. It highlights the importance of ongoing, formative assessment in supporting student learning and discusses techniques such as peer assessment and performance-based tasks. She also addresses standardized testing and the challenges it poses. Furthermore, it explores school assessment, emphasizing the need for multiple measures to evaluate school effectiveness. Overall, the anthology presents diverse perspectives from scholars in fields such as psychology, measurement, and educational leadership, enriching the discourse on assessment theory and practice.

Gardner (2011) provides a comprehensive overview of educational assessment, supporting the practical theory of learning, and formative assessment to support individual development and motivate learners. The main objective of this work is to enhance the educational assessment practices of practitioners, as a form of consciousness-raising. It attempts to establish a theoretical framework to address the main issues that may perplex novice and professional practitioners, which involve understanding the workings of the complex task of educational assessment that has long been delegated to them.

Specific aspects of the work target the definition of the concept of assessment, the value, functions, and purposes of assessment, the levels at which assessment occurs, a review of the assessment literature, and Classroom Assessment Research (CAR). CAR provides detailed knowledge about the efficacy of assessment, classroom assessment practices, alternative assessment, formative assessment, and finally the quality control standards of effective classroom assessment.

Gardner's work that has a profound impact on the field of educational assessment. It provides a practical approach to help practitioners better understand and apply assessment to improve student learning outcomes. The theories and practical suggestions in this work are based on rigorous research and provide valuable guidance for educators in teaching design, classroom practice, and teaching assessment.

Wright (2007) systematically introduces the basic concepts, methods, and applications of educational assessment. Wright discusses different types of assessments, including classroom assessments, standardized tests, and large-scale assessments, and explores the relationship between assessment and teaching. He provides a comprehensive overview of the field of educational assessment, covering a wide range of topics from the basic principles and methods of assessment to the practical applications of these techniques in the classroom. Wright discusses various types of assessments, including formative assessments used in the classroom, standardized tests used for large-scale assessments, and other types of assessments used in specific contexts.

One of the key themes is the relationship between assessment and teaching. The author argues that effective assessment is not just about measuring student learning outcomes, but also about informing teaching practices and supporting student learning. By providing timely and relevant feedback, assessments can help teachers tailor their instruction to meet the needs of their students, thereby enhancing the quality of teaching and learning.

In addition to discussing the theoretical aspects of educational assessment, he provides practical guidance for teachers and educators. It includes numerous examples and case studies that illustrate how assessment concepts and methods can be applied in real-world educational settings. He also includes practical tools and resources that teachers can use to develop their assessment skills and improve their teaching practices.

Ghaicha (2016) discusses in detail the theoretical framework of educational assessment, including the definition, value, function, and purpose of assessment, the levels at which assessment takes place, and detailed knowledge about classroom

assessment research. Ghaicha emphasizes that in this era of accountability, assessment is considered a powerful lever that can enhance or undermine student learning. However, many conventional institutional and instructional practices show that assessment is still inhibitive or hollow, rather than constructive, because these assessments lack aspects of formative assessment. This indicates that assessment is either not well understood or not carried out on all educational levels with a principled educational framework.

Specific aspects of the conceptual definition of assessment, the value, function, and purpose of assessment, the levels at which assessment occurs, an overview of assessment research literature, and Classroom Assessment Research (CAR). CAR provides detailed knowledge about assessment capabilities, classroom assessment practices, alternative assessments, formative assessments, and quality control standards for effective teaching assessment. Ghaicha concludes by emphasizing the instructional potential of formative assessment and some classroom procedural applications inspired from formative assessment research that may help to improve instructional practices.

Barron (2020) teaching assessment theory divides teaching assessment into three types: diagnostic assessment, formative assessment, and summative assessment. Diagnostic assessment is mainly carried out before teaching, with the purpose of understanding the students' readiness for learning, determining the appropriate placement for students, and identifying the causes of students' learning difficulties. Formative assessment is carried out during the teaching process, with the main purpose of improving students' learning, setting steps for students' learning, strengthening students' learning, and providing feedback to teachers. Summative assessment is an assessment of students' learning outcomes at the end of a large learning stage, a semester or a course, also known as terminal assessment.

Diagnostic assessment can help teachers understand students' readiness for learning, so as to better design and adjust teaching plans. Formative assessment can provide real-time feedback, allowing teachers to adjust teaching strategies in time during the teaching process to improve teaching effectiveness. Summative assessment can provide a comprehensive assessment of students' learning outcomes, helping

teachers, schools, and educational decision-makers understand students' learning situation, so as to carry out teaching improvement and educational decision-making.

He also provides us with a comprehensive framework for teaching assessment, helping us better understand and implement teaching assessment, to improve teaching quality and student learning outcomes.

Hongxi Wang et al. (2022), investigate the role of teachers' assessment literacy in teaching efficacy, with psychological capital and professional identity as antecedents to teaching efficacy. Recently, there has been a revision to reclassify categories of resources and acknowledge the conceptual importance of "gain spirals" and "resource caravans" in enriching the theoretical understanding of resources. The authors argue that teachers' assessment literacy is a prominent yet underexplored personal constructive resource in teaching (Hongxi et al., 2022).

The findings indicated that the teachers' assessment literacy and teaching efficacy were positively correlated, verifying that assessment literacy can influence teaching efficacy through the separate and chain mediation effects of psychological capital and professional identity. The identification of such mediating pathways has confirmed that resources owned by teachers can lead to gain spirals and full resource caravans, thus expanding the Conservation of Resources Theory by positing that resources can be nested within one another. This study has theoretical implications for teaching efficacy research and the Conservation of Resources Theory. It also has practical implications regarding how to boost teachers' constructive and energy resources and professional development.

In conclusion, the field of teaching assessment theory stands as a dynamic and evolving discipline that continually seeks to enhance educational practices and outcomes. The theoretical frameworks and concepts developed by these scholars have provided valuable insights into the design, implementation, and assessment of assessment practices in teaching and learning environments. From emphasizing the importance of multidimensional assessment to advocating for diversified assessment methods, their work has laid the foundation for more comprehensive and effective approaches to assessing student learning and teaching effectiveness. The ongoing refinement and adaptation of teaching assessment theory reflect a commitment to

addressing the evolving needs and challenges of education in a rapidly changing world. By embracing innovative assessment strategies and incorporating insights from diverse disciplines such as cognitive psychology and social sciences, educators can better tailor assessment practices to meet the diverse needs of students and promote meaningful learning experiences.

Smart Classroom

Current Status of Research on Smart Classrooms

With the rapid advancement of information technology, the education sector has undergone profound changes. Traditional classroom teaching methods are increasingly being replaced by information and technology-driven educational models, leading to the emergence of smart classrooms. Smart classrooms not only enhance teaching quality but also transform the way teachers and students interact, improving students' learning experiences and efficiency.

From China National Knowledge Infrastructure (2019), There are many studies on smart classrooms, and the terms “smart classroom”, “intelligent classroom”, “classroom of the future”, “future classroom”, and “future classroom” are commonly used in the related literature. From the search keywords “smart classroom” and other keywords to find the number of journal articles showed a linear upward trend, from only a number of articles in 2011 to hundreds of articles in 2017, from which it can be seen that everyone's attention to the smart classroom has increased dramatically.

Regarding the concept of a smart classroom, some viewpoints believe that it is an enhanced classroom with software and hardware upgrades compared to ordinary multimedia classrooms. Some view the smart classroom as a learning environment that employs innovative educational activities to improve the use of technology from classroom management to aspects of teaching. There are also views that the smart classroom is a new type of classroom with situational awareness and environmental management functions that utilizes perception technology, network technology, rich media technology and intelligent space technology, with interaction

as the core to stimulate students' interest in learning, and to promote collaborative and exploratory learning among students.

Biyue Zhu, Huomu Xie and Bin Yao (2019) believe that the main features of the smart classroom to interact as the core, the integration of new science and technology, new technology, to create a comfortable, convenient intelligent teaching environment, conducive to the classroom teachers and students in all aspects of the ability to expand (Biyue et al., 2019).

Current research on smart classrooms is divided into two main categories: the first type is to do theoretical framework research. Ronghuai Huang (Ronghuai, 2012) proposed the "SMART" conceptual model, which suggests that the "intelligence" of a smart classroom involves optimizing the presentation of teaching content, facilitating access to learning resources, deep interaction in classroom teaching, situational awareness, and classroom layout. His research provides valuable reference for the construction and integration of smart classrooms. The second type is to focus on upgrading the software and hardware of smart classrooms to reflect more intelligence, and to study how to optimize the combination and use of software and hardware devices. But most of the research remains at the theoretical level or explores feasible technological ideas. These studies have shown us various possibilities of smart classrooms in the new environment and the diversity of classroom design.

Construction Case of Smart Classroom- Xiamen University

Following the concept of smart classroom construction, Xiamen University completed the construction of 12 smart classrooms in August 2016 in order to maximize the function of the existing technical means in education and teaching. The entire “smart classroom construction” project after nearly half a year of research, demonstration, planning, design and construction, to provide teachers and students with a technologically advanced, full-featured, flexible application, management and convenient information technology teaching environment. The smart classroom integrates new technological achievements and builds an adaptive, ubiquitous, and open teaching space that is mainly based on teacher-student interaction and participation, flexible and efficient, and supports multiple teaching modes. The local

classroom is controlled by a touch screen programmable control panel, which controls the power, signal switching, and local amplification of all equipment in the classroom (including touch tablets, computers, recording, and interaction). At the same time, remote control and asset management of these classrooms can also be achieved through a remote centralized management platform.

The smart classroom is based on the " Internet of Things + Internet " information platform, takes wireless routing as the connection core, builds a " WiFi + wired " integrated LAN, connects all smart teaching equipment, forms the network layer of the Internet of Things connection, and various teaching and auxiliary equipment wirelessly access the information platform through the WiFi standard module, forming a unified Internet of Things platform that comprehensively covers the three levels of the Internet of Things; At the same time, other devices (laptops, mobile phones, projectors, interactive whiteboards, etc.) are also connected to the information platform through WiFi modules, becoming part of the IoT information platform equipment. If there are other teaching, research and development equipment, they can be connected to the information platform through standard Wi-Fi devices and can be used well after testing and verification.

The education comprehensive management system supports the opening of API and SDK development ports, seamlessly integrating with the school's one card system. Teachers only need to bring their campus one card during class, and the card insertion system can automatically link the startup of devices such as computers, smart whiteboards, and digital control systems, and start classes. The classroom can switch between wireless interactive or recording systems on the touch panel as needed. No special training is required to meet the needs of school teachers, and teachers do not need to spend more energy on teaching equipment.

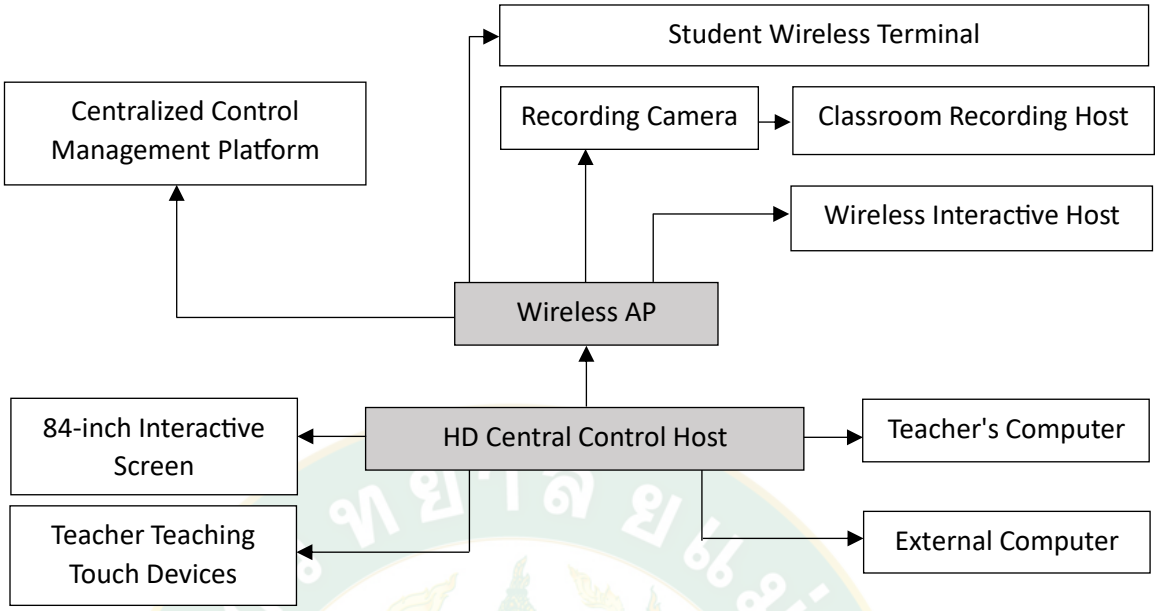

Figure 3 Smart Classroom System Topology

(Xiamen University, 2022)

In the smart classroom, traditional multimedia projectors and screens have disappeared and become smart blackboards (also known as "interactive smart tablets", Smart Boards). Smart blackboards are like large iPads, where teachers can perform editing, annotation, and other functions, and save them in real time. This allows teachers to no longer limit their teaching and evaluation to the podium. This classroom can also achieve single screen or 4-panel display, which facilitates the display of teaching content and logical connections in a larger area and improves learning efficiency.

The smart classroom covers high-speed wireless networks, supports access to rich resources and teaching tools, and fully supports various terminal access, meeting seamless access requirements for various versions of operating systems such as Android, Apple, and Microsoft. Mobile terminals such as tablets, phones, and laptops can all be accessed through Wi-Fi. The learning process and results can be conveniently displayed and shared between different terminals. Some smart classrooms have automatic classroom recording and playback functions. Teachers can record and play the entire teaching process in real-time through a "one click" operation, making it convenient for students to learn anytime before, during, and

after class. Teachers can send recorded content to students for pre class learning based on their own classroom design, and discuss key and difficult points in class, easily achieving classroom flipping and training students' ability to explore and innovate.

This smart classroom can provide dynamic interaction, teacher-student interaction, and student-student interaction. Students can give feedback through electronic voting and problem feedback through computers or handheld devices. During class, students can vote in class, and teachers can prepare questions before class or ask questions in real time during class. Through the classroom voting system, students' mastery of knowledge points can be monitored at any time, so that teachers can adjust teaching methods and content in a timely manner; At the same time, teaching effectiveness evaluation can be conducted at any time.

This smart classroom can achieve electronic attendance, and roll call no longer wastes valuable classroom time. Teachers can generate QR codes in class at any time, and students can scan them to complete classroom attendance. Remote management can be achieved in equipment management, and management personnel can remotely control classroom equipment, facilitating daily maintenance and quick troubleshooting.

Construction Case of Smart Classroom- Zhejiang University

China Education and Research Network (2022) explored Zhejiang University’s launch of the "Smart Classroom 3.0" project to provide an information environment that is technologically advanced, fully functional, flexible in application, and easy to manage, allowing artificial intelligence, big data, and other technological means to play a greater role in education and teaching. After nearly half a year of research, demonstration, planning, and design, the school completed the construction of 150 smart classrooms 3.0 in the North District of Zhejiang in the summer of 2022.

The construction standard for Zhejiang University Smart Classroom 2.0 is "1+X", where "1" refers to the essential standard configuration of each classroom, and "X" refers to the optional configuration items based on the functional requirements of the classroom. Unlike the configuration of the "multimedia classroom", Zhejiang University Smart Classroom 2.0 has made "speech recognition" and "classroom interaction" essential standard construction projects for every classroom, giving the smart classroom preliminary AI capabilities.

The construction standard for Zhejiang University Smart Classroom 3.0 is "1+3+X", where "3" is an extended element based on the Smart Classroom 2.0 construction standard, including "cloud computer", "synchronous classroom", and "smart cockpit". Zhejiang University Smart Classroom 3.0 uses these three as standard configurations and applies them to smart classrooms. The project includes 150 public classrooms, 12 self-service discussion rooms, 14 self-study rooms, and 1 multimedia control service room, totaling 177 spaces.

In Zhejiang University's Smart Classroom 3.0, teachers and students can access wireless screen mirroring and sharing of learning resources on their computers and mobile devices by scanning or entering screen mirroring codes. Multiple high-definition cameras in the classroom can automatically track the teacher's class situation and record the content taught by the teacher in the cloud. Students can "play on demand" recorded courses and view "replays" at any time through Smart Cloud Classroom. At the same time, online students only need to perform simple operations to obtain teacher written blackboards, courseware PPTs, or teacher close-up images through cloud sharing. The system can provide real-time feedback on the course situation data generated during the entire teaching process to the teaching staff, helping them manage experiments and teaching processes conveniently and efficiently, and realizing the full teaching process on the cloud. Smart classroom supports classroom interactions such as initiating check-in, opening bullet comments, and initiating classroom discussions. Record students' daily learning behaviors and trajectories, and present multidimensional classroom learning data to teachers.

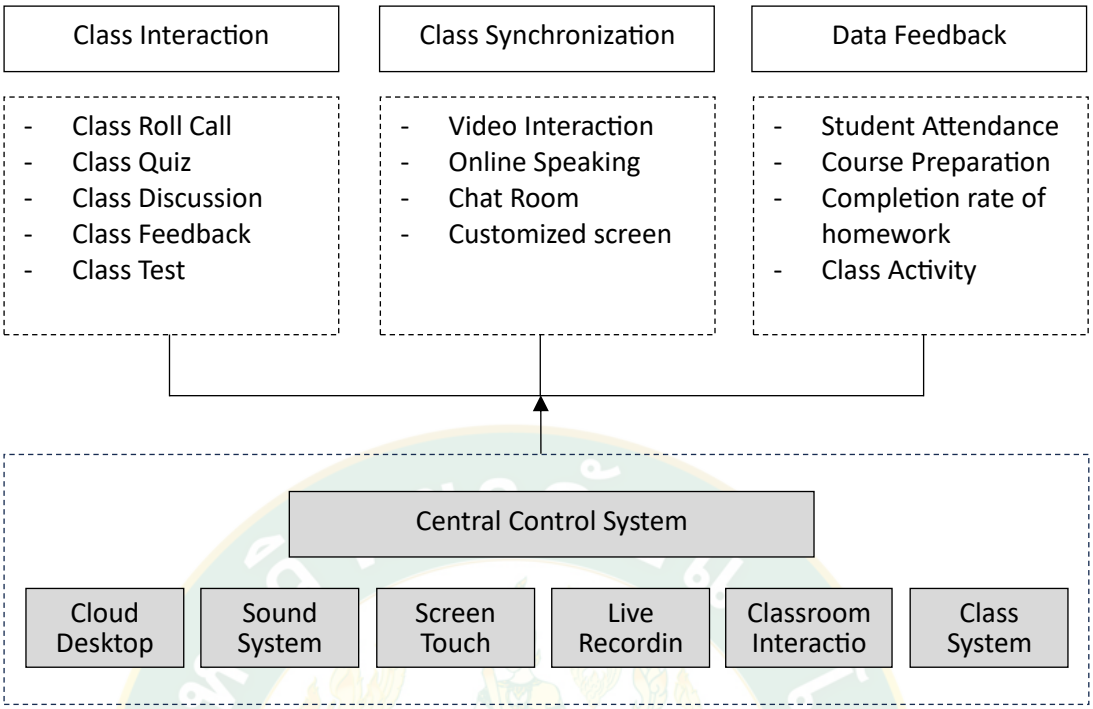

Figure 4 Smart Classroom 3.0 Function
(Zhejiang University, 2022)

In the case of smart classrooms, how to effectively integrate various new technologies into the teaching environment and activities, better achieve in class and out of class interaction between teachers and students, promote and support students' learning and development, has always been a key issue for builders to explore. At present, it is widely advocated worldwide that future talents should possess critical thinking, lifelong learning, self-awareness and self-regulation, creativity, communication and cooperation, and other qualities. When the requirements for students' abilities change, corresponding teaching models, educational facilities, and educational service measures are being attempted in higher education institutions.

Related Research

Educational Quality Theory

Guanglun Michael Mu, Xinrong Zheng and Ning Jia (2013), analyze the latest research on educational quality and equity in China, explore the historical and cultural roots of educational equity and quality through Confucianism and elaborate on the current policy priority that aims to address educational equity and quality. Informed by Confucianism, policy, and research, they pose a framework to structure investigation and analysis of three illustrative examples, namely the Special Post Teacher Plan, Amalgamation of Rural Schools, and Schooling of Floating Children. The promotion of educational equity through high quality provision of education for disadvantaged groups can help to narrow the gap in educational quality currently existing in China (Guanglun et al., 2013).

Li Wang (2013) reviews the quality assurance system of higher education in China and its impact on university governance and academic performance. The research begins by examining the development of the quality assurance system and its effects on university accountability and autonomy from the perspective of faculty and staff. Given varying stakeholder perspectives on educational quality, He also discusses whether the current system is designed to enhance the learning experience or primarily serves as a government control mechanism. The study emphasizes the importance of involving faculty, staff, and students in the existing quality assurance system to elevate the overall quality of higher education (Li, 2013).

Ping Li, Shulin Li and Liming Fang (2008) conduct an empirical investigation and analysis of the key factors influencing the quality of postgraduate education. The empirical research indicates that nine factors significantly impact the quality of postgraduate education in universities, including the overall level of mentorship, the content of postgraduate courses, the availability of school laboratories (electronic reading rooms) and various experimental equipment, the management level of postgraduate education, requirements for postgraduate thesis/dissertation, the quality of postgraduate student sources, their involvement in specific research projects, their attitude towards thesis writing, and issues related to the duration of postgraduate

education programs. Universities should strengthen reform efforts in these areas (Ping et al., 2008).

Jianhua Wang (2010) conducts research on educational quality management theory and explored the quality of education in Chinese universities. Their study focused on how universities learn from and draw inspiration from enterprise quality management practices. Rather than merely replicating corporate quality management models, universities engage in a collaborative exchange of sound quality management principles with businesses. In the process of implementing quality management and constructing theories for higher education quality management, universities must transcend organizational boundaries and move beyond the dichotomy of public and private sectors. By abandoning the adversarial stance between universities and enterprises in quality management, they can actively share the latest scientific advancements in quality management to continually enrich and refine the theoretical foundations (Jianhua, 2010).

Yan Liu (2012) conducts a domestic study on the influencing factors of the quality of postgraduate education based on content analysis, analyzing the current research status of postgraduate education quality in China through literature citation methods. The results indicate that apart from the core issue of postgraduate education quality, two other important research areas include training processes and management efforts. His research findings suggest that the current focus of postgraduate education quality research primarily revolves around the analysis of influencing factors. Based on content analysis, the study identifies several key factors affecting the quality of postgraduate education, including mentors, student sources, curriculum design, and laboratory conditions. Through content analysis, a series of critical factors influencing postgraduate education quality are identified, including faculty strength, curriculum design, research conditions, academic atmosphere, and management level (Yan, 2012).

Changxi Li and Jiannan Li (2014) conducted research on quality management and enhancement in Chinese university education. They summarized the main characteristics of research conducted over the past decade in this area. Their approach involved drawing from advanced teaching quality management experiences

in countries like the United States and the United Kingdom. Additionally, they integrated soft factors such as teaching philosophy, university culture, and content development. Their focus was on constructing and implementing quality monitoring systems for teaching quality, as well as reforming talent development models and innovating key stages of the teaching process (Changxi and Jiannan, 2014).

Caixia Yang and Xiaodong Zou (2015) study the concept construction and improvement strategies of student-centered teaching quality assurance in universities. Based on the perspective of student learning, development, and learning outcomes, and drawing on the fourth-generation assessment theory and total quality management theory, we have systematically sorted out the two core quality assurance contents of management and assessment. Clarify the reasons why students study, what they learn, how they expect teachers to teach, how they should learn, and what kind of service and organizational support they hope to receive. Clearly state that the assessment of teaching quality should be based on the learning outcomes of students rather than the teaching effectiveness of teachers. Based on this concept, three characteristics of student-centered teaching quality assurance are identified, and improvement strategies for teaching quality assurance are proposed, including organizational strategy, goal construction strategy, service support strategy, and assessment feedback strategy (Caixia and Xiaodong, 2015).

Lilian Yang (2015) conducts an in-depth examination, system construction, and assessment of quality management in higher vocational education. Their research indicates that effective construction of a quality management system in higher vocational education can be achieved through processes such as defining talent development quality standards, managing talent development resources, overseeing talent development processes, and analyzing and improving talent development. In assessment the effectiveness of quality management, the fundamental components include assessment objectives, assessment entities, assessment criteria, and assessment methods. When assessing the effectiveness of quality management in higher vocational education, the focus should be on meeting “customer requirements,” which in this context refers to the satisfaction of stakeholders and learners (Lilian, 2015).

Gang Li and Tao Xin (2021) research on the connotation of basic education quality and theoretical model of monitoring and assessment, It is concluded through research that the core of educational quality is the development of students, which should be comprehensive and is the result of multiple factors. The theoretical model of monitoring and assessment of basic education quality is a structured presentation of the connotation of quality, which uses CIPO (Context-Input-Process-Output) as a framework, defines educational output from the perspective of student development, selects key influencing factors, examines various factors and their relationships at all levels of educational quality, and finally characterizes educational quality from the perspective of the role of educational factors (Gang and Tao, 2021).

Xiaoyu Wei and Na Su (2021) research on equity and quality of school education, research has found that, from the perspective of quality, after removing the influence of student background factors and school composition factors, there are significant differences in the promotion of students' cognitive development among different schools; From the perspective of fairness, there are significant differences in the promotion effect of different schools on the cognitive development of students with different cognitive abilities and genders; from the perspective of the relationship between quality and equity dimensions, some schools have high efficiency in promoting students' cognitive development, and also have high efficiency in reducing the impact of factors such as cognitive foundation or gender on students' cognitive development, proving that school education can balance fairness and quality (Xiaoyu and Na, 2021).

Educational Management Theory

Biliang Xiao (2000) researches on value and conflict of educational management. His research indicates that educational management is essentially a practice activity based on value selection and value assessment. Exploring the value issues in educational management involves various aspects such as basic ideas, management systems, and management principles. Through research, not only can the fundamental theories of educational management be understood and grasped,

but it can also effectively guide educational management practices and promote the deep development of ongoing educational reforms (Biliang, 2000).

Tingzhen Zhi (2005) has conducted research on educational management ethics. His research aims to improve the current situation of educational management practices, call for and advocate for an educational management activity and behavior that reflects ethical spirit and moral care, and enrich and expand the research on basic theories of educational management. The ethics of educational management have the functions of guiding concepts and providing theoretical guidance for the implementation of educational management practices. Education management requires continuous in-depth research on how to achieve standardization, institutionalization, and normalization, while also strengthening attention and reflection on how to embody ethics and morality (Tingzhen, 2005).

Zengjun Feng (2004) studies on the characteristics and trends in the development of modern educational management theory. His research indicates that the development trends of modern educational management theory primarily manifest in: establishing theoretical systems with independent academic status, tending towards compatibility, integration, and innovation, emphasizing theoretical innovation and practicality, continuing the strong trend of diversified theoretical development, and experiencing significant advancements in virtual educational management theory (Zengjun, 2004).

Zhihong Wu (2002) study on the direction of research in educational management in the new century, through study, it is concluded that the study of educational management in the new century will exhibit the following characteristics: in terms of research methods, it will study both facts and values, striving to combine objective description with subjective analysis; We will continue to be strongly influenced by enterprise management theories and absorb, transform, and apply these theories according to the needs of educational management practices; The research questions have both commonalities and individualities, manifested in the equal emphasis on internationalization and localization research; The research content will be more diverse and tend towards diversification (Zhihong, 2002).

Guangying Li's (2012) research indicates that with the deepening of higher education management reform and the continuous changes in the dual-level management system of universities, the secondary colleges, which serve as the foundation of university management, play an extremely important role in teaching management within universities. Through his research, it has been demonstrated that innovation in the theoretical framework of teaching management at secondary colleges, the improvement of teaching management systems, the updating of management methods, the comprehensive monitoring of teaching quality, and the dynamic tracking of student learning outcomes have become essential tasks for universities to enhance teaching quality and ensure the quality of talent cultivation (Guangying, 2012).

Lu Yu (2008) conducts a study on the development direction of Chinese educational management from the perspective of postmodern educational management. He proposed that the criticism of traditional educational management views by postmodern educational management theory strikes at the core and offers many constructive suggestions. His suggestions include a commitment to critical thinking and reflection, a focus on the student experience, flexibility and innovation, and diversity and inclusion. His research elucidated the perspective of postmodern educational management and analyzed the insights of postmodern educational management theory for Chinese educational management concepts, aiming to promote the development of Chinese educational management theory and practical reforms (Lu, 2008).

Xinping Zhang (2022) researches on case teaching and its application in educational management courses. Through the study, he proposed that case-based teaching should foster discussion and dialogue rather than imparting monologues, encourage collective collaboration instead of individual endeavors, and promote critical reflection rather than dogmatic conclusions. The uniqueness of educational management knowledge, the advantages of integrating theory and practice through case-based teaching, and the role of case-based teaching in enhancing learners' collaborative skills and understanding of management complexity, all underscored the necessity for educational management courses to adopt case-based teaching.

Based on the research findings, Zhang concluded that the immediate priority should be the development of high-quality cases, strengthening training for organizers of case-based teaching, and instigating changes in learners' learning concepts and habits (Xinping, 2023).

Goldwyn (2008) discusses the theory, research, and practice of educational management. This study using a systems viewpoint to integrate relevant theories and research about organizational behavior, and focusing on understanding and applying theory to solve practical problems. The research concluded that there is a connection between educational management theory and major leadership models, as well as their policy and practice applications in various educational environments around the world.

Lumad (2017) provides a rigorous foundation and application of contemporary educational leadership theories for policy and practice in various educational environments around the world. The research concluded that educational leadership and management are both the same and different. Using the iceberg metaphor and five disciplines, iceberg metaphor points think about what's "beneath the surface" driving the individual events, five disciplines describing five key areas or disciplines for organizational learning: personal mastery, team learning, systems thinking, mental models, and shared vision. Draw conclusions based on research, educational leadership and management are both independent and dependent on each other, especially in achieving the goals of learning organizations.

Teaching Assessment Theory

Wei Wei, Yongkuan Wang, and Bing Shi (2006) investigated the optimization method for a teaching assessment system utilizing rough set theory. Their research yielded a method for enhancing the teaching assessment system by constructing attribute frequency functions based on the principle of the discrimination matrix and analyzing crucial factors. The attribute reduction algorithm of rough set theory can refine the assessment system by eliminating redundant indicators (Wei et al., 2006).

Yourong Liu and Fang Gong (2008) research the theoretical deficiencies and institutional gaps in undergraduate teaching. Through their study, they demonstrated that constructing a "Chinese characteristic" higher education assessment system should follow the following paths: strengthening hierarchical research in higher education, changing the status of "legislative negligence" and legislative lag in assessment, emphasizing the phenomenon of "subject absence" in assessment, and resisting the exaggeration of the role of "intermediary assessment." At the same time, attention should be paid to phenomena such as the contradiction between assessment method selection and assessment positioning, unreasonable assessment team structure, and vague connotations of assessment indicators (Yourong and Fang, 2008).

Guangming Zhou and Meihang Xie (2008) study the developmental teaching assessment theory of universities from the perspective of educational ecology. By analyzing the basic principles and laws of educational ecology in teaching assessment, exploring the ecological principles and utility of developmental teaching assessment, and constructing a theoretical system of developmental teaching assessment that conforms to the requirements of ecological development and the laws of higher education, it plays a positive role in rational allocation of educational resources, fully realizing the benefits of educational resources, and promoting the sustainable development of higher education (Guangming and Meihang, 2008).

Ran Chen and Dasheng Li (2013) conduct research on constructing an internal quality assurance system in universities with teaching assessment as the core, based on Six Sigma management theory and methods: sincere concern for customers, management of data and facts, emphasis on processes, proactive management, unlimited collaborative cooperation, and the pursuit of perfection. Through the study, it was found that by applying Six Sigma management theory and methods, the constituent factors of the assurance system were defined and analyzed, as curriculum design, teaching methods, assessment practices, faculty qualifications, student support services, and learning resources. Key control points as curriculum design, teaching methods, assessment practices, faculty competence, student support services, learning environment, affecting teaching quality were identified using the

Analytic Hierarchy Process (AHP), followed by quantitative measurement and analysis through teaching assessment. Based on the results, continuous improvement was carried out on these key control points, leading to the integration and expansion of the internal quality assurance system in universities (Ran and Dasheng, 2013).

Liu Zhentian (2018) studies on the theoretical understanding and practical exploration of teaching assessment in Chinese universities. Through his research, four aspects were identified for the theoretical understanding and practical exploration of teaching assessment in Chinese universities: firstly, in terms of assessment concepts, shifting from emphasizing performance accountability to focusing on negotiated dialogue; secondly, in terms of assessment functions, moving from rigid reinforcement to flexible incentives; thirdly, in terms of assessment classification, transitioning from single standards to diverse standards; and fourthly, in terms of assessment focus, shifting from specific teaching activities to internal quality assurance systems. The research has conducted research on the new exploration of teaching assessment practices in Chinese universities from level assessment to audit assessment, as well as the new understanding of teaching assessment theory. Through research, he suggests that in terms of assessment philosophy, there should be a shift from emphasizing performance accountability to emphasizing negotiation and dialogue; In terms of assessment, move from rigid reinforcement to flexible excitation; Moving from a single criterion to diverse criteria in evaluation classification; In terms of evaluation focus, move from specific teaching activities to an internal quality assurance system (Liu, 2018).

Shepard (2019) studies how Classroom Assessment to Support Teaching and Learning. Through the study, a model for creating a productive classroom learning culture is proposed. Rather than seeking coherence with standardized tests, which undermines the learning orientation of formative assessment, He proposed seeking coherence with ambitious teaching practices, Classroom assessment includes both formative assessment, used to adapt instruction and help students to improve, and summative assessment, used to assign grades. These two forms of assessment must be coherently linked through a well-articulated model of learning. Support for

teachers to learn these new assessment practices is most likely to be successful in the context of professional development for new curriculum and standards.

Coombs et al. (2022) research on the investigate Chinese teachers' conceptions of classroom assessment and perceived skills. Results showed that a higher percentage of Chinese teachers selected contemporary assessment approaches to classroom assessment than more traditional approaches. Chinese teachers also reported high levels of confidence in items that addressed aspects of assessment theory. Significant differences in approaches to classroom assessment were found across age groups, educational qualifications, and between full-time classroom teachers and classroom teachers that held additional positions. Implications for educational policy-makers and practitioners in light of enhancing teacher assessment literacy are discussed.

Conceptual Framework

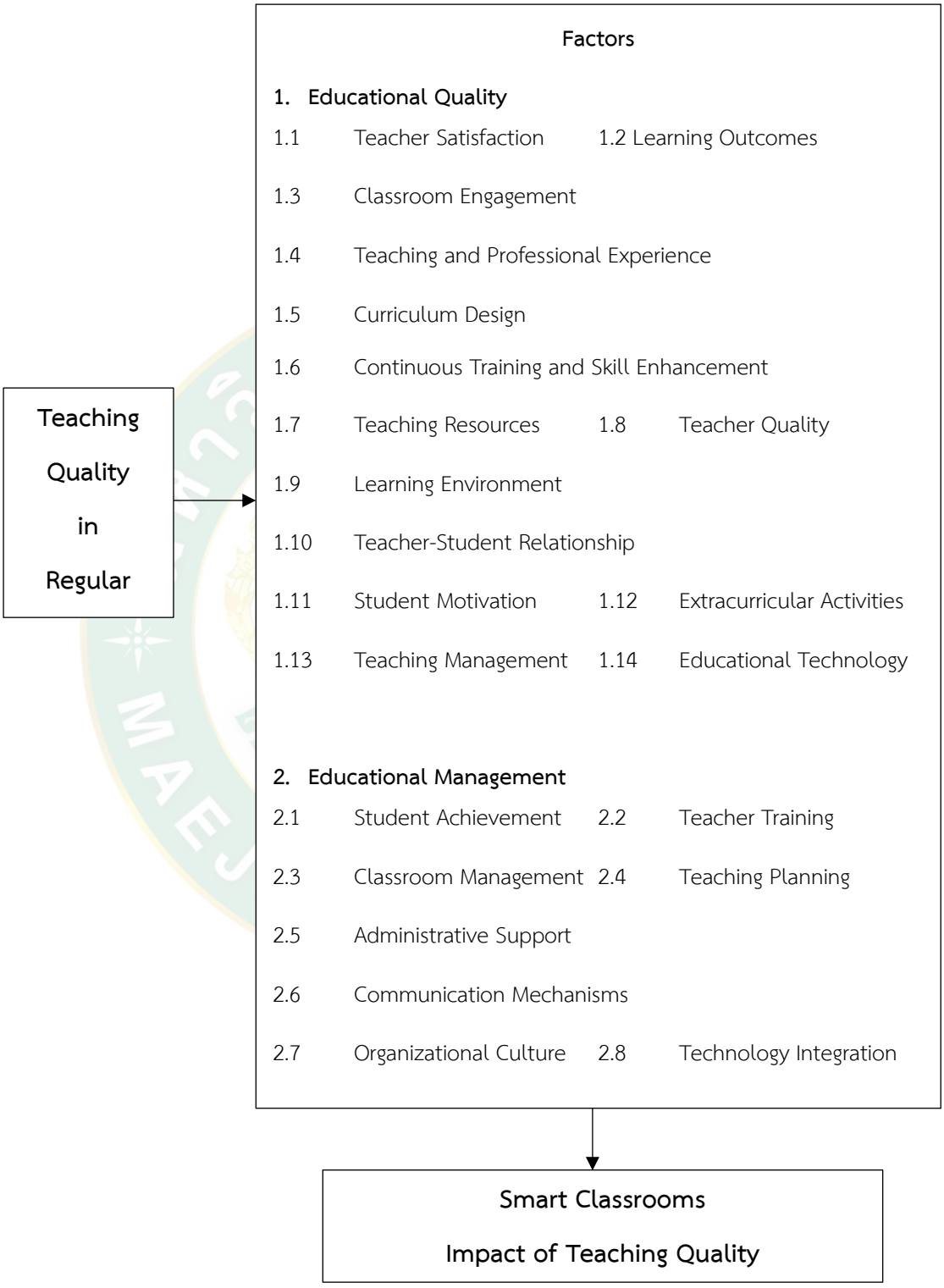

Figure 5 Conceptual framework

CHAPTER 3

RESEARCH METHODOLOGY

This chapter presents the fundamentals of the research methodology used in this study and describes in detail how it was conducted. It aims to inform the reader as to why this method was chosen to suit an investigative question involving a rigorous investigative process. This section also provides information on the study site, sampling procedures and statistical processing of the data.

This study uses quantitative methods to collect and compare instructional assessment data such as student performance, class attendance, satisfaction, and engagement between smart and regular classrooms. The quantitative approach will help generate empirical data that complements and validates the qualitative analysis and conclusions. Quantitative methods will help generate empirical data that complement and validate the qualitative analysis and conclusions. The methodology used aims to provide an objective and unbiased assessment of the data. Quantitative methods emphasize objective measurements and statistical, mathematical or numerical analysis of data collected through polls, questionnaires, and surveys, or the use of computational techniques to manipulate existing statistical data.

Locale of the Study

The location of this study is Guizhou Vocational College of Industry and Commerce. This university is locating in Guizhou, China. As shown in the map of the People's Republic of China (Google Map, 2024), Guizhou Province (Baidu Baike, 2024), is a provincial-level administrative region of the People's Republic of China, with Guiyang City as its capital. Between longitude 103° 36′ - 109° 35′E and latitude 24° 37′ - 29° 13′N, it borders Sichuan Province and Chongqing City to the north, Hunan Province to the east, Guangxi Zhuang Autonomous Region to the south, and Yunnan Province to the west. The distance between east and west is about 595 kilometers,

and the distance between north and south is about 509 kilometers. The total area is 176167 square kilometers, with a permanent population of 38.65 million people.

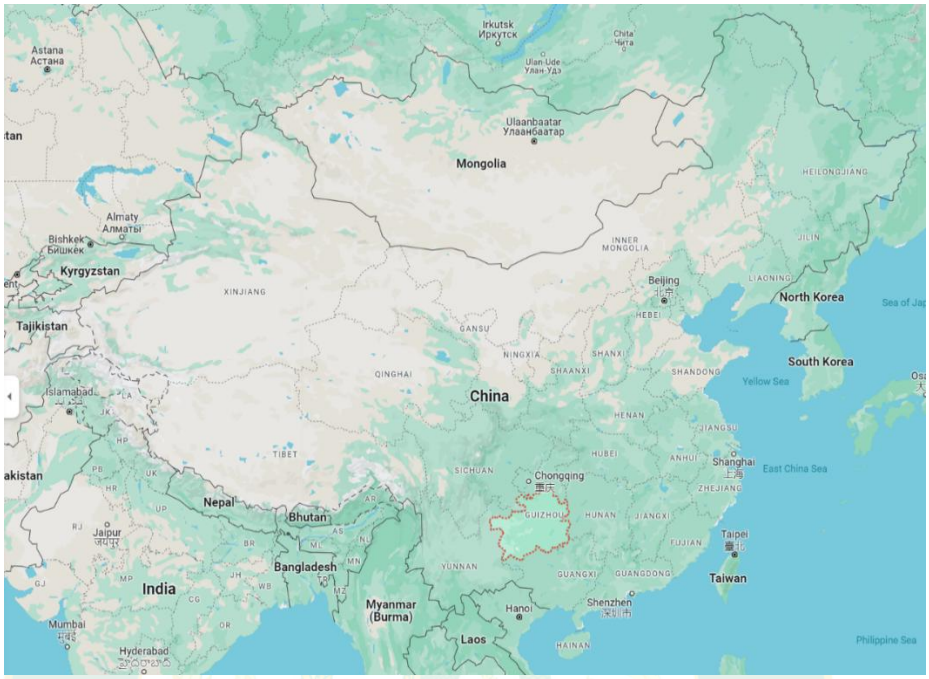

Figure 6 Guizhou's Location in China

(Google Map, 2024)

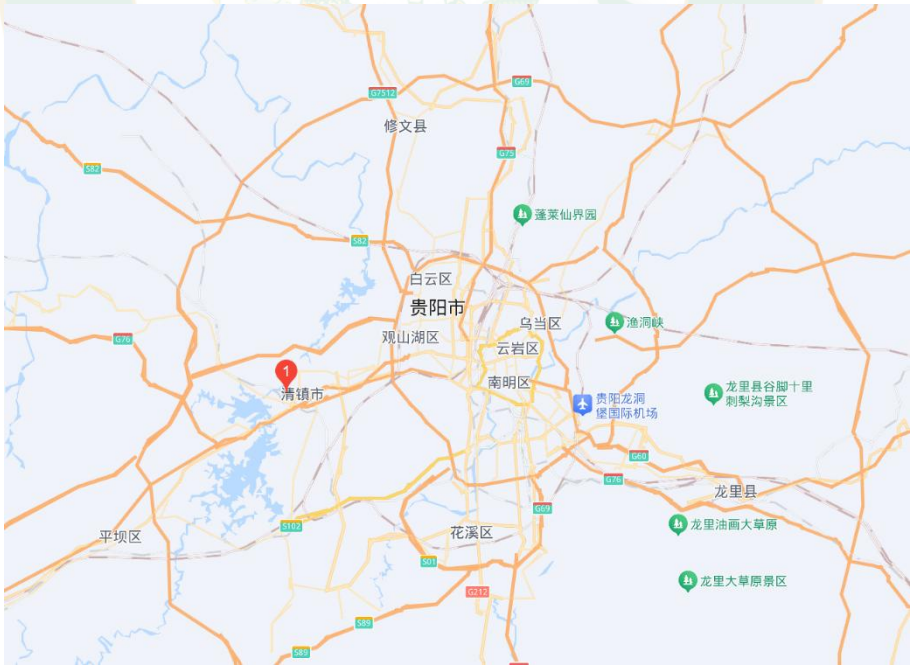

Figure 7 Location of Guizhou Vocational College of Industry and Commerce in Guiyang, Guizhou

(Baidu Ditu, 2024)

Guizhou Vocational College of Industry and Commerce

Guizhou Vocational College of Industry and Commerce is a full-time ordinary higher vocational college approved by the People's Government of Guizhou Province, registered with the Ministry of Education, and included in the national plan for unified enrollment. It was established in February 2012. The main form of education of the school is full-time vocational education, including higher vocational education, self-study examination assistance, vocational training, etc. The school plans to cover an area of over 1400 acres and establish 6 secondary colleges with 25 professional directions; There are over a thousand full-time and part-time teachers, including more than 130 senior and associate professional titles, over 320 "dual teacher" teachers with industrial and project backgrounds, and more than 15000 students.

Research Method

Based on the objectives proposed in the early stages of the research, this study employed quantitative research methods. Representative samples were extracted from teachers of Guizhou Vocational College of Industry and Commerce, and quantitative data was collected to more clearly assess the factors that affect the improvement of intelligent classroom teaching quality at Guizhou Vocational College of Industry and Commerce. Quantitative research refers to the systematic empirical study of social phenomena using statistical, mathematical, or computational techniques. The goal of such research is to develop and apply mathematical models, theories, or hypotheses related to social phenomena.

The most important process in quantitative research is the measurement process, as it fundamentally links the "empirical observation" and "mathematical representation" of phenomena. Quantitative data includes various data presented in numerical form, such as statistical data or percentages. This study used a questionnaire survey method to investigate the quality of teaching and its influencing factors.

This design allows for checking the current application status of smart classrooms and their impact on teaching quality at specific points in time. Objectively

and clearly explore and evaluate the teaching status of teachers in regular classrooms and smart classrooms, as well as the key factors that affect teaching quality.

Based on the collection and analysis of raw data, we aim to understand the application of smart classrooms in Guizhou Vocational College of Industry and Commerce by analyzing sample data, and analyze the differences in teaching quality between smart classrooms and regular classrooms. Provide suggestions for Guizhou Vocational College of Industry and Commerce to improve teaching quality by utilizing the advantages of intelligent classrooms. This study was conducted from August 2024 to November 2024.

The questionnaire aims to accurately answer the research objectives, which is the key to developing Guizhou Vocational College of Industry and Commerce to improve teaching quality by utilizing the advantages of smart classrooms. Including the following main components:

Part I: It includes basic information, teaching years, and teaching grade level. Intended to understand the views and needs of different groups of respondents towards smart classrooms, ensure data diversity and representativeness, and provide classification basis for subsequent data analysis.

Part II: Understand the current teaching quality situation in regular classrooms from the perspective of teachers, and obtain overall perception and specific feedback on teaching quality. This includes evaluating the positive and negative impacts of regular classrooms, as well as the advantages and disadvantages of teaching both inside and outside the classroom. The purpose is to understand the advantages and disadvantages of ordinary classrooms from the perspective of the respondents, in order to analyze the specific impact of classrooms on teaching quality. Collect specific evaluations of ordinary classrooms from respondents to provide a basis for future improvements.

Part III: Identify the key factors that affect teaching quality and understand the specific impact of each factor on teaching quality. The purpose is to evaluate the usability of teaching aids and technologies, understand the promoting effect of technology on teaching quality, and explore the needs of teachers considering environmental improvement. Collect specific factors from respondents regarding the impact of teaching software and hardware on teaching quality, in order to consider educational management strategies.

Part IV: Find the impact of smart classroom on teaching quality. The purpose is to understand the cognitive level of respondents towards smart classrooms in order to analyze the promotion effect, compare the teaching quality differences between smart classrooms and conventional classrooms, determine their advantages and disadvantages, collect and measure the actual impact of smart classrooms on teaching quality, evaluate their application effect and facilitate improvement, and provide a basis for subsequent optimization.

The final average score is divided into 5 intervals using the Likert scale, and the calculation formula is as follows:

The interval level = f maximum value -minimum value

$$= \frac{5-1}{5} = 0.8$$

Therefore, the mean scores are shown below:

Mean Scores	Criteria	Interval Scale
1<Scores≤1.8	Very Low Level	1
1.8<Scores≤2.6	Low Level	2
2.6<Scores≤3.4	Moderate Level	3
3.4<Scores≤4.2	High Level	4
4.2<Scores≤5	Very High Level	5

Adapted from Likert Scale (Likert, 1932)

Source of Data

A lot of data will be used in this study, the main sources are:

Primary data: The information collected through the questionnaire will serve as the primary data source for this study. The questionnaire will include multiple questions addressing teaching quality, the factors influencing it, and the impact of smart classrooms on improving teaching outcomes. It will be distributed online to ensure wide and representative coverage. The target respondents are teachers, whose feedback will offer valuable insights drawn from their professional experience and daily teaching practices. Among the total of 1,206 full-time teachers at the college, a sample size of 315 has been selected to ensure statistical validity and reliability of the findings.

Second-hand data: statistics of predecessors' research materials, with the help of information from Official website of the college websites.

Data Collection

Based on the exploration of key factors mentioned above, meaningful results and conclusions were obtained through questionnaire collection and analysis. The data is based on a questionnaire survey of management personnel at Guizhou Vocational College of Industry and Commerce in the selected research location. The questionnaire was written on the Wenjuanxing platform and distributed through online communication tools such as E-mail, WeChat, and QQ. This survey uses guiding questions to elicit managers' responses to key information. In some cases, this method is commonly used to observe, discover, and analyze the similarities and differences among participants on specific topics, and to draw certain conclusions about the research. Then use SPSS statistical software to organize and analyze the data collected from the sample.

The questionnaire was randomly distributed from August to November 2024, and according to the official website, the total number of teachers who have used smart classrooms—including both full-time and part-time faculty—is nearly 1,500 of

which 1,206 are full-time teachers (Official Website of Guizhou Vocational College of Industry and Commerce, 2nd semester, 2023-2024). Random sampling refers to randomly distributing a questionnaire to a study population. According to Taro Yamane's sample size calculation formula, the confidence level is 95% and the standard deviation is 5%, and the calculation is carried out according to the formula.

$$\mathrm{n} = \frac{N}{1+N*(e)^2}$$ at 95% of confidence

Yamane Taro Statistics (Yamane, 1976)

Where n =Sample Size

N =Total Population

e =Standard Error=0.05

So, in this research, the sample size

$$\mathrm{n} = \frac{1206}{1 + 1206 * (0.05)^2} = 300$$

The sample size was calculated to be 315, but it was expected that 310 questionnaires would be distributed.

Validity and Reliability of Research

The validity of this study was validated through the structural validity and content validity of the questionnaire. The factual questionnaire in this study is divided into two stages.

Stage 1: By reviewing relevant literature, a preliminary plan for an information literacy scale was developed and preliminary questions were collected.

Stage 2: The preliminary objectives of the questionnaire have been submitted to experts in the field of information literacy, who have evaluated all questions from the perspectives of content, frequency, and similar items and proposed revisions.

This study invited three experts to conduct assessment, all of whom are educators or teaching managers from Guizhou Vocational College of Industry and Commerce. This number of experts can provide diverse opinions, ensuring the reliability and representativeness of the evaluation results, and has practical guidance significance. Propose modification suggestions for the survey questionnaire and provide scoring criteria (-1, 0, 1), calculate the score of each question, and process it based on the scoring results to select the final question, calculate the comprehensive score using the following formula:

$$IOC = \frac{\sum X_i}{N}$$

Where *IOC* = Item Objective Congruence

$\sum X_i$ = Total Score of All Experts

N = Number of Experts

- score of -1: consider deleting or making significant modifications
- score of 0: make necessary adjustments and modifications.
- score of 1: keep them in the final questionnaire.

The summary score is the sum of the scores of three experts, and the appropriateness of the problem is judged based on the comprehensive score:

According to the sample size calculation formula:

$$\mathrm{n} = \frac{N}{1+N*(e)^2}$$ at 90% of confidence

So, in this research, the sample size

$$\mathrm{n} = \frac{310}{1 + 310 * (0.1)^2} = 76$$

Therefore, about 76 small samples can be selected.

Stage 1: After the questionnaire design and modification were completed, a representative sample of teachers was selected for the pilot test. The responses for each question and the overall questionnaire were recorded.

Stage 2: To evaluate the reliability of the questionnaire, Cronbach's alpha coefficient was calculated to assess the internal consistency. A high Cronbach's alpha value indicates that the items in the questionnaire are highly correlated and measure the same underlying construct. This method verifies the stability and coherence of the questionnaire content, providing a reliable tool for data collection in this study and ensuring the reliability of the research results.

Reliability Analysis

Reliability Statistics	
Cronbach's Alpha	**N of Items**
.985	83

The results showed that the Cronbach's alpha coefficient of the questionnaire was 0.985, indicating an extremely high level of internal consistency. In general, a Cronbach's alpha value greater than 0.8 is considered to reflect strong reliability, meaning that the items within the scale are closely related and consistently measure the same construct. The significantly high alpha value obtained in this study far exceeds the accepted threshold, suggesting that the questionnaire demonstrates excellent internal coherence and minimal measurement error. This high reliability implies that the questionnaire is a stable and dependable tool for assessing issues related to teaching quality, and it can effectively capture the perceptions and evaluations of respondents across multiple items. Therefore, it provides strong support for the accuracy and trustworthiness of the data collected and enhances the overall validity and rigor of the research findings.

Validity analysis

KMO and Bartletts Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.857
Bartletts Test of Sphericity	Approx. Chi-Square	4160.188
	df	1128
	Sig.	.000

To assess the validity of the questionnaire, the KMO and Bartlett sphericity tests were performed. The Kaiser-Meyer-Olkin (KMO) value of 0.857 indicates that the data are suitable for factor analysis. KMO values greater than 0.7 are generally considered a better indicator for factor analysis. In addition, the Bartlett spherical degree test showed that the approximate chi-square value is 4160.188, the degree of freedom is 1128, and the significance level (Sig.) is 0.000. This indicated a significant correlation between the variables and the data structure was suitable for factor analysis, thus further validating the construct validity of the questionnaire.

In conclusion, the questionnaire in this study performed well in both reliability and validity, and can provide scientific and reliable measurement tools for the assessment of teaching quality. This lays a solid foundation for further analysis of the impact of regular classrooms and smart classrooms on teaching quality.

Data Analysis

In order to answer the research questions, the survey data will be entered into a computer and analyzed using SPSS software. Descriptive statistics, including the mean, median, mode, and standard deviation, will be used to summarize and interpret the data, providing a clear overview of the patterns and trends within the responses.

Mean: A quantity that indicates the trend of a set of data. It is the sum of all observations divided by the number of observations. It is used to indicate the approximate average level of the data.

Median: It is the number in the middle of a set of data arranged in order. It represents a value in a sample, population or probability distribution. It is the observation in the middle after the data is sorted by size.

Mode: The observation with the highest frequency in the data.

Standard Deviation: The degree of dispersion of the mean of a set of data. The larger the standard deviation, the farther most values are from the mean; the smaller the standard deviation, the closer the values are to the mean.

CHAPTER 4

DATA ANALYSIS OF RESEARCH RESULTS

Introduction

This chapter focuses on the analysis and interpretation of the data collected from the survey conducted among teachers of Guizhou Vocational College of Industry and Commerce. The purpose of this analysis is to address the research objectives and questions outlined in earlier chapters, specifically examining the teaching quality in regular classrooms, the key factors affecting teaching quality, and the impact of smart classrooms on enhancing teaching quality. This will answer all the questions.

1. What is the teaching quality situation in regular classrooms in Guizhou Vocational College of Industry and Commerce?
2. What are the factors affect the teaching quality in regular classrooms in Guizhou Vocational College of Industry and Commerce?
3. How does smart classrooms impact of teaching quality in Guizhou Vocational College of Industry and Commerce?

Research Results

According to questionnaire, the part one is demographic has 8 questions and the result shown following to tables 1-8, that is the statistics of demographic variables. There are 31 questions in part 2, the result shown following to tables 9-39, it is the analysis of the current teaching quality situation in regular classrooms from the perspective of teachers, and obtain overall perception and specific feedback on teaching quality. There are 31 questions in part 3, the result shown following to tables 40-70, it is the analysis of the key factors that affect teaching quality and understand the specific impact of each factor on teaching quality. There are 21 questions in part 4, the result shown following to tables 71-91, it is the analysis of the the impact of smart classroom on teaching quality, to collect and measure the actual impact of smart classrooms on teaching quality, evaluate their application effect and facilitate improvement, and provide a basis for subsequent optimization.

Pre-survey for basic information

Name	Degree	Respondents	Percentage
1.Gender	Male	34	44.74%
	Female	42	55.26%
2. Age	20-30 years old	7	9.21%
	30-40 years old	21	27.63%
	40-50 years old	20	26.32%
	50-60 years old	19	25.00%
	60-70 years old	9	11.84%
3. Marital Status	Single	32	42.11%
	Married	28	36.84%
	Divorced	9	11.84%
	Other (please specify)	7	9.21%
4. Salary (US Dollar)	$550-800	8	10.53%
	$801-1110	11	14.47%
	$1110-1400	18	23.68%
	$1400-2100	29	38.16%
	Above$2100	10	13.16%
5. Teaching Years	1-5 years	19	25.00%
	6-10 years	16	21.05%
	11-20 years	14	18.42%
	21-30 years	11	14.47%
	31-40 years	9	11.84%
	41-50 years	7	9.21%

Name	Degree	Respondents	Percentage
6. Teaching Grade Level	First year	11	14.47%
	Second year	27	35.53%
	Third year	38	50.00%
7. Education Level	Undergraduate	26	34.21%
	Master	44	57.89%
	Doctor	6	7.89%
8. Faculty	Marxism	18	23.68%
	Comprehensive Health	15	19.74%
	Big Data	20	26.32%
	Digital Economy	9	11.84%
	Humanities and Physical Education	8	10.53%
	Engineering	6	7.89%
Total		**76**	

From the data provided, we can observe the distribution and characteristics of the different groups. In terms of gender, the proportion of women is slightly higher than that of men; in the age distribution, people aged 30-50 are relatively high; in marital status, single and married people dominate; in terms of salary, most of the income is $1400-2100; in terms of teaching years, the majority of teaching experience is 1-10 years; teaching grade is the second and third year; doctor degree; finally, in the perspective of subject distribution, Marxism, comprehensive health and big data are the main subject areas. These data provide us with a comprehensive portrait of the faculty population contributing a deeper understanding of its structure and characteristics.

Basic Information

Table 1 Gender

NO.	Gender	Respondents	Percentage
1	Male	151	47.94%
2	Female	164	52.06%
	Total	**315**	**100%**

According to the Table 1, this study found that in the total groups surveyed, men accounted for 47.94% and women accounted for 52.06%.

Table 2 Age

NO.	Age	Respondents	Percentage
1	20-30 years old	34	10.79%
2	30-40 years old	99	31.43%
3	40-50 years old	78	24.76%
4	50-60 years old	67	21.27%
5	60-70 years old	37	11.75%
	Total	**315**	**100%**

According to the Table 2, the age groups are unevenly distributed in the study sample. Among them, the 30-40 age group accounted for the highest proportion, reaching 31.43%, followed by 40-50 and 50-60 years old, accounting for 24.76% and 21.27% respectively. However, the proportion of the ages of 20-30 years and 60-70 years was relatively low, with 10.79% and 11.75%, respectively.

Table 3 Marital Status

NO.	Marital Status	Respondents	Percentage
1	Single	175	55.56%
2	Married	124	39.37%
3	Divorced	10	3.17%
4	Other	6	1.90%
	Total	**315**	**100%**

According to the Table 3, the distribution of different marital states can be observed. Among them, single status had the highest proportion, reaching 55.56%, 175; married, 39.37%, 124; divorce and other marital status (to be specified) are relatively low, 3.17% and 1.90%.

Table 4 Salary (US Dollars)

NO.	Salary	Respondents	Percentage
1	$550-800	42	13.33%
2	$801-1110	124	39.37%
3	$1110-1400	101	32.06%
4	$1400-2100	31	9.84%
5	Above$2100	17	5.40%
	Total	**315**	**100%**

According to the Table 4, the distribution of the different salary ranges can be observed. Among them, the salary in the $801-1110 range reached 39.37%, followed by the salary in the $1110-1400 range, accounting for 32.06%. The salary in the range of $550-800 was 13.33%, the range of 9.84% was $1400-2100, and the lowest salary over $2100 was 5.40%.

Table 5 Teaching Years

NO.	Teaching Years	Respondents	Percentage
1	1-5 years	30	9.52%
2	6-10 years	145	46.03%
3	11-20 years	110	34.92%
4	21-30 years	15	4.76%
5	31-40 years	11	3.49%
6	41-50 years	4	1.27%
	Total	**315**	**100%**

According to the Table 5, the distribution of teachers teaching years presents certain characteristics. Among them, teachers with teaching experience in 6-10 years accounted for the highest proportion, reaching 46.03%, followed by teachers with 11-20 years of teaching experience, accounting for 34.92%. However, the proportion of teachers with 1-5 years, 21-30 years, 31-40 years and 41-50 years of teaching experience was relatively low, with 9.52%, 4.76%, 3.49% and 1.27%.

Table 6 Teaching Grade Level

NO.	Teaching Grade Level	Respondents	Percentage
1	First year	62	19.68%
2	Second year	87	27.62%
3	Third year	166	52.70%
	Total	**315**	**100%**

According to the Table 6, we can find differences in the distribution of teachers among different teaching grades. Among them, teachers in the first year accounted for 19.68%, 27.62% in the second year, and the third year accounted for the highest proportion, reaching 52.70%.

Table 7 Education Level

NO.	Education Level	Respondents	Percentage
1	Undergraduate	104	33.02%
2	Master	181	57.46%
3	Doctor	30	9.52%
	Total	**315**	**100%**

According to the Table 7, the distribution of education level shows the following characteristics: the undergraduates account for 33.02%, the proportion of master students accounts for the highest, reaching 57.46%, and the doctoral students account for 9.52%.

Table 8 Faculty

NO.	Faculty	Respondents	Percentage
1	Marxism	67	21.27%
2	Comprehensive Health	55	17.46%
3	Big Data	59	18.73%
4	Digital Economy	45	14.29%
5	Humanities and Physical Education	59	18.73%
6	Engineering	30	9.52%
	Total	**315**	**100%**

According to the Table 8, 21.27% of respondents come from Marxism Faculty, 17.46% of respondents come from Comprehensive Health Faculty, 18.73% of respondents come from Big Data Faculty, 14.29% of respondents come from Digital Economy Faculty, 18.73% of respondents come from Humanities and Physical Education Faculty, 9.52% of respondents come from Engineering Faculty.

Current Teaching Quality Situation in Regular Classrooms

Items	Mean	SD	Level
9 Are you satisfied with the current teaching methods in regular classrooms?	3.413	1.371	Neutral
10 Do students in regular classrooms achieve the expected learning outcomes?	3.165	1.096	Neutral
11 Are students actively engaged during lessons in regular classrooms?	3.149	1.109	Neutral
12 Does your professional experience positively influence the teaching quality in regular classrooms?	3.076	1.112	Neutral
13 Is your teaching design effective in regular classrooms?	3.149	1.218	Neutral
14 Do you receive sufficient training and opportunities for skill enhancement to improve your teaching in regular classrooms?	3.171	1.095	Neutral
15 Are the teaching resources in regular classrooms adequate for delivering high-quality education?	3.181	1.141	Neutral
16 Can teachers keep their skills and qualities up-to-date in a regular classroom environment to increase their adaptability?	3.171	1.155	Neutral
17 Can the learning environment of a regular classroom (such as display devices, volume, and seating layout) effectively teach?	3.229	1.099	Neutral
18 Is it convenient for students to actively participate, think, and discuss in regular classrooms.	3.124	1.146	Neutral
19 Is the support given to students in regular classrooms in self-study situations outside the classroom sufficient?	3.105	1.153	Neutral
20 Can regular classrooms effectively support extracurricular learning (such as searching for course materials, supplementing extracurricular knowledge)?	3.181	1.118	Neutral
21 Can regular teachers effectively control teaching progress?	3.229	1.040	Neutral

Items	Mean	SD	Level
22 Does the current technology in regular classrooms meet the quality of instruction?	3.159	1.132	Neutral
23 Does the current management system support high student achievement in regular classrooms?	3.146	1.093	Neutral
24 Does the college provide adequate training programs for teachers to improve teaching quality in regular classrooms?	3.187	1.106	Neutral
25 Are the classroom management strategies effective in regular classrooms?	3.184	1.082	Neutral
26 Do you have sufficient time and resources for effective teaching planning in regular classrooms?	3.229	1.073	Neutral
27 Do teachers in regular classrooms have timely and effective access to administrative support?	3.248	1.127	Neutral
28 Can you communicate smoothly and quickly solve problems with students in a regular classroom.	3.165	1.175	Neutral
29 Does the college focus on promoting teaching quality through teaching hardware and scientific technology?	3.178	1.117	Neutral
30 Is technology effectively integrated into teaching practices in regular classrooms?	3.168	1.094	Neutral
31 Does the school have policies to improve the quality of teaching?	3.133	1.109	Neutral
32 Can regular classroom frequently use formative assessments (such as tests and assignments) to monitor students' progress?	3.184	1.055	Neutral
33 Can regular classrooms effectively measure students' learning outcomes through summative assessments (such as final exams)?	3.159	1.134	Neutral
34 Can regular classrooms improve teaching practices in regular classrooms through teacher self-assessment?	3.184	1.119	Neutral

Items	Mean	SD	Level
35 Can regular classrooms effectively improve the teaching quality of regular classrooms through peer assessment?	3.190	1.143	Neutral
36 In a regular classroom, can you give students some useful advice to help them improve their learning quality.	3.190	1.098	Neutral
37 Are there any evaluation criteria for students in regular classroom learning?	3.168	1.115	Neutral
38 Can the tools used in regular classrooms to measure students' learning outcomes accurately reflect their actual learning situation.	3.194	1.113	Neutral
39 After regular classroom teaching, do you often check students' grades and performance?	3.203	1.147	Neutral
Overall average	**3.181**	**1.125**	**Neutral**

The average values of all items range from 3.076 to 3.413, with the standard deviation ranging from 1.040 to 1.371. The overall average is 3.181, with a standard deviation of 1.125. Both individual items and the overall level are "Neutral". This indicates that the overall evaluation of the current situation of teaching quality in regular classrooms is relatively balanced, with no obvious positive or negative tendency.

Table 9 Are you satisfied with the current teaching methods in regular classrooms?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	40	12.70%
2	Disagree	47	14.92%
3	Neutral	61	19.37%
4	Agree	77	24.44%
5	Strongly Agree	90	28.57%
	Total	**315**	**100%**

According to the Table 9, the results showed a different distribution of the Agrees. Among them, 12.70% of respondents strongly disagree, 14.92% disagree, 19.37% are neutral, 24.44% agree, and the highest proportion of 28.57% of respondents strongly agree.

Table 10 Do students in regular classrooms achieve the expected learning outcomes?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	26	8.25%
2	Disagree	63	20.00%
3	Neutral	85	26.98%
4	Agree	115	36.51%
5	Strongly Agree	26	8.25%
	Total	**315**	**100%**

Based on the data from Table 10, 8.25% of the students strongly disagree, 20.00% disagree, 26.98% remained neutral, 36.51% agree, and 8.25% strongly agree.

Table 11 Are students actively engaged during lessons in regular classrooms?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	23	7.30%
2	Disagree	76	24.13%
3	Neutral	75	23.81%
4	Agree	113	35.87%
5	Strongly Agree	28	8.89%
	Total	**315**	**100%**

According to the Table 11, 35.87% of the students agreed with the question of whether they would actively participate in the course in the regular classroom, 24.13% and 23.81% disagree and are neutral, while 7.30% and 8.89% strongly disagree and strongly agree.

Table 12 Does your professional experience positively influence the teaching quality in regular classrooms?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	25	7.94%
2	Disagree	84	26.67%
3	Neutral	72	22.86%
4	Agree	110	34.92%
5	Strongly Agree	24	7.62%
	Total	**315**	**100%**

According to the Table 12, the respondents showed a certain distribution of answers about the question whether your professional experience had a positive impact on the quality of teaching in a regular classroom. Of these, 7.94% strongly

disagree, 26.67% disagree, 22.86% are neutral, and 34.92% agree, while 7.62% strongly agree.

Table 13 Is your teaching design effective in regular classrooms?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	39	12.38%
2	Disagree	56	17.78%
3	Neutral	79	25.08%
4	Agree	101	32.06%
5	Strongly Agree	40	12.70%
	Total	**315**	**100%**

Based on the data from Table 13, students presented a certain distribution of responses about the question "does your instructional design work in a regular classroom class." Among them, 12.38% strongly disagree, 17.78% disagree, 25.08% are neutral, 32.06% agree, and 12.70% strongly agree.

Table 14 Do you receive sufficient training and opportunities for skill enhancement to improve your teaching in regular classrooms?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	22	6.98%
2	Disagree	70	22.22%
3	Neutral	85	26.98%
4	Agree	108	34.29%
5	Strongly Agree	30	9.52%
	Total	**315**	**100%**

According to the Table 14, 6.98% of participants strongly disagree, 22.22% disagree, 26.98% are neutral, 34.29% agree, and 9.52% strongly agree.

Table 15 Are the teaching resources in regular classrooms adequate for delivering high-quality education?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	24	7.62%
2	Disagree	73	23.17%
3	Neutral	76	24.13%
4	Agree	106	33.65%
5	Strongly Agree	36	11.43%
	Total	**315**	**100%**

According to the Table 15, 7.62% strongly disagree, 23.17% disagree, 24.13% are neutral, and 33.65% agree, while 11.43% strongly agree.

Table 16 Can teachers keep their skills and qualities up-to-date in a regular classroom environment to increase their adaptability?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	31	9.84%
2	Disagree	61	19.37%
3	Neutral	79	25.08%
4	Agree	111	35.24%
5	Strongly Agree	33	10.48%
	Total	**315**	**100%**

Based on the data from Table 16, on the question of whether teachers can constantly update their skills and qualities in the regular classroom environment, 35.24% of respondents agreed, 25.08% remained neutral, 19.37% disagree, while 9.84% strongly disagree and 10.48% strongly agree.

Table 17 Can the learning environment of a regular classroom (such as display devices, volume, and seating layout) effectively teach?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	19	6.03%
2	Disagree	67	21.27%
3	Neutral	90	28.57%
4	Agree	101	32.06%
5	Strongly Agree	38	12.06%
	Total	**315**	**100%**

Based on the data from Table 17, 6.03% of respondents strongly disagree, 21.27% disagree, 28.57% are neutral, 32.06% agree, and 12.06% of respondents strongly agree.

Table 18 Is it convenient for students to actively participate, think, and discuss in regular classrooms.

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	29	9.21%
2	Disagree	72	22.86%
3	Neutral	75	23.81%
4	Agree	109	34.60%
5	Strongly Agree	30	9.52%
	Total	**315**	**100%**

According to the Table 18, 9.21% strongly disagree, 22.86% disagree, 23.81% remained neutral, and 34.60% agree, while 9.52% strongly agree.

Table 19 Is the support given to students in regular classrooms in self-study situations outside the classroom sufficient?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	29	9.21%
2	Disagree	74	23.49%
3	Neutral	80	25.40%
4	Agree	99	31.43%
5	Strongly Agree	33	10.48%
	Total	**315**	**100%**

Based on the data from Table 19, 9.21% strongly disagree, 23.49% disagree, 25.40% are neutral, 31.43% agree, and 10.48% strongly agree.

Table 20 Can regular classrooms effectively support extracurricular learning (such as searching for course materials, supplementing extracurricular knowledge)?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	25	7.94%
2	Disagree	65	20.63%
3	Neutral	86	27.30%
4	Agree	106	33.65%
5	Strongly Agree	33	10.48%
	Total	**315**	**100%**

According to the Table 20, 33.65% of respondents agree that regular classrooms can support extracurricular learning, there is also 27.30% who remain neutral on this matter. Additionally, 20.63% disagree, and 7.94% strongly disagree, while 10.48% strongly agree with the statement.

Table 21 Can regular teachers effectively control teaching progress?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	15	4.76%
2	Disagree	68	21.59%
3	Neutral	91	28.89%
4	Agree	112	35.56%
5	Strongly Agree	29	9.21%
	Total	**315**	**100%**

According to the Table 21, 4.76% of the respondents strongly disagree, 21.59% disagree, 28.89% are neutral, 35.56% agree, and 9.21% strongly agree.

Table 22 Does the current technology in regular classrooms meet the quality of instruction?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	26	8.25%
2	Disagree	67	21.27%
3	Neutral	88	27.94%
4	Agree	99	31.43%
5	Strongly Agree	35	11.11%
	Total	**315**	**100%**

According to the Table 22, 8.25% strongly disagree, 21.27% disagree, 27.94% are neutral, and 31.43% agree, while 11.11% strongly agree.

Table 23 Does the current management system support high student achievement in regular classrooms?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	22	6.98%
2	Disagree	75	23.81%
3	Neutral	80	25.40%
4	Agree	111	35.24%
5	Strongly Agree	27	8.57%
	Total	**315**	**100%**

Based on the data from Table 23, 5.24% agree, 25.40% remained neutral, and 23.81% disagree, while 6.98% strongly disagree, and another 8.57% strongly agree.

Table 24 Does the college provide adequate training programs for teachers to improve teaching quality in regular classrooms?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	29	9.21%
2	Disagree	51	16.19%
3	Neutral	97	30.79%
4	Agree	108	34.29%
5	Strongly Agree	30	9.52%
	Total	**315**	**100%**

According to the Table 24, 34.29% agree and 9.52% strongly agree, while those indicating neutral, disagreed and strongly disagree are 30.79%, 16.19% and 9.21%.

Table 25 Are the classroom management strategies effective in regular classrooms?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	21	6.67%
2	Disagree	66	20.95%
3	Neutral	93	29.52%
4	Agree	104	33.02%
5	Strongly Agree	31	9.84%
	Total	**315**	**100%**

Based on the data from Table 25, 6.67% of respondents strongly disagree, 20.95% disagree, 29.52% are neutral, 33.02% agree, and 9.84% strongly agree with the effectiveness of classroom management strategies in regular classroom.

Table 26 Do you have sufficient time and resources for effective teaching planning in regular classrooms?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	21	6.67%
2	Disagree	65	20.63%
3	Neutral	75	23.81%
4	Agree	129	40.95%
5	Strongly Agree	25	7.94%
	Total	**315**	**100%**

According to the Table 26, 6.67% strongly disagree, 20.63% disagree, 23.81% are neutral, 40.95% agree, and 7.94% strongly agree.

Table 27 Do teachers in regular classrooms have timely and effective access to administrative support?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	22	6.98%
2	Disagree	67	21.27%
3	Neutral	74	23.49%
4	Agree	115	36.51%
5	Strongly Agree	37	11.75%
	Total	**315**	**100%**

According to the Table 27, 6.98% of the teachers strongly disagree, 21.27% disagree, 23.49% are neutral, 36.51% agree, and 11.75% strongly agree.

Table 28 Can you communicate smoothly and quickly solve problems with students in a regular classroom?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	31	9.84%
2	Disagree	65	20.63%
3	Neutral	77	24.44%
4	Agree	105	33.33%
5	Strongly Agree	37	11.75%
	Total	**315**	**100%**

According to the Table 28, 9.84% strongly disagree, 20.63% disagree, 24.44% remained neutral, 33.33% agree, and 11.75% strongly agree.

Table 29 Does the college focus on promoting teaching quality through teaching hardware and scientific technology?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	29	9.21%
2	Disagree	57	18.10%
3	Neutral	87	27.62%
4	Agree	113	35.87%
5	Strongly Agree	29	9.21%
	Total	**315**	**100%**

Based on the data from Table 29, 9.21% of the respondents strongly disagree, 18.10% disagree, 27.62% are neutral, 35.87% agree, and 9.21% strongly agree.

Table 30 Is technology effectively integrated into teaching practices in regular classrooms?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	23	7.30%
2	Disagree	73	23.17%
3	Neutral	71	22.54%
4	Agree	124	39.37%
5	Strongly Agree	24	7.62%
	Total	**315**	**100%**

According to the Table 30, the survey results showed that 39.37% of respondents agreed, the highest proportion, while 22.54% remained neutral. Furthermore, 23.17% of the respondents disagreed with the view, and 7.30% strongly disagree. A small number of respondents, or 7.62%, strongly agree that technology had been effectively integrated into the teaching of the regular classroom.

Table 31 Does the school have policies to improve the quality of teaching?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	27	8.57%
2	Disagree	65	20.63%
3	Neutral	91	28.89%
4	Agree	103	32.70%
5	Strongly Agree	29	9.21%
	Total	**315**	**100%**

According to the Table 31, 8.57% of respondents strongly disagree, 20.63% disagree, 28.89% are neutral, 32.70% agree, and 9.21% strongly agree.

Table 32 Can regular classroom frequently use formative assessments (such as tests and assignments) to monitor students' progress?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	22	6.98%
2	Disagree	59	18.73%
3	Neutral	99	31.43%
4	Agree	109	34.60%
5	Strongly Agree	26	8.25%
	Total	**315**	**100%**

Based on the data from Table 32, 6.98% of the students strongly disagree, 18.73% disagree, 31.43% are neutral, 34.60% agree, and 8.25% strongly agree.

Table 33 Can regular classrooms effectively measure students' learning outcomes through summative assessments (such as final exams)?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	25	7.94%
2	Disagree	73	23.17%
3	Neutral	77	24.44%
4	Agree	107	33.97%
5	Strongly Agree	33	10.48%
	Total	**315**	**100%**

According to the Table 33, 7.94% strongly disagree, 23.17% disagree, 24.44% remained neutral, 33.97% agree, and 10.48% strongly agree that regular classrooms can effectively measure students learning outcomes through summative assessments.

Table 34 Can regular classrooms improve teaching practices in regular classrooms through teacher self-assessment?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	26	8.25%
2	Disagree	63	20.00%
3	Neutral	85	26.98%
4	Agree	109	34.60%
5	Strongly Agree	32	10.16%
	Total	**315**	**100%**

According to the Table 34, 34.60% agree, 26.98% remained neutral, 20.00% disagree, and 8.25% strongly disagree. Another 10.16% of the respondents strongly agree.

Table 35 Can regular classrooms effectively improve the teaching quality of regular classrooms through peer assessment?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	25	7.94%
2	Disagree	70	22.22%
3	Neutral	76	24.13%
4	Agree	108	34.29%
5	Strongly Agree	36	11.43%
	Total	**315**	**100%**

Based on the data from Table 35, 7.94% strongly disagree, 22.22% disagree, 24.13% are neutral, 34.29% agree, and 11.43% strongly agree that regular classrooms can effectively improve teaching quality through peer interaction.

Table 36 In a regular classroom, can you give students some useful advice to help them improve their learning quality?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	20	6.35%
2	Disagree	71	22.54%
3	Neutral	87	27.62%
4	Agree	103	32.70%
5	Strongly Agree	34	10.79%
	Total	**315**	**100%**

According to the Table 36, 6.35% of the students strongly disagree, 22.54% disagree, 27.62% are neutral, 32.70% agree, and 10.79% strongly agree.

Table 37 Are there any assessment criteria for students in regular classroom learning?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	28	8.89%
2	Disagree	62	19.68%
3	Neutral	81	25.71%
4	Agree	117	37.14%
5	Strongly Agree	27	8.57%
	Total	**315**	**100%**

According to the Table 37, 8.89% strongly disagree, 19.68% disagree, 25.71% remained neutral, 37.14% agree, and 8.57% strongly agree.

Table 38 Can the tools used in regular classrooms to measure students' learning outcomes accurately reflect their actual learning situation?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	29	9.21%
2	Disagree	56	17.78%
3	Neutral	82	26.03%
4	Agree	121	38.41%
5	Strongly Agree	27	8.57%
	Total	**315**	**100%**

Based on the data from Table 38, 9.21% of the students strongly disagree, 17.78% disagree, 26.03% are neutral, 38.41% agree, and 8.57% strongly agree.

Table 39 After regular classroom teaching, do you often check students' grades and performance?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	28	8.89%
2	Disagree	63	20.00%
3	Neutral	75	23.81%
4	Agree	115	36.51%
5	Strongly Agree	34	10.79%
	Total	**315**	**100%**

According to the Table 39, 8.89% of respondents strongly disagree, 20.00% disagree, 23.81% are neutral, 36.51% agree, and 10.79% of respondents strongly agree.

Therefore, to answer question 1, the teaching quality of regular classrooms in Guizhou Vocational College of Industry and Commerce in good condition. According to table 9, 53.01% teachers are generally satisfied with the current situation of regular classrooms, however, there are still 46.99% teachers who hold different opinions on the following data:

According to table 12, 18, and 19, in regular classroom, it is showed that there is more relative disagreement on the positive impact of professional experience (34.61%), self-study skills outside the classroom (32.7%) and students' classroom interactions (32.07%), which need to be improved. According to table 11 and 33, respondents disagreed with the effectiveness of student class engagement (31.43%) and summative assessments (31.11%) in regular classrooms.

According to table 13, 15, 23, 28, 30 and 35, more than 30% of the respondents disagreed with the data: high-quality teaching resources (30.79%), student achievement support (30.79%), classroom communication (30.47%), integration of technology practice (30.47%) and effective peer assessment (30.16%), effective teaching design (30.16%).

According to table 10, 14, 16, 20, 22, 27, 31, 34, 36, 37and 39, Less than 30% of respondents hold a negative attitude in regular classrooms with the data: technical conditions (29.52%), adaptability increasing (29.21%), skill enhancement (29.2%), policy support (29.2%), grades checking (28.89%), classroom advice (28.89%), assessment criteria (28.57%), extracurricular learning (28.57%), practices learning (28.25%), policy support (28.25%), expected learning outcomes (28.25%),.

According to table 17, 21, 24, 25, 26, 29, 32 and 38, the respondents had the least disapproval, which were: classroom management (27.62%), hardware promoting (27.31%), learning environment (27.3%), teaching planning (27.3%), learning situation tools (26.99%), control teaching progress (26.35%), formative assessments monitor (25.71%), training programs (25.4%).

Factors Affect the Teaching Quality in Regular Classrooms

Items	Mean	SD	Level
40 Do you think teacher satisfaction is the main factor affecting teaching quality?	3.156	1.093	Neutral
41 Do you think the expected learning outcomes are the main factor affecting the quality of teaching?	3.137	1.125	Neutral
42 Do you think student engagement in the classroom is the main factor affecting teaching quality?	3.156	1.116	Neutral
43 Do you think that a teacher's professional experience is the main factor affecting the quality of teaching?	3.165	1.142	Neutral
44 Do you think teaching design is the main factor affecting teaching quality?	3.203	1.152	Neutral
45 Do you think the adequacy of teacher training and skill enhancement opportunities is the main factor affecting teaching quality?	3.168	1.178	Neutral
46 Do you think the adequacy of teaching resources is the main factor affecting the teaching quality?	3.073	1.177	Neutral
47 Do you think the ability of teachers to maintain skill updates in regular classrooms is the main factor affecting teaching quality?	3.190	1.146	Neutral
48 Do you think the supportive learning environment is the main factor affecting teaching quality?	3.140	1.148	Neutral
49 Do you think the classroom interaction is the main factor affecting teaching quality?	3.111	1.150	Neutral
50 Do you think the adequacy of support for students' self-study is the main factor affecting teaching quality?	3.108	1.140	Neutral
51 Do you think extracurricular learning (such as searching for course materials, supplementing extracurricular knowledge) are the main factor affecting teaching quality?	3.146	1.090	Neutral

Items	Mean	SD	Level
52 Do you think the teaching progress is the main factor affecting teaching quality?	3.143	1.115	Neutral
53 Do you think the technology in the classroom is the main factor affecting teaching quality?	3.156	1.108	Neutral
54 Do you think the high student achievement is the main factor affecting teaching quality?	3.114	1.159	Neutral
55 Do you think the adequacy of teacher training programs provided by schools is the main factor affecting teaching quality?	3.219	1.091	Neutral
56 Do you think classroom management is the main factor affecting teaching quality?	3.130	1.175	Neutral
57 Do you think have sufficient administrative support is the main factor affecting teaching quality?	3.108	1.129	Neutral
58 Do you think the adequacy of time and resources used for teaching planning is the main factor affecting teaching quality?	3.127	1.110	Neutral
59 Do you think the classroom communicate is the main factor affecting teaching quality?	3.137	1.164	Neutral
60 Do you think the supportive role of organizational culture in improving teaching quality is the main factor affecting teaching quality?	3.203	1.144	Neutral
61 Do you think the integration effect of technology in ordinary classroom teaching practice is the main factor affecting teaching quality?	3.175	1.169	Neutral
62 Do you think the college policies for improve the teaching quality is the main factor affecting teaching quality?	3.140	1.151	Neutral
63 Do you think the formative assessments (such as tests and assignments) are the main factor affecting teaching quality?	3.156	1.099	Neutral

Items	Mean	SD	Level
64 Do you think the summative assessments (such as final exams) are the main factor affecting teaching quality?	3.171	1.187	Neutral
65 Do you think teacher self-assessment is the main factor affecting teaching quality?	3.181	1.110	Neutral
66 Do you think the effectiveness of peer assessment is the main factor affecting teaching quality?	3.102	1.118	Neutral
67 Do you think the teacher's advice is the main factor affecting the quality of teaching?	3.194	1.078	Neutral
68 Do you think the assessment criteria is the main factor affecting teaching quality?	3.194	1.102	Neutral
69 Do you think the assessment software is the main factor affecting teaching quality?	3.384	1.399	Neutral
70 Do you think the students' performance is the main factors affecting teaching quality?	3.095	1.161	Neutral
Overall average	**3.157**	**1.143**	**Neutral**

The average values of these factors range from 3.073 to 3.384, with the standard deviation ranging from 1.078 to 1.399. The overall average is 3.157, with a standard deviation of 1.143. Both individual items and the overall level are "Neutral". This indicates that the respondents' views on the many factors affecting the teaching quality in regular classrooms are relatively balanced, and there is no obvious tendency to consider a certain factor as the main influencing factor.

Table 40 Do you think teacher satisfaction is the main factor affecting teaching quality?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	28	8.89%
2	Disagree	51	16.19%
3	Neutral	78	24.76%
4	Agree	88	27.94%
5	Strongly Agree	70	22.22%
	Total	**315**	**100%**

According to the Table 40, 8.89% of the respondents strongly disagree, 16.19% disagree, 24.76% are neutral, 27.94% agree, and 22.22% strongly agree.

Table 41 Do you think the expected learning outcomes are the main factor affecting the quality of teaching?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	25	7.94%
2	Disagree	63	20.00%
3	Neutral	94	29.84%
4	Agree	104	33.02%
5	Strongly Agree	29	9.21%
	Total	**315**	**100%**

According to the Table 41, 7.94% strongly disagree, 20.00% disagree, 29.84% are neutral, 33.02% agree, and 9.21% strongly agree.

Table 42 Do you think student engagement in the classroom is the main factor affecting teaching quality?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	29	9.21%
2	Disagree	63	20.00%
3	Neutral	89	28.25%
4	Agree	104	33.02%
5	Strongly Agree	30	9.52%
	Total	**315**	**100%**

Based on the data from Table 42, 9.21% of the students strongly disagree, 20.00% disagree, 28.25% are neutral, 33.02% agree, and 9.52% strongly agree.

Table 43 Do you think that a teacher's professional experience is the main factor affecting the quality of teaching?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	24	7.62%
2	Disagree	73	23.17%
3	Neutral	78	24.76%
4	Agree	110	34.92%
5	Strongly Agree	30	9.52%
	Total	**315**	**100%**

According to the Table 43, 7.62% of the respondents strongly disagree, 23.17% disagree, 24.76% are neutral, 34.92% agree, and 9.52% strongly agree.

Table 44 Do you think teaching design is the main factor affecting teaching quality?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	28	8.89%
2	Disagree	67	21.27%
3	Neutral	77	24.44%
4	Agree	111	35.24%
5	Strongly Agree	32	10.16%
	Total	**315**	**100%**

According to the Table 44, 8.89% of the participants strongly disagree, 21.27% disagree, 24.44% are neutral, 35.24% agree, and 10.16% strongly agree.

Table 45 Do you think the adequacy of teacher training and skill enhancement opportunities is the main factor affecting teaching quality?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	28	8.89%
2	Disagree	61	19.37%
3	Neutral	83	26.35%
4	Agree	105	33.33%
5	Strongly Agree	38	12.06%
	Total	**315**	**100%**

Based on the data from Table 45, 8.89% of the respondents strongly disagree, 19.37% disagree, 26.35% are neutral, 33.33% agree, and 12.06% strongly agree.

Table 46 Do you think the adequacy of teaching resources is the main factor affecting the teaching quality?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	31	9.84%
2	Disagree	64	20.32%
3	Neutral	80	25.40%
4	Agree	101	32.06%
5	Strongly Agree	39	12.38%
	Total	**315**	**100%**

According to the Table 46, 9.84% of the respondents strongly disagree, 20.32% disagree, 25.40% are neutral, 32.06% agree, and 12.38% strongly agree.

Table 47 Do you think the ability of teachers to maintain skill updates in regular classrooms is the main factor affecting teaching quality?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	34	10.79%
2	Disagree	70	22.22%
3	Neutral	85	26.98%
4	Agree	91	28.89%
5	Strongly Agree	35	11.11%
	Total	**315**	**100%**

Based on the data from Table 47, 10.79% of respondents strongly disagree, 22.22% disagree, 26.98% are neutral, 28.89% agree, and 11.11% of respondents strongly agree.

Table 48 Do you think the supportive learning environment is the main factor affecting teaching quality?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	28	8.89%
2	Disagree	64	20.32%
3	Neutral	77	24.44%
4	Agree	112	35.56%
5	Strongly Agree	34	10.79%
	Total	**315**	**100%**

According to the Table 48, 35.56% of the respondents agree that it is a main factor; 24.44% remain neutral; 20.32% disagree with this view; and another 8.89% and 10.79% respectively strongly disagree and strongly agree.

Table 49 Do you think the classroom interaction is the main factor affecting teaching quality?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	30	9.52%
2	Disagree	67	30.79%
3	Neutral	78	55.55%
4	Agree	109	90.15%
5	Strongly Agree	31	99.99%
	Total	**315**	**100%**

According to the Table 49, 9.52% strongly disagree, 21.27% disagree, 24.76% are neutral, 34.60% agree, and 9.84% strongly agree.

Table 50 Do you think the adequacy of support for students' self-study is the main factor affecting teaching quality?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	32	10.16%
2	Disagree	67	21.27%
3	Neutral	79	25.08%
4	Agree	108	34.29%
5	Strongly Agree	29	9.21%
	Total	**315**	**100%**

Based on the data from Table 50, 10.16% of respondents strongly disagree, 21.27% disagree, 25.08% are neutral, 34.29% agree, and 9.21% of respondents strongly agree.

Table 51 Do you think extracurricular learning (such as searching for course materials, supplementing extracurricular knowledge) are the main factor affecting teaching quality?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	32	10.16%
2	Disagree	66	20.95%
3	Neutral	80	25.40%
4	Agree	110	34.92%
5	Strongly Agree	27	8.57%
	Total	**315**	**100%**

Based on the data from Table 51, 34.92% of the respondents agree, 25.40% remain neutral, 20.95% disagree, 10.16% strongly disagree, and another 8.57% of the respondents strongly agree.

Table 52 Do you think the teaching progress is the main factor affecting teaching quality?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	28	8.89%
2	Disagree	61	19.37%
3	Neutral	85	26.98%
4	Agree	119	37.78%
5	Strongly Agree	22	6.98%
	Total	**315**	**100%**

According to the Table 52, 8.89% of respondents strongly disagree, 19.37% disagree, 26.98% are neutral, 37.78% agree, and 6.98% strongly agree.

Table 53 Do you think the technology in the classroom is the main factor affecting teaching quality?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	25	7.94%
2	Disagree	71	22.54%
3	Neutral	83	26.35%
4	Agree	106	33.65%
5	Strongly Agree	30	9.52%
	Total	**315**	**100%**

Based on the data from Table 53, 7.94% of the respondents strongly disagree, 22.54% disagree, 26.35% are neutral, 33.65% agree, and 9.52% strongly agree.

Table 54 Do you think the high student achievement is the main factor affecting teaching quality?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	25	7.94%
2	Disagree	65	20.63%
3	Neutral	93	29.52%
4	Agree	100	31.75%
5	Strongly Agree	32	10.16%
	Total	**315**	**100%**

According to the Table 54, 7.94% of respondents strongly disagree, 20.63% disagree, 29.52% are neutral, 31.75% agree, and 10.16% strongly agree.

Table 55 Do you think the adequacy of teacher training programs provided by schools is the main factor affecting teaching quality?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	33	10.48%
2	Disagree	70	22.22%
3	Neutral	66	20.95%
4	Agree	120	38.10%
5	Strongly Agree	26	8.25%
	Total	**315**	**100%**

According to the Table 55, 10.48% of respondents strongly disagree, 22.22% disagree, 20.95% are neutral, 38.10% agree, and 8.25% of respondents strongly agree.

Table 56 Do you think classroom management is the main factor affecting teaching quality?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	25	7.94%
2	Disagree	53	16.83%
3	Neutral	97	30.79%
4	Agree	108	34.29%
5	Strongly Agree	32	10.16%
	Total	**315**	**100%**

Based on the data from Table 56, 7.94% of respondents strongly disagree, 16.83% disagree, 30.79% are neutral, 34.29% agree, and 10.16% of respondents strongly agree.

Table 57 Do you think have sufficient administrative support is the main factor affecting teaching quality?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	33	10.48%
2	Disagree	69	21.90%
3	Neutral	68	21.59%
4	Agree	114	36.19%
5	Strongly Agree	31	9.84%
	Total	**315**	**100%**

According to the Table 57, 10.48% of respondents strongly disagree, 21.90% disagree, 21.59% are neutral, 36.19% agree, and 9.84% of respondents strongly agree.

Table 58 Do you think the adequacy of time and resources used for teaching planning is the main factor affecting teaching quality?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	29	9.21%
2	Disagree	67	21.27%
3	Neutral	91	28.89%
4	Agree	97	30.79%
5	Strongly Agree	31	9.84%
	Total	**315**	**100%**

According to the Table 58, 9.21% of respondents strongly disagree, 21.27% disagree, 28.89% are neutral, 30.79% agree, and 9.84% of respondents strongly agree.

Table 59 Do you think the classroom communicate is the main factor affecting teaching quality?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	23	7.30%
2	Disagree	79	25.08%
3	Neutral	76	24.13%
4	Agree	109	34.60%
5	Strongly Agree	28	8.89%
	Total	**315**	**100%**

Based on the data from Table 59, 7.30% of respondents strongly disagree, 25.08% disagree, 24.13% are neutral, 34.60% agree, and 8.89% of respondents strongly agree.

Table 60 Do you think the supportive role of organizational culture in improving teaching quality is the main factor affecting teaching quality?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	30	9.52%
2	Disagree	71	22.54%
3	Neutral	73	23.17%
4	Agree	108	34.29%
5	Strongly Agree	33	10.48%
	Total	**315**	**100%**

According to the Table 60, 9.52% of respondents strongly disagree, 22.54% disagree, 23.17% are neutral, 34.29% agree, and 10.48% of respondents strongly agree.

Table 61 Do you think the integration effect of technology in regular classroom teaching practice is the main factor affecting teaching quality?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	31	9.84%
2	Disagree	53	16.83%
3	Neutral	86	27.30%
4	Agree	111	35.24%
5	Strongly Agree	34	10.79%
	Total	**315**	**100%**

According to the Table 61, 35.24% of the respondents agree, 27.30% remain neutral, 16.83% disagree, and 9.84% and 10.79% of the respondents respectively strongly disagree and strongly agree.

Table 62 Do you think the college policies for improve the teaching quality is the main factor affecting teaching quality?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	30	9.52%
2	Disagree	61	19.37%
3	Neutral	89	28.25%
4	Agree	94	29.84%
5	Strongly Agree	41	13.02%
	Total	**315**	**100%**

According to the Table 62, 9.52% of respondents strongly disagree, 19.37% disagree, 28.25% are neutral, 29.84% agree, and 13.02% of respondents strongly agree.

Table 63 Do you think the formative assessments (such as tests and assignments) are the main factor affecting teaching quality?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	28	8.89%
2	Disagree	73	23.17%
3	Neutral	73	23.17%
4	Agree	109	34.60%
5	Strongly Agree	32	10.16%
	Total	**315**	**100%**

Based on the data from Table 63, 8.89% of respondents strongly disagree, 23.17% disagree, 23.17% are neutral, 34.60% agree, and 10.16% of respondents strongly agree.

Table 64 Do you think the summative assessments (such as final exams) are the main factor affecting teaching quality?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	27	8.57%
2	Disagree	62	19.68%
3	Neutral	87	27.62%
4	Agree	113	35.87%
5	Strongly Agree	26	8.25%
	Total	**315**	**100%**

Based on the data from Table 64, 8.57% of the respondents strongly disagree, 19.68% disagree, 27.62% are neutral, 35.87% agree, and 8.25% strongly agree.

Table 65 Do you think teacher self-assessment is the main factor affecting teaching quality?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	31	9.84%
2	Disagree	65	20.63%
3	Neutral	79	25.08%
4	Agree	99	31.43%
5	Strongly Agree	41	13.02%
	Total	**315**	**100%**

According to the Table 65, 9.84% of respondents strongly disagree, 20.63% disagree, 25.08% are neutral, 31.43% agree, and 13.02% of respondents strongly agree.

Table 66 Do you think the effectiveness of peer assessment is the main factor affecting teaching quality?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	26	8.25%
2	Disagree	63	20.00%
3	Neutral	83	26.35%
4	Agree	114	36.19%
5	Strongly Agree	29	9.21%
	Total	**315**	**100%**

According to the Table 66, 8.25% of respondents strongly disagree, 20.00% disagree, 26.35% are neutral, 36.19% agree, and 9.21% strongly agree.

Table 67 Do you think the teacher's advice is the main factor affecting the quality of teaching?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	30	9.52%
2	Disagree	67	21.27%
3	Neutral	84	26.67%
4	Agree	109	34.60%
5	Strongly Agree	25	7.94%
	Total	**315**	**100%**

Based on the data from Table 67, 9.52% of respondents strongly disagree, 21.27% disagree, 26.67% are neutral, 34.60% agree, and 7.94% strongly agree.

Table 68 Do you think the assessment criteria is the main factor affecting teaching quality?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	25	7.94%
2	Disagree	57	18.10%
3	Neutral	91	28.89%
4	Agree	116	36.83%
5	Strongly Agree	26	8.25%
	Total	**315**	**100%**

According to the Table 68, 7.94% of respondents strongly disagree, 18.10% disagree, 28.89% are neutral, 36.83% agree, and 8.25% of respondents strongly agree.

Table 69 Do you think the assessment software is the main factor affecting teaching quality?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	25	7.94%
2	Disagree	60	19.05%
3	Neutral	90	28.57%
4	Agree	109	34.60%
5	Strongly Agree	31	9.84%
	Total	**315**	**100%**

Based on the data from Table 69, 7.94% of respondents strongly disagree, 19.05% disagree, 28.57% are neutral, 34.60% agree, and 9.84% of respondents strongly agree.

Table 70 Do you think the students' performance is the main factors affecting teaching quality?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	32	10.16%
2	Disagree	69	21.90%
3	Neutral	84	26.67%
4	Agree	97	30.79%
5	Strongly Agree	33	10.48%
	Total	**315**	**100%**

According to the Table 70, 10.16% of respondents strongly disagree, 21.90% disagree, 26.67% are neutral, 30.79% agree, and 10.48% of respondents strongly agree.

Therefore, to answer question 2, according to table 40, 50.16% of the respondents believe that teacher satisfaction is the most important factor in improving teaching quality.

According to Table 48 and 61, the second most important factor is supportive learning environment (46.35%) and technology integration practices (46.03%), moreover, the opinions of the respondents are relatively unified, and the proportion of those holding different opinions is relatively low.

According to Table 55 and 57, the proportion of respondents who agree with teachers training (46.35%) and administrative support (46.03%) is also relatively high, but there is still a significant proportion of differing opinions, showing diversity in respondents' view on the relationship between teachers training and administrative support.

According to table 44, 45, 66 and 68, the proportion of respondents who agree with factors such as teaching design (45.4%), effectiveness of peer assessment (45.4%), teachers training (45.39%), and assessment criteria (45.08%) is also relatively high.

According to table 43, 46, 49, 52, 56, 60, 63, 64, 65 and 69, the proportion of respondents more than 44% of respondents agreed with the following: organizational culture support (44.77%), teaching progress (44.76%), formative assessments (44.76%), classroom management (44.45%), teacher self-assessment (44.45%), teaching resources (44.44%), professional experience (44.44%), assessment software (44.44%), classroom interaction (44.44%), summative assessments (44.12%).

According to table 41, 42, 50, 51, 53, 59, 62 and 67, the proportion of respondents more than 42% of respondents agreed with the following: self-study support (43.5%), extracurricular learning (43.49%), classroom communication (43.49%), technology support (43.17%), policy support (42.86%), student engagement (42.54%), teacher's advice (42.54%), expected learning outcomes (42.23%).

According to table 47, 54, 58 and 70, the proportion of respondents who agree with the attitude is relatively low with the following: student achievement (41.91%), students' performance (41.27%), teaching planning (40.63%), teacher skill updates (40%).

Smart Classrooms Impact of Teaching Quality

Items	Mean	SD	Level
71 Do you think smart classrooms (For example, classrooms equipped with multimedia tools, digital technology, interactive software, and audio equipment) can improve teacher satisfaction?	3.498	1.343	Neutral
72 Do you think smart classrooms can improve the learning effectiveness of the classroom?	3.190	1.118	Neutral
73 Do you think smart classrooms can increase students' participation in the classroom?	3.219	1.131	Neutral
74 Do you think smart classrooms can improve teachers' curriculum design?	3.197	1.106	Neutral
75 Do you think smart classrooms can have sufficient teaching materials?	3.213	1.095	Neutral
76 Do you think smart classrooms have strong support for learning environments?	3.216	1.147	Neutral
77 Do you think the teacher-student relationship and classroom interaction are effective in a smart classroom environment?	3.257	1.095	Neutral
78 Do you think smart classrooms can support students' self-learning?	3.222	1.176	Neutral
79 Do you think smart classrooms can improve the effectiveness of teaching process management?	3.270	1.047	Neutral
80 Do you think smart classrooms can enhance students' sense of achievement in learning?	3.175	1.122	Neutral
81 Do you think smart classrooms can improve the effectiveness of classroom management strategies?	3.159	1.094	Neutral
82 Do you think smart classrooms can have sufficient administrative support?	3.171	1.130	Neutral

Items	Mean	SD	Level
83 Do you think smart classrooms can improve the effectiveness of solving classroom problems between teachers and students?	3.244	1.086	Neutral
84 Do you think smart classrooms can improve the integration effect in teaching practice?	3.273	1.092	Neutral
85 Do you think smart classrooms can effectively complete formative assessments?	3.206	1.105	Neutral
86 Do you think smart classrooms can effectively complete summative assessments?	3.156	1.055	Neutral
87 Do you think smart classrooms can effectively complete teacher self-assessment?	3.210	1.132	Neutral
88 Do you think smart classrooms can effectively complete peer assessment?	3.178	1.077	Neutral
89 Do you think smart classrooms can effectively provide constructive feedback?	3.181	1.095	Neutral
90 Do you think smart classrooms have fair assessment criteria?	3.213	1.116	Neutral
91 Do you think smart classrooms can use student performance data to improve teaching practices?	3.238	1.039	Neutral
Overall average	**3.223**	**1.114**	**Neutral**

The average values of various items range from 3.156 to 3.498, with the standard deviation ranging from 1.039 to 1.343. The overall average is 3.223, with a standard deviation of 1.114. Both individual items and the overall level are "Neutral". This indicates that the overall view on the impact of smart classrooms on all aspects of teaching quality is relatively balanced, with no obvious positive or negative tendency.

Table 71 Do you think smart classrooms (for example, classrooms equipped with multimedia tools, digital technology, interactive software, and audio equipment) can improve teacher satisfaction?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	38	12.06%
2	Disagree	43	13.65%
3	Neutral	45	14.29%
4	Agree	102	32.38%
5	Strongly Agree	87	27.62%
	Total	**315**	**100%**

According to the Table 71, 12.06% of respondents strongly disagree, 13.65% disagree, 14.29% are neutral, 32.38% agree, and 27.62% of respondents strongly agree.

Table 72 Do you think smart classrooms can improve the learning effectiveness of the classroom?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	27	8.57%
2	Disagree	60	19.05%
3	Neutral	85	26.98%
4	Agree	112	35.56%
5	Strongly Agree	31	9.84%
	Total	**315**	**100%**

According to the Table 72, 8.57% of respondents strongly disagree, 19.05% disagree, 26.98% are neutral, 35.56% agree, and 9.84% of respondents strongly agree.

Table 73 Do you think smart classrooms can increase students' participation in the classroom?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	28	8.89%
2	Disagree	59	18.73%
3	Neutral	75	23.81%
4	Agree	122	38.73%
5	Strongly Agree	31	9.84%
	Total	**315**	**100%**

Based on the data from Table 73, 8.89% of respondents strongly disagree, 18.73% disagree, 23.81% are neutral, 38.73% agree, and 9.84% of respondents strongly agree.

Table 74 Do you think smart classrooms can improve teachers' curriculum design?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	24	7.62%
2	Disagree	64	20.32%
3	Neutral	84	26.67%
4	Agree	112	35.56%
5	Strongly Agree	31	9.84%
	Total	**315**	**100%**

According to the Table 74, 7.62% of respondents strongly disagree, 20.32% disagree, 26.67% are neutral, 35.56% agree, and 9.84% of respondents strongly agree.

Table 75 Do you think smart classrooms can have sufficient teaching materials?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	25	7.94%
2	Disagree	55	17.46%
3	Neutral	95	30.16%
4	Agree	108	34.29%
5	Strongly Agree	32	10.16%
	Total	**315**	**100%**

According to the Table 75, 7.94% of respondents strongly disagree, 17.46% disagree, 30.16% are neutral, 34.29% agree, and 10.16% of respondents strongly agree.

Table 76 Do you think smart classrooms have strong support for learning environments?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	23	7.30%
2	Disagree	72	22.86%
3	Neutral	73	23.17%
4	Agree	108	34.29%
5	Strongly Agree	39	12.38%
	Total	**315**	**100%**

Based on the data from Table 76, 7.30% of respondents strongly disagree, 22.86% disagree, 23.17% are neutral, 34.29% agree, and 12.38% of respondents strongly agree.

Table 77 Do you think the teacher-student relationship and classroom interaction are effective in a smart classroom environment?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	17	5.40%
2	Disagree	73	23.17%
3	Neutral	71	22.54%
4	Agree	120	38.10%
5	Strongly Agree	34	10.79%
	Total	**315**	**100%**

Based on the data from Table 77, 5.40% of respondents strongly disagree, 23.17% disagree, 22.54% are neutral, 38.10% agree, and 10.79% of respondents strongly agree.

Table 78 Do you think smart classrooms can support students' self-learning?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	30	9.52%
2	Disagree	62	19.68%
3	Neutral	69	21.90%
4	Agree	116	36.83%
5	Strongly Agree	38	12.06%
	Total	**315**	**100%**

According to the Table 78, 9.52% of respondents strongly disagree, 19.68% disagree, 21.90% are neutral, 36.83% agree, and 12.06% of respondents strongly agree.

Table 79 Do you think smart classrooms can improve the effectiveness of teaching process management?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	22	6.98%
2	Disagree	47	14.92%
3	Neutral	98	31.11%
4	Agree	120	38.10%
5	Strongly Agree	28	8.89%
	Total	**315**	**100%**

According to the Table 79, 6.98% of respondents strongly disagree, 14.92% disagree, 31.11% are neutral, 38.10% agree, and 8.89% of respondents strongly agree.

Table 80 Do you think smart classrooms can enhance students' sense of achievement in learning?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	28	8.89%
2	Disagree	63	20.00%
3	Neutral	78	24.76%
4	Agree	118	37.46%
5	Strongly Agree	28	8.89%
	Total	**315**	**100%**

Based on the data from Table 80, 8.89% of respondents strongly disagree, 20.00% disagree, 24.76% are neutral, 37.46% agree, and 8.89% of respondents strongly agree.

Table 81 Do you think smart classrooms can improve the effectiveness of classroom management strategies?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	25	7.94%
2	Disagree	66	20.95%
3	Neutral	84	26.67%
4	Agree	114	36.19%
5	Strongly Agree	26	8.25%
	Total	**315**	**100%**

According to the Table 81, 7.94% of respondents strongly disagree, 20.95% disagree, 26.67% are neutral, 36.19% agree, and 8.25% of respondents strongly agree.

Table 82 Do you think smart classrooms can have sufficient administrative support?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	32	10.16%
2	Disagree	54	17.14%
3	Neutral	85	26.98%
4	Agree	116	36.83%
5	Strongly Agree	28	8.89%
	Total	**315**	**100%**

According to the Table 82, 10.16% of respondents strongly disagree, 17.14% disagree, 26.98% are neutral, 36.83% agree, and 8.89% of respondents strongly agree.

Table 83 Do you think smart classrooms can improve the effectiveness of solving classroom problems between teachers and students?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	20	6.35%
2	Disagree	64	20.32%
3	Neutral	82	26.03%
4	Agree	117	37.14%
5	Strongly Agree	32	10.16%
	Total	**315**	**100%**

Based on the data from Table 83, 6.35% of respondents strongly disagree, 20.32% disagree, 26.03% are neutral, 37.14% agree, and 10.16% of respondents strongly agree.

Table 84 Do you think smart classrooms can improve the integration effect in teaching practice?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	25	7.94%
2	Disagree	50	15.87%
3	Neutral	85	26.98%
4	Agree	124	39.37%
5	Strongly Agree	31	9.84%
	Total	**315**	**100%**

According to the Table 84, 7.94% of respondents strongly disagree, 15.87% disagree, 26.98% are neutral, 39.37% agree, and 9.84% of respondents strongly agree.

Table 85 Do you think smart classrooms can effectively complete formative assessments?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	25	8.57%
2	Disagree	56	17.78%
3	Neutral	86	27.30%
4	Agree	117	37.14%
5	Strongly Agree	29	9.21%
	Total	**315**	**100%**

According to the Table 85, 8.57% of respondents strongly disagree, 17.78% disagree, 27.30% are neutral, 37.14% agree, and 9.21% of respondents strongly agree.

Table 86 Do you think smart classrooms can effectively complete summative assessments?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	23	7.30%
2	Disagree	66	20.95%
3	Neutral	84	26.67%
4	Agree	123	39.05%
5	Strongly Agree	19	6.03%
	Total	**315**	**100%**

Based on the data from Table 86 7.30% of respondents strongly disagree, 20.95% disagree, 26.67% are neutral, 39.05% agree, and 6.03% of respondents strongly agree.

Table 87 Do you think smart classrooms can effectively complete teacher self-assessment?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	26	8.25%
2	Disagree	67	21.27%
3	Neutral	67	21.27%
4	Agree	125	39.68%
5	Strongly Agree	30	9.52%
	Total	**315**	**100%**

Based on the data from Table 87, 8.25% of respondents strongly disagree, 21.27% disagree, 21.27% are neutral, 39.68% agree, and 9.52% of respondents strongly agree.

Table 88 Do you think smart classrooms can effectively complete peer assessment?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	23	7.30%
2	Disagree	63	20.00%
3	Neutral	91	28.89%
4	Agree	111	35.24%
5	Strongly Agree	27	8.57%
	Total	**315**	**100%**

According to the Table 88, 7.30% of respondents strongly disagree, 20.00% disagree, 28.89% are neutral, 35.24% agree, and 8.57% of respondents strongly agree.

Table 89 Do you think smart classrooms can effectively provide constructive feedback?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	24	7.62%
2	Disagree	65	20.63%
3	Neutral	84	26.67%
4	Agree	114	36.19%
5	Strongly Agree	28	8.89%
	Total	**315**	**100%**

Based on the data from Table 89, 7.62% of respondents strongly disagree, 20.63% disagree, 26.67% are neutral, 36.19% agree, and 8.89% of respondents strongly agree.

Table 90 Do you think smart classrooms have fair assessment criteria?

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	22	6.98%
2	Disagree	69	21.90%
3	Neutral	78	24.76%
4	Agree	112	35.56%
5	Strongly Agree	34	10.79%
	Total	**315**	**100%**

According to the Table 90, 6.98% of respondents strongly disagree, 21.90% disagree, 24.76% are neutral, 35.56% agree, and 10.79% of respondents strongly agree.

Table 91 Do you think smart classrooms can use student performance data to improve teaching practices*?*

NO.	Degree	Respondents	Percentage
1	Strongly Disagree	15	4.76%
2	Disagree	66	20.95%
3	Neutral	93	29.52%
4	Agree	111	35.24%
5	Strongly Agree	30	9.52%
	Total	**315**	**100%**

Based on the data from Table 91, 4.76% of respondents strongly disagree, 20.95% disagree, 29.52% are neutral, 35.24% agree, and 9.52% of respondents strongly agree.

Therefore, to answer question 3, according to Table 71, teacher satisfaction improved by smart classrooms (for example, classrooms equipped with multimedia tools, digital technology, interactive software and audio equipment) is the most important factor affecting teaching quality, with an impact rate of 60%.

According to Table 73, 77, 78, 84 and 87, among the respondents, those who gave positive feedback on the factors that smart classrooms can improve teaching quality were as follows: technology integration practices (49.21%), teacher self-assessment (49.2%), classroom interaction (48.89%), students self-learning (48.89%), students' participation (48.57%).

According to Table 76, 79, 80, 83, 85 and 90, the proportion of those who agree is also high as follows: solving classroom problems (47.3%), teaching process management (46.99%), learning environments support (46.67%), enhancing students' achievement (46.35%), completing formative assessments (46.35%), having fair assessment criteria (46.35%). Overall, most respondents believe that smart classrooms will have a positive impact on teaching quality, and the impact is diverse, but mainly concentrated on the above factors.

According to table 72, 74, 75, 81, 82, 86, 88 and 89, the proportion of respondents who agree with the attitude is relatively low with the following: policy support (45.72%), teaching design (45.4%), learning effectiveness (45.4%), constructive feedback (45.08%), summative assessment (45.08%), students' performance (44.76%), teaching resources (44.45%), classroom management (44.44%), peer assessment (43.81%).

Conclusions

Therefore, the impact of smart classrooms to improving teaching quality in Guizhou Vocational College of Industry and Commerce is summarized as follows:

Firstly, for the first question, the teaching quality in regular classrooms in good condition but still has considerable room for improvement. While respondents are mostly satisfied with the teaching quality, negative feedback highlights areas such as the positive impact of professional experience, self-study skills outside the classroom and students' classroom interactions.

Secondly, for the second question, the most important factor influencing teaching quality is teacher satisfaction, the second most important factors are learning environment, technology integration practices, teachers training and administrative support in improving teaching quality, teaching design, effectiveness of peer assessment. Additionally, aspects such as teachers training, and assessment criteria is also important to improve the teaching quality.

Finally, for the third question, teacher satisfaction improved by smart classrooms (for example, classrooms equipped with multimedia tools, digital technology, interactive software and audio equipment) is the most important factor affecting teaching quality. In addition, the proportion of respondents who hold a positive attitude towards factors such as smart classrooms in improving technology integration practices, teacher self-assessment, classroom interaction, students self-learning, students' participation are also relatively high.

CHAPTER 5

CONCLUSIONS, DISCUSSIONS, RECOMMENDATIONS

This study explores the impact of smart classrooms on improving teaching quality using Guizhou College of Commerce and Industry as the study site. It focuses on the teaching quality of regular classrooms and smart classrooms, and explores the key factors affecting teaching quality. This study also found that although the teaching quality of regular classrooms is in good condition, there is still a lot of room for improvement in teaching quality. Smart classrooms play a key role in coping with the challenges of regular classroom education environments and improving teacher satisfaction, student technology practice, teacher-student classroom interaction. The research results aim to provide feasible suggestions for optimizing the use of smart classrooms to improve the quality of teaching in vocational education environments.

This study selected Guizhou Vocational College of Industry and Commerce as the research location, the three theories of Educational Quality Theory, Educational Management Theory, and Teaching Assessment Theory. This study employed quantitative analysis and a questionnaire survey, with a total of 315 completed questionnaires returned from full-time teachers. Through the questionnaire survey analysis, the current status of regular classroom teaching quality in Guizhou Vocational College of Industry and Commerce, the main factors effect regular classroom teaching quality, and the impact of smart classrooms on teaching quality were analyzed.

There are three parts in this chapter, the first part presents the conclusions of this study based on the results of the data analyses in the previous chapter, the second part will focus on the comparative discussion of the conclusions, and the last part will make suggestions on the role of smart classrooms in Guizhou Vocational College of Industry and Commerce.

Conclusions

Research has shown that the teaching quality in regular classrooms of Guizhou Vocational College of Industry and Commerce in good condition but still has considerable room for improvement. While respondents are mostly satisfied with the teaching quality, negative feedback mainly focuses on the positive impact of professional experience, self-study skills outside the classroom, and students' classroom interaction. The introduction of smart classrooms provides an effective way to solve these problems.

The application of smart classrooms can significantly improve teacher satisfaction and teacher self-assessment. It also can improve students' technology integration ability, cultivate students self-learning skills, encourages active classroom interaction, and improve student participation.

1. The main factors effect these situations are as follows:

Teacher satisfaction needs to be improved (according from Table 9, 46.99%), which shows that there are great limitations in teaching equipment and technical support in regular classroom environments. The lack of modern digital means makes the course content presentation method relatively simple, making it difficult to improve classroom interactivity and teaching effectiveness. In addition, teachers cannot make full use of modern teaching methods to optimize teaching design, increase classroom attractiveness and student participation during teaching, thus affecting the overall teaching quality and teaching enthusiasm.

Supportive learning environment needs to be improved (according from Table 48, 46.35%), which shows that regular classrooms have great limitations in supporting learning environments. Respondents believe that the current learning environment lacks effective teaching auxiliary facilities and flexible teaching models, making it difficult for teachers to pay attention to students' individual needs in a timely manner, thereby affecting students' learning effects.

The level of technology integration practice needs to be improved (according from Table 61, 46.03%), which shows that regular classrooms have limited ability to cultivate technology for modern vocational education in the teaching process, which

affects students' improvement of practical ability. Respondents believe that current classroom teaching is still mainly based on traditional lectures, lacking effective technical means to assist teaching, such as real-time operation of practical skills, real-time feedback of practical problems, etc., which makes it impossible for students to make full use of modern technology for in-depth learning, affecting their ability to apply technology and improve their innovation ability.

2. Smart classrooms can effectively improve teaching quality, especially helping improve teacher satisfaction and self-assessment ability, and cultivate students self-learning skills, encourages active classroom interaction, and improve student participation effects. The basis for this is as follows:

Smart classrooms effectively improve teacher satisfaction (according from Table 71, 60%), from data of respondents show that the application of smart classrooms has significantly improved their teaching satisfaction. This shows that in the smart classroom environment, teachers can use multimedia tools, intelligent interactive software and digital technology to optimize the teaching process, make the course content more vivid and intuitive, improve the efficiency and quality of classroom teaching, thereby improving teachers' teaching experience and improving teacher satisfaction.

Smart classrooms improve students' technology integration practices (according from Table 84, 49.21%), respondents believe that the practical teaching model of smart classrooms helps them better master professional skills. This shows that the advanced technical means such as virtual simulation systems and online experimental platforms equipped in smart classrooms can provide students with more opportunities for practical operations, make theoretical knowledge and practical applications more closely integrated, and improve students' technical application capabilities.

Smart classrooms improve teachers' self-assessment ability (according from Table 87, 49.2%), from data of respondents show that the intelligent analysis and real-time feedback system of smart classrooms help them more accurately assess their teaching effectiveness. This shows that through the data analysis function of the smart classroom, it is possible to keep abreast of teachers' teaching results and

students' learning and adjust teaching strategies so as to continuously optimize classroom teaching and improve teaching quality.

Smart classrooms improve classroom interaction (according from Table 77, 48.89%), respondents believe that the interactive teaching method of smart classrooms significantly improved the activeness of the classroom atmosphere. This shows that smart classrooms enhance the interaction between teachers and students through real-time voting, online discussions, virtual Q&A, process points, etc., so that students can participate more actively in classroom content and enhance their interest in learning.

Smart classrooms improve students' self-learning skill (according from Table 78, 48.89%), respondents believe that the intelligent learning platform of smart classrooms has enhanced their self-learning ability. This shows that the online resources, personalized learning paths and self-learning tools provided by smart classrooms enable students to freely arrange their learning progress according to their own needs, improve their self-learning ability and learning efficiency.

Smart classrooms improve students' participation effect (according from Table 73, 48.57%), respondents believe that the teaching mode of smart classrooms promotes students' classroom participation. This shows that the diversified teaching methods of smart classrooms, such as group collaboration, intelligent assessment, and instant feedback, can attract students to engage more in classroom learning, improve concentration and learning outcomes.

In summary, Guizhou Vocational College of Industry and Commerce still faces many challenges under the traditional teaching model, such as low teacher satisfaction, insufficient classroom interactivity, weak student technical practice ability, and lack of autonomous learning ability. However, the introduction of smart classrooms provides an effective way to solve these problems. Smart classrooms not only improve teachers' teaching experience and self-assessment ability, but also enhance students' technical practice ability and classroom participation, which helps to cultivate more active, innovative and practical high-quality talents. Therefore, the college should further deepen the application of smart classrooms, optimize teaching

models, and strengthen technical support to comprehensively improve teaching quality and meet the needs of modern education and industry development.

Discussions

By introducing smart classrooms, solving a series of problems in the teaching management of Guizhou Vocational College of Industry and Commerce is an important way to improve teaching quality, improve teacher satisfaction, enhance students' technical practice ability, cultivate students' autonomous learning ability and classroom interaction enthusiasm, and optimize curriculum settings. The application of smart classrooms makes the teaching mode more intelligent, flexible and interactive, makes up for the shortcomings of the traditional teaching environment, and creates a more efficient and humane teaching experience for teachers and students.

The questionnaire survey helped researchers to deeply analyze the impact of smart classrooms on teaching quality from three aspects: the current status of education quality in regular classrooms, the main influencing factors, and how smart classrooms affect teaching quality, and answered the key issues that need to be improved in the current teaching quality. Therefore, through the introduction of smart classrooms, this study provides a theoretical basis and feasible strategies for Guizhou Vocational College of Industry and Commerce to improve teacher satisfaction, improve students' technology integration ability, cultivate students self-learning skills, encourages active classroom interaction, and improve student participation.

Yan (2012) analyzed the factors affecting the quality of graduate education and found that course design, teaching management and learning environment are the key factors affecting the quality of education. However, the traditional classroom model has limitations in these aspects, such as limited teaching resources, insufficient interaction, delayed classroom feedback, etc., which leads to a decline in students' learning interest and participation.

Although the teaching quality of Guizhou Vocational College of Industry and Commerce in regular classrooms is acceptable, teachers still believe that the teaching

quality needs to be improved (according from Table 9, 46.99%), which further verifies Yan Liu's research that the optimization of course design and teaching environment is crucial to improving teaching quality. The introduction of smart classrooms can effectively improve these problems, and improve students' learning experience and teachers' teaching efficiency through intelligent teaching tools, online interactive systems and data-driven teaching feedback.

Caixia and Xiaodong (2015) proposed that teaching quality assurance should focus on students' learning outcomes rather than simply focusing on teachers' teaching effectiveness. They believe that students' learning experience, learning methods and learning outcomes are the key to measuring teaching quality.

The questionnaire survey of this study shows that in the smart classroom pilot project of Guizhou Vocational College of Industry and Commerce, teachers believe that smart classrooms can improve classroom interaction (according from Table 77, 48.89%). This result is consistent with the research conclusion of Caixia Yang and Xiaodong Zou, that is, the quality assurance of teaching needs to rely on modern teaching methods to improve students' learning experience and effect. Smart classrooms make the teaching process more dynamic and personalized through smart whiteboards, virtual simulation teaching, online tests and other means, providing students with better learning support.

Zengjun (2004) studied the development trend of modern educational management theory, pointing out that modern educational management theory is developing in the direction of compatibility, integration and innovation, and that the theory of virtual educational management has made significant progress. The introduction of smart classrooms is a reflection of this trend, which not only integrates information technology and traditional teaching modes, but also breaks through the physical constraints of the regular classrooms and realizes smarter teaching management.

The findings of this study show that the teachers surveyed believe that smart classrooms can improve teacher satisfaction (according from Table 71, 60%) and self-assessment ability (according from Table 87, 49.2%). For example, the smart teaching system can automatically record classroom data, analyze students' learning behaviors, and generate real-time feedback to provide teachers with data support, making classroom management more accurate and efficient. This finding confirms Zengjun Feng's study that modern education management needs to be constantly innovated to meet the educational needs of the information age.

Guangying (2012) showed that secondary colleges in universities play a central role in teaching management, and the innovation of their self-assessment system and the dynamic monitoring of teaching quality are the key factors to improve teaching quality. The survey of this study shows that teachers believe that smart classrooms can improve the science and standardization of teaching self-assessment, for example, through intelligent attendance system, classroom interaction analysis and teaching data tracking, faculties are able to more accurately monitor the quality of teaching, dynamically adjust the teaching strategy and optimize the curriculum.

In addition, the application of intelligent learning platform enables teachers to track students' learning progress in real time and provide personalized guidance to meet the needs of different students, thus improving the effectiveness of teaching management. This result is consistent with the findings of Guangying Li, that is, in the process of improving teaching quality, universities need to rely on advanced management tools to achieve all-round monitoring and optimization of teaching quality.

Guangming and Meihang (2008) studied the development of teaching assessment theory from the perspective of educational ecology. By analyzing the basic principles and utility of educational ecology in teaching assessment, they emphasized the importance of rational resource allocation and sustainable development in higher education. This aligns with the findings from the study at Guizhou Vocational College of Industry and Commerce.

Respondents agreed that the integration of smart classrooms has greatly enhanced students' technology integration ability (according from Table 84, 49.21%). Specifically, the use of intelligent platforms enables real-time collection of student learning data, which provides teachers with a more comprehensive and accurate picture of student performance. This approach not only enhances the objectivity of assessments but also supports the ecological development of teaching practices by optimizing educational resource allocation. The adoption of smart classrooms at Guizhou Vocational College of Industry and Commerce has thus fostered a more sustainable and resource-efficient teaching and assessment environment, contributing to the broader goal of educational resource optimization and the improvement of teaching quality.

Liu (2018) explored the theoretical and practical development of teaching assessment in Chinese universities, highlighting the shift from emphasizing performance accountability to fostering negotiation and dialogue in assessments. His research suggests that teaching assessment should transition from rigid reinforcement to flexible incentives and from single to diverse criteria.

In line with this theory, the introduction of smart classrooms has promoted these changes at Guizhou Vocational College of Industry and Commerce. teachers believed that smart classrooms have created more opportunities for interaction and collaboration between teachers and students (according from Table 77, 48.89%). This fosters a more dialogic approach to teaching assessment, moving beyond traditional evaluation methods. Additionally, smart classrooms encourage more personalized assessments, where students' learning outcomes are evaluated not only based on in-class performance but also on engagement with digital learning tools and platforms. This shift towards a more flexible, diversified assessment approach aligns with Liu's exploration of modern teaching assessment practices and demonstrates the positive impact of smart classrooms on assessment flexibility at Guizhou Vocational College of Industry and Commerce.

To summarize, through the application of intelligent technology, smart classrooms allow teaching content to be more flexibly dovetailed with the actual needs of students, enhance teacher experience and satisfaction, and help teachers

and students better adapt to the future professional environment. Meanwhile, smart classrooms provide more opportunities for personalized learning, making teaching not only limited to regular classroom interactions, but also able to provide instant feedback and customized learning resources through smart devices and online platforms. Smart classroom helps to enhance students' self-learning skills, further strengthening their professionalism and competitiveness in employment. In addition, the smart classroom is able to track students' learning progress and performance in real time through big data analysis, thus providing teachers with powerful decision-making support and helping them adjust their teaching strategies according to the students' learning situation, ensuring that each student can achieve the best development in the most suitable learning mode.

Recommendations

1. Suggestions for future research

Based on the conclusions of this study, the author suggests that the subsequent research can be further deepened in the following aspects:

Expanding the scope of the study: the follow-up study can be promoted in different subject areas to explore the differences between different majors in the application of the smart classroom, and then to explore its impact on the quality of teaching.

Strengthening empirical research on the integration of technology and teaching: the follow-up study can explore in depth the application effects of different smart devices and teaching software in the actual classroom in order to provide more empirically valuable data support for the selection of smart teaching tools and the adjustment of teaching methods.

Further research on students' subjective experience: the follow-up study is suggested can focus more on students' subjective experience, including their acceptance of smart classrooms, changes in learning attitudes, and satisfaction with the teaching methods, in order to further deepen the understanding of the students' learning behaviors and psychological changes in smart classroom environments.

2. Recommendations for college organizations:

For Guizhou Vocational College of Industry and Commerce, in the construction and application of smart classrooms, the author puts forward the following suggestions:

Strengthen the construction and management of the facilities of the smart classroom: the school should increase the investment in the facilities of the smart classroom, improve the function and ease of use of intelligent teaching equipment, and ensure that the teaching hardware can stably and efficiently support the development of smart teaching. At the same time, the maintenance and updating of the equipment should be strengthened to avoid the impact of equipment failure on teacher satisfaction and teaching quality.

Improvement of personalized learning support and feedback mechanism: In the smart classroom environment, schools should establish a perfect personalized learning support system to provide students with more independent learning opportunities and provide timely feedback on students' learning progress and difficulties through data analysis. Teachers should adjust the teaching content and methods according to the different needs of students to truly realize teaching according to the students' abilities.

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APPENDIXS

Questionnaire on the Impact of Smart Classrooms to Improving Teaching Quality in Guizhou Vocational College of Industry and Commerce

Dear Respondents:

Hello! In order to better understand the current situation and influencing factors of teaching quality in regular classrooms at Guizhou Vocational College of Industry and Commerce, and to explore how does smart classrooms impact of teaching quality through smart classrooms, this questionnaire survey has been designed. Your answer will have important reference value for this study. This questionnaire is filled out anonymously, your responses will be kept completely confidential and will not be disclosed to third parties. Please fill out the questionnaire based on your actual situation and true feelings. Thank you very much for your support and cooperation!

This questionnaire uses a Likert scale for scoring, with a total of 5 options: strongly agree (5 points), agree (4 points), neutral (3 points), disagree (2 points), and strongly disagree (1 point).

Questionnaire content:

Part I: Basic information

Please mark √ in front of your best answer

This questionnaire uses a Likert scale for scoring, with a total of 5 options: strongly agree (5 points), agree (4 points), neutral (3 points), disagree (2 points), and strongly disagree (1 point).

1.Gender

☐Male ☐Female

2. Age

☐20-30 years old ☐30-40 years old ☐40-50 years old

☐50-60 years old ☐60-70 years old

3. Marital Status

☐Single ☐Married

☐Divorced ☐Other (please specify)

4. Salary

☐$550-800 ☐$801-1110 ☐$1110-1400

☐$1400-2100 ☐Above$2100

5. Teaching Years

☐1-5 years ☐6-10 years ☐11-20 years

☐21-30 years ☐31-40 years ☐41-50 years

6. Teaching Grade Level

☐First year ☐Second year ☐Third year

7. Education Level

☐Undergraduate ☐Master ☐Doctor

8. Faculty

☐Marxism ☐Comprehensive Health ☐Big Data

☐Digital Economy ☐Humanities and Physical Education

☐Engineering

Part II: Current Teaching Quality Situation in Regular Classrooms

Please mark √ in front of your best answer

This questionnaire uses a Likert scale for scoring, with a total of 5 options: strongly agree (5 points), agree (4 points), neutral (3 points), disagree (2 points), and strongly disagree (1 point).

No.	Items	Degree of Opinion				
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
		1	2	3	4	5
9	Are you satisfied with the current teaching methods in regular classrooms?					
10	Do students in regular classrooms achieve the expected learning outcomes?					
11	Are students actively engaged during lessons in regular classrooms?					
12	Does your professional experience positively influence the teaching quality in regular classrooms?					
13	Is your teaching design effective in regular classrooms?					
14	Do you receive sufficient training and opportunities for skill enhancement to improve your teaching in regular classrooms?					
15	Are the teaching resources in regular classrooms adequate for delivering high-quality education?					
16	Can teachers keep their skills and qualities up-to-date in a regular classroom environment to increase their adaptability?					

No.	Items	Degree of Opinion				
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
		1	2	3	4	5
17	Can the learning environment of a regular classroom (such as display devices, volume, and seating layout) effectively teach?					
18	Is it convenient for students to actively participate, think, and discuss in regular classrooms.					
19	Is the support given to students in regular classrooms in self-study situations outside the classroom sufficient?					
20	Can regular classrooms effectively support extracurricular learning (such as searching for course materials, supplementing extracurricular knowledge)?					
21	In regular classrooms, can teachers effectively control teaching progress?					
22	Does the current technology in regular classrooms meet the quality of instruction?					
23	Does the current management system support high student achievement in regular classrooms?					
24	Does the college provide adequate training programs for teachers to improve teaching quality in regular classrooms?					
25	Are the classroom management strategies effective in regular classrooms?					

No.	Items	Degree of Opinion				
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
		1	2	3	4	5
26	Do you have sufficient time and resources for effective teaching planning in regular classrooms?					
27	Do teachers in regular classrooms have timely and effective access to administrative support?					
28	Can you communicate smoothly and quickly solve problems with students in a regular classroom?					
29	Does the college focus on promoting teaching quality through teaching hardware and scientific technology?					
30	Is technology effectively integrated into teaching practices in regular classrooms?					
31	Does the school have policies to improve the quality of teaching?					
32	Can regular classroom frequently use formative assessments (such as tests and assignments) to monitor students' progress?					
33	Can regular classrooms effectively measure students' learning outcomes through summative assessments (such as final exams)?					
34	Can regular classrooms improve teaching practices in regular classrooms through teacher self-assessment?					

No.	Items	Degree of Opinion				
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
		1	2	3	4	5
35	Can regular classrooms effectively improve the teaching quality of regular classrooms through peer assessment?					
36	In a regular classroom, can you give students some useful advice to help them improve their learning quality?					
37	Are there any assessment criteria for students in regular classroom learning?					
38	Can the tools used in regular classrooms to measure students' learning outcomes accurately reflect their actual learning situation?					
39	After regular classroom teaching, do you often check students' grades and performance?					

Part III: Factors Affect the Teaching Quality in Regular Classrooms

Please mark √ in front of your best answer

This questionnaire uses a Likert scale for scoring, with a total of 5 options: strongly agree (5 points), agree (4 points), neutral (3 points), disagree (2 points), and strongly disagree (1 point).

No.	Items	Degree of Opinion				
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
		1	2	3	4	5
40	Do you think teacher satisfaction is the main factor affecting teaching quality?					
41	Do you think the expected learning outcomes are the main factor affecting the quality of teaching?					
42	Do you think student engagement in the classroom is the main factor affecting teaching quality?					
43	Do you think that a teacher's professional experience is the main factor affecting the quality of teaching?					
44	Do you think teaching design is the main factor affecting teaching quality?					
45	Do you think the adequacy of teacher training and skill enhancement opportunities is the main factor affecting teaching quality?					
46	Do you think the adequacy of teaching resources is the main factor affecting the teaching quality?					

No.	Items	Degree of Opinion				
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
		1	2	3	4	5
47	Do you think the ability of teachers to maintain skill updates in regular classrooms is the main factor affecting teaching quality?					
48	Do you think the supportive learning environment is the main factor affecting teaching quality?					
49	Do you think the classroom interaction is the main factor affecting teaching quality?					
50	Do you think the adequacy of support for students' self-study is the main factor affecting teaching quality?					
51	Do you think extracurricular learning (such as searching for course materials, supplementing extracurricular knowledge) are the main factor affecting teaching quality?					
52	Do you think the teaching progress is the main factor affecting teaching quality?					
53	Do you think the technology in the classroom is the main factor affecting teaching quality?					
54	Do you think the high student achievement is the main factor affecting teaching quality?					

No.	Items	Degree of Opinion				
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
		1	2	3	4	5
55	Do you think the adequacy of teacher training programs provided by schools is the main factor affecting teaching quality?					
56	Do you think classroom management is the main factor affecting teaching quality?					
57	Do you think have sufficient administrative support is the main factor affecting teaching quality?					
58	Do you think the adequacy of time and resources used for teaching planning is the main factor affecting teaching quality?					
59	Do you think the classroom communicate is the main factor affecting teaching quality?					
60	Do you think the supportive role of organizational culture in improving teaching quality is the main factor affecting teaching quality?					
61	Do you think the integration effect of technology in regular classroom teaching practice is the main factor affecting teaching quality?					
62	Do you think the college policies for improve the teaching quality is the main factor affecting teaching quality?					

No.	Items	Degree of Opinion				
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
		1	2	3	4	5
63	Do you think the formative assessments (such as tests and assignments) are the main factor affecting teaching quality?					
64	Do you think the summative assessments (such as final exams) are the main factor affecting teaching quality?					
65	Do you think teacher self-assessment is the main factor affecting teaching quality?					
66	Do you think the effectiveness of peer assessment is the main factor affecting teaching quality?					
67	Do you think the teacher's advice is the main factor affecting the quality of teaching?					
68	Do you think the assessment criteria is the main factor affecting teaching quality?					
69	Do you think the assessment software is the main factor affecting teaching quality?					
70	Do you think the students' performance is the main factors affecting teaching quality?					

Part IV: Smart Classrooms Impact of Teaching Quality

Please mark √ in front of your best answer

This questionnaire uses a Likert scale for scoring, with a total of 5 options: strongly agree (5 points), agree (4 points), neutral (3 points), disagree (2 points), and strongly disagree (1 point).

No.	Items	Degree of Opinion				
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
		1	2	3	4	5
71	Do you think smart classrooms (for example, classrooms equipped with multimedia tools, digital technology, interactive software, and audio equipment) can improve teacher satisfaction?					
72	Do you think smart classrooms can improve the learning effectiveness of the classroom?					
73	Do you think smart classrooms can increase students' participation in the classroom?					
74	Do you think smart classrooms can improve teachers' curriculum design?					
75	Do you think smart classrooms can have sufficient teaching resources?					
76	Do you think smart classrooms have strong support for learning environments?					
77	Do you think the teacher-student relationship and classroom interaction are effective in a smart classroom environment?					

No.	Items	Degree of Opinion				
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
		1	2	3	4	5
78	Do you think smart classrooms can support students' self-learning?					
79	Do you think smart classrooms can improve the effectiveness of teaching process management?					
80	Do you think smart classrooms can enhance students' sense of achievement in learning?					
81	Do you think smart classrooms can improve the effectiveness of classroom management strategies?					
82	Do you think smart classrooms can have sufficient policy support?					
83	Do you think smart classrooms can improve the effectiveness of solving classroom problems between teachers and students?					
84	Do you think smart classrooms can improve the integration effect in teaching practice?					
85	Do you think smart classrooms can effectively complete formative assessments?					
86	Do you think smart classrooms can effectively complete summative assessments?					
87	Do you think smart classrooms can effectively complete teacher self-assessment?					

No.	Items	Degree of Opinion				
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
		1	2	3	4	5
88	Do you think smart classrooms can effectively complete peer assessment?					
89	Do you think smart classrooms can effectively provide constructive feedback?					
90	Do you think smart classrooms have fair assessment criteria?					
91	Do you think smart classrooms can use student performance data to improve teaching practices?					

Part V: Supplementary Q&A

What other strategies do you think are not mentioned in the questionnaire that can effectively reduce the turnover rate of management personnel?

Please specify:

1. What is the teaching quality situation in regular classrooms in Guizhou Vocational College of Industry and Commerce?

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2. What are the factors affect the teaching quality in regular classrooms in Guizhou Vocational College of Industry and Commerce?

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3. How does smart classrooms impact of teaching quality in Guizhou Vocational College of Industry and Commerce?

CURRICULUM VITAE

NAME	Mr. Yaran Liu
DATE OF BIRTH	June 27, 1985
EDUCATION	2007 Bachelor of Business Administration Open University of China
WORK EXPERIENCE	2007-2011 Shandong Sangle Group Co., Ltd 2011-2014 Shandong Horizone Network Technology Co., Ltd 2014-2016 Shandong Industrial Exhibition Hall 2019-2021 Chengcheng Union Group, China 2021-Present Guizhou Vocational College of Industry & Commerce