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องค์ประกอบของสรรมถนะการจัดการเรียนรู้เชิงรุกของครูโรงเรียนประถมศึกษาในภาคตะวันออกเฉียงเหนือ

COMPONENTS OF ACTIVE LEARNING MANAGEMENT COMPETENCY FOR PRIMARY SCHOOL TEACHERS IN THE NORTHEASTERN OF THAILAND

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Abstract

การวิจัยครั้งนี้มีวัตถุประสงค์เพื่อศึกษาองค์ประกอบของสมรรถนะการจัดการเรียนรู้เชิงรุกของครูโรงเรียนประถมศึกษาในภาคตะวันออกเฉียงเหนือ เป็นการวิจัยเอกสารดำเนินการ 2 ขั้นตอน คือ 1) ศึกษาเอกสารเกี่ยวกับองค์ประกอบของสมรรถนะการจัดการเรียนรู้เชิงรุกของครูโรงเรียนประถมศึกษาในภาคตะวันออกเฉียงเหนือ จำนวน 11 แหล่ง เพื่อสังเคราะห์องค์ประกอบของสมรรถนะการจัดการเรียนรู้เชิงรุกของครูโรงเรียนประถมศึกษาในภาคตะวันออกเฉียงเหนือ 2) ยืนยันองค์ประกอบของสมรรถนะการจัดการเรียนรู้เชิงรุกของครูโรงเรียนประถมศึกษาในภาคตะวันออกเฉียงเหนือ โดยผู้ทรงคุณวุฒิ จำนวน 7 คน ใช้แบบสัมภาษณ์แบบมีโครงสร้างที่ผู้วิจัยสร้างขึ้น หาคุณภาพด้วยวิธีตรวจสอบความตรงเชิงเนื้อหา ความเที่ยงของเครื่องมือแล้วนำแบบสัมภาษณ์แบบมีโครงสร้างไปทดลองใช้ ผลการวิจัยพบว่า องค์ประกอบของสมรรถนะการจัดการเรียนรู้เชิงรุกของครูประถมศึกษาในภาคตะวันออกเฉียงเหนือ มี 4 องค์ประกอบ ได้แก่ 1) การวิเคราะห์หลักสูตรการจัดการเรียนรู้ ประกอบด้วย 2 ตัวบ่งชี้ คือ การวิเคราะห์มาตรฐานและตัวชี้วัด และการวิเคราะห์ผู้เรียน 2) การออกแบบการจัดการเรียนรู้เชิงรุก ประกอบด้วย 6 ตัวบ่งชี้ คือ การกำหนดวัตถุประสงค์การเรียนรู้ ขอบข่ายเนื้อหา รูปแบบการจัดการเรียนรู้เชิงรุก กิจกรรมการจัดการเรียนรู้เชิงรุก สื่อและนวัตกรรมและเทคนิคการวัดและประเมินผล 3) การจัดกิจกรรมการเรียนรู้เชิงรุก ประกอบด้วย 3 ตัวบ่งชี้ คือ การเตรียมความพร้อมสำหรับการจัดการเรียนรู้ บทบาทของครู และบทบาทของผู้เรียน 4) เครื่องมือในการวัดและประเมินผล ประกอบด้วย 3 ตัวบ่งชี้ คือ เครื่องมือที่ใช้ เกณฑ์การวัดและประเมินผล และสะท้อนผลการวัดและประเมินผล

Keywords: สมรรถนะครู, การจัดการเรียนรู้เชิงรุก

Abstract

The objective of this research was to study the components of active learning management competency for primary school teachers in the Northeastern of Thailand. It was a two-step procedural research: 1) Document study of the components of active learning management competency for primary school teachers in the Northeastern of Thailand, conducted at 11 sources to synthesize the components. 2) Confirmation of the components of active learning management competency for primary school teachers in the Northeastern of Thailand by 7 experts using structured interview questionnaires developed by the

researchers. The content validity and reliability of the interview questionnaire were assessed, and then the structured interview questionnaire was piloted. The research findings are as follows: The components of active learning management competency for primary school teachers in the Northeastern of Thailand consist of 4 components: Curriculum analysis, comprising 2 indicators: Standard and metric analysis, and learner analysis. Active learning management design, comprising 6 indicators: Learning objective setting, content scope, active learning management format, active learning management activities, media and innovation, and measurement and evaluation techniques. Active learning activity organization, comprising 3 indicators: Readiness preparation for learning management, teacher roles, and student roles. Measurement and evaluation tools, comprising 3 indicators: Measurement tools, evaluation criteria, measurement and evaluation reflection.

Keywords : Competency , Active Learning

Introduction

Active learning management is a learning process that promotes student participation in the classroom, fosters interaction between teachers and students, and encourages hands-on learning with teachers facilitating, inspiring, advising, guiding, coaching, and mentoring. It seeks to provide various learning techniques and resources. Active learning management emphasizes developing students' critical thinking, problem-solving skills, and applying knowledge. Students actively participate in organizing the learning system and creating knowledge through collaborative relationships rather than competition. It maximizes student involvement in the learning process, focusing on activities that integrate information, analysis, synthesis, and evaluation skills. Students learn discipline in collaborative work with others, and knowledge emerges from experiences and students' summaries. Teachers facilitate learning management to enable students to act on their own, with various forms of active learning management such as analysis, synthesis, brainstorming, exchange of ideas, and case studies. Activities used aim to develop knowledge, skills in critical thinking, reasoning, communication, presentation, and appropriate information technology usage. In addition to participating in the above activities, learners must also interact with teachers and other learners. Teachers reduce their role as knowledge transmitters in lectures and increase their role in stimulating students to engage in various activities, including preparing suitable learning environments. Overall, active learning management aims for meaningful learning where students construct knowledge, understand themselves, apply intellect, think, analyze, and create innovative works indicating significant competency in the 21st century. It targets academic, life, and professional skills, achieving learning goals across age groups, effectively addressing learning impediments, and restoring learners' learning competencies (Office of the Basic Education Commission, 2019 : 4)

Before developing students' competencies to align with the changing times, it is urgent and essential to elevate the teaching competencies or the learning management competencies of teachers. Continuous self-development in both professional competencies and pedagogical skills is imperative. This includes enhancing knowledge, improving self-performance, and mastering teaching skills professionally. It involves the integration of skills, knowledge, behaviors, characteristics, and attitudes to link learning management with changing environments or contextual changes in a holistic manner to enhance work efficiency (Office of the Secretary-General of the Education Commission. 2556)

As a researcher serving as a school administrator in a primary school under the supervision of the Office of the Basic Education Commission, I am interested in understanding the active learning management competencies of primary school teachers. Therefore, I conducted research on the components of active learning management competencies of primary school teachers, aiming to provide school directors, academic supervisors, and related organizations in primary schools with a framework for developing the active learning management competencies of teachers in the Northeastern of Thailand.

Research Objectives

To study the components of active learning management competencies of primary school teachers in the Northeastern of Thailand.

Research Methods

This research utilizes a document analysis research method to study the components of active learning management competencies of primary school teachers in the Northeastern of Thailand. The detailed steps of the research methodology consist of 2 stages as follows:

1. Document Study To conduct an analysis and synthesis of the components of active learning management competencies of primary school teachers in the Northeastern of Thailand, based on theoretical concepts from scholars and relevant research studies. This will involve studying documents related to the topic from 11 sources, aligned with the theoretical concepts and research works of scholars and researchers :

1) Study of the active learning management competencies of primary school teachers, based on the perspectives of educators, educational organizations, and various sources, encompassing 11 references. These include Pimphann Detchakupt (2008), Phonthip Wongpaiboon (2017), Rasami Srinan and colleagues (2018), Office of the Basic Education Commission (2019), Ratana Boonlersaph and colleagues (2020), Office of the Secretary-General of the Education Council (2020), Educational Service Area Office 35 (2021), Kamphaeng Phet Provincial Education Office (2021), Meyer and Jones (1993), Dick and Carey (2001), Christine (2010), Lise and Others (2018), and Helen and Others (2019).

2) The synthesis of the components of active learning management competencies of primary school teachers was conducted by frequency distribution from multiple data sources, and the results were summarized using a frequency criterion of 6 or higher (55%). These components include : 1) Curriculum analysis 2) Active learning management design 3) Active learning activity organization 4) Evaluation tools The researcher then presented the components derived from the synthesis in step 1 to qualified individuals for validation in the subsequent step 2

2. Confirmation of the components of active learning management competence of primary school teachers in the northeastern of Thailand, conducted by 7 qualified individuals. These individuals include 7 experts in active learning management, 1 educational administrator from the district education office, 2 school administrators affiliated with the Basic Education Commission who have completed doctoral studies, 2 teachers with expert status or doctoral degree holders with experience in active learning activities or curriculum and teaching experience, 2 educational supervisors with special expertise status from the primary education district office, and researchers with educational research experience related to active learning management. This research utilized structured interviews as part of the assessment process, including checklist and open-ended questionnaire formats, to provide additional insights and recommendations as evaluation tools to confirm the components.

Research Results

Synthesis of Components of Active Learning Management Competencies of Primary School Teachers in the Northeastern Of Thailand The synthesis of components of active learning management competencies of primary school teachers in the Northeastern of Thailand, derived from the study of theoretical concepts by relevant scholars and researchers, was conducted. The researchers synthesized content analysis data from documents into a synthesis table by showing the frequency distribution and selecting components with a frequency of 6 or more (55%) as components of active learning management competencies of primary school teachers in the Northeastern of Thailand. It was found that the active learning management competencies of primary school teachers in the Northeastern of Thailand consist of 4 components, namely: 1) Curriculum analysis, 2) Designing active learning management, 3) Organizing active learning activities, and 4) Measurement and evaluation tools, as shown in Table 1

Table 1: Frequency Analysis of Components of Active Learning Management Competencies of Primary School Teachers in the Northeastern Of Thailand

Components of Active Learning Management \ Resources for research	Pimpan Dechakub (2551)	Pornthip Wongpaiboon(2560)	Somrit Klanpeng (2562)	OBEC.(2562)	Ratana Boonlertpornpisut(2563)	Area Office 35 (2564)	Kamphaeng Phet Provincial Education Office. (2564)	Meyer;& Jones. (1993)	Dick and Carey (2001)	Christine Stephen (2010)	Lise and Others (2018)	Frequency
Analysis of curriculum and content managem	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	10
Experiential Learning Activity Planning	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	10
Learning Management System Design	✓	✓	✓	✓		✓	✓	✓		✓	✓	9
Assessment of Experiential Learning Management	✓		✓	✓	✓	✓	✓					6
Utilization of media, learning resources,	✓		✓		✓	✓						4
Class schedule						✓	✓					2
Student analysis							✓					1
Assignment and workload allocation for							✓					1
Collaboration										✓	✓	2
Creating a conducive learning environment										✓		1

The synthesis of content related to the components of active learning management competencies of primary school teachers in the Northeastern of Thailand revealed that there are 4 components. They are:

1. Curriculum analysis, which involves analyzing both school-level and classroom-level curricula by examining various data such as standards and indicators analysis, student analysis, suitability of content for students, alignment with curriculum goals and student interests, content utilization, and having a learning management system that promotes student development.

2. Designing active learning management, which entails identifying learning objectives, studying relevant factors, setting learning objectives, determining content boundaries, designing active learning formats, activities, media, and innovations, and assessment techniques, and then organizing learning processes that align with student abilities.

3. Organizing active learning activities, which means preparing activities for active learning management. It is the role of the teacher to consider the objectives of the learning activities, select content and learning activities that consider the role of students in developing knowledge, abilities, group work processes, developing desirable characteristics and values, focusing on skills development, self-directed learning, utilizing technology and innovation sources, as well as assessing and evaluating real-life situations and considering individual differences.

4. Measurement and evaluation tools, which involve defining measurement and evaluation objectives, determining tools for use, setting measurement and evaluation criteria, selecting appropriate measurement and evaluation techniques, using quality measurement and evaluation tools, conducting measurements and evaluations based on actual conditions, and then using the measurement and evaluation results effectively. Reflecting on measurement and evaluation results to improve future measurement and evaluation processes.

Summarizing the synthesis results of the components, as shown in Table 2

Table 2 : Content Analysis of Components of Active Learning Management Competencies of Primary School Teachers in the Northeastern Of Thailand

Components	Standard Operating Procedures	Indicators
1. Curriculum analysis	Analyzing the curriculum at both the institutional and classroom levels involves examining various fundamental data, including standards and indicators analysis, student analysis, assessing content suitability for students, alignment with curriculum objectives and student interests, content application, and having an assessment system in place that promotes the development of student quality.	1. Standard and metric analysis 2. learner analysis
2. Designing active learning management	Analyzing the curriculum at both the institutional and classroom levels involves examining various fundamental data, including standards and indicators analysis, student analysis, assessing content suitability for students, alignment with curriculum objectives and student interests, content application, and having an assessment system in place that promotes the development of student quality.	1. Learning objective setting 2. content scope 3. active learning management format 4. active learning management activities 5. media and innovation 6. measurement and evaluation techniques

Components	Standard Operating Procedures	Indicators
3. Organizing active learning activities	Organizing learning activities that prepare for learning management is the responsibility of teachers, who must consider the objectives of the learning activities, select content and learning activities that consider the role of students in developing knowledge and abilities, involve group work processes, foster desirable characteristics and values, and emphasize skill development, self-directed learning, the use of innovative technology and learning resources, as well as real-life assessment and consideration of individual differences.	1. Readiness preparation for learning management 2. teacher role 3. student role
4. Measurement and evaluation tools	Setting measurement and evaluation objectives, determining tools to be used, establishing measurement and evaluation criteria, then selecting appropriate measurement and evaluation techniques and methods, using quality measurement and evaluation tools, conducting measurements and evaluations based on actual conditions, and then utilizing the measurement and evaluation results effectively. Reflecting on measurement and evaluation results for further improvement and development of measurement and evaluation processes moving forward.	1. Tools used 2. Measurement and evaluation criteria 3. measurement and evaluation reflection

2. The results of confirming the components of the active learning management competence of primary school teachers in the northeastern of Thailand

The results of confirming the components of the active learning management competence of primary school teachers in the northeastern of Thailand found that there are four components, namely: 1) Curriculum analysis consisting of two indicators: standards and metrics analysis, and student analysis. 2) Active learning management design consisting of six

indicators: learning objectives specification, content framework, active learning management format, active learning management activities, media and innovations, and measurement and evaluation techniques. 3) Active learning activity organization consisting of three indicators: readiness preparation for learning management, teacher role, and student role. 4) Measurement and evaluation tools consisting of three indicators: tools used, measurement and evaluation criteria, and reflection of measurement and evaluation results, as shown in Figure 1.

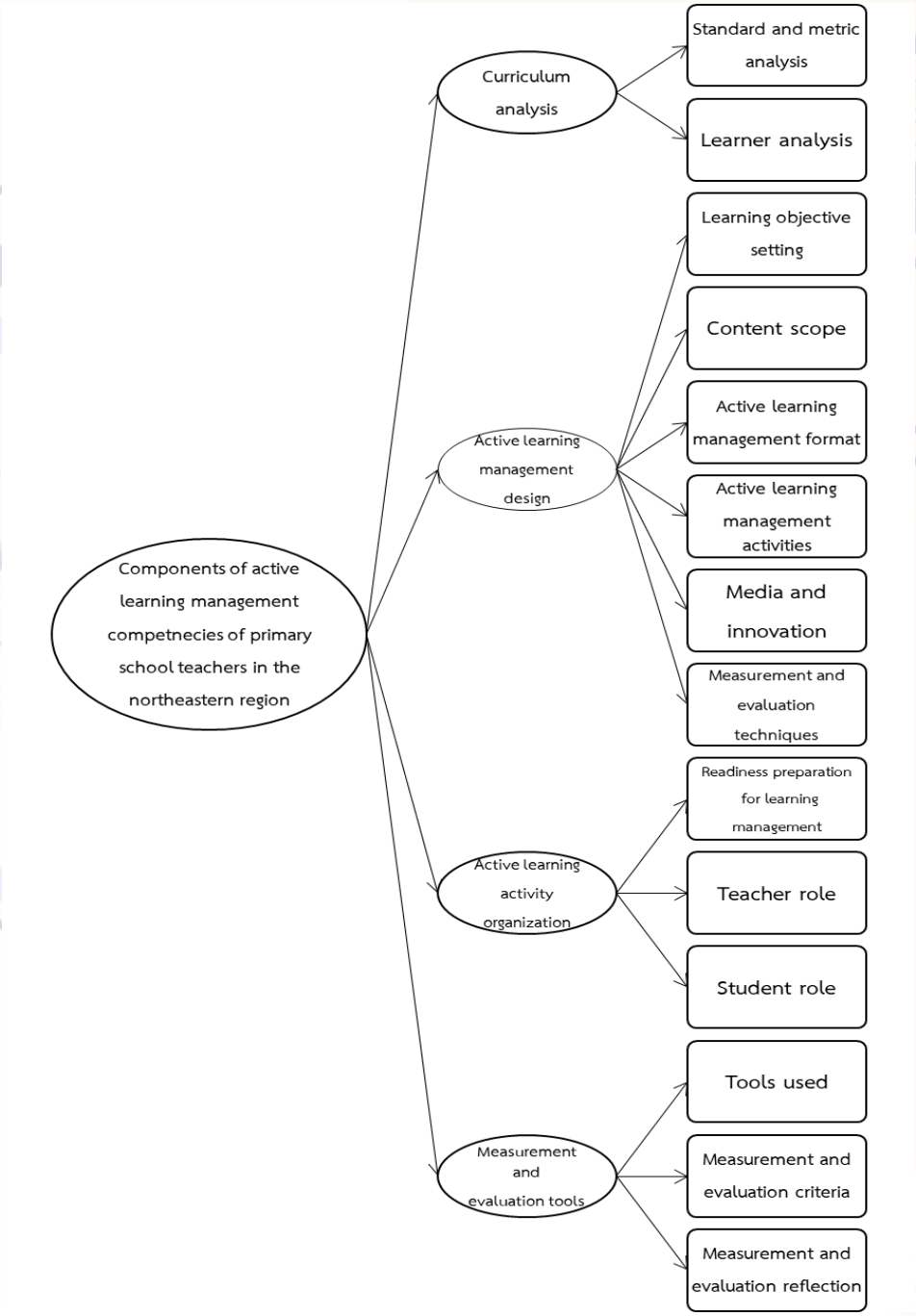

Figure 1 Components of primary school teachers' active learning management competencies in the Northeastern of Thailand of Thailand

Research Discussion

The study of the components of management competency for teachers' active learning management in primary schools in the northeastern of Thailand was derived from the synthesis of documents and relevant research, as well as interviews with qualified individuals. The study aimed to identify the components of teachers' active learning management competency in primary schools in the northeastern of Thailand that align with the context of primary education. It was found that the management competency for teachers' active learning in primary schools in the northeastern of Thailand comprises four components: 1) Curriculum analysis 2) Design of active learning management 3) Implementation of active learning activities 4) Tools for measurement and evaluation Overall, there are 14 indicators across these four components. The research results were obtained through a study aimed at developing indicators of teachers' active learning management competency. The researchers conducted a review of various theories related to teachers' active learning management competency and integrated them with interviews with qualified individuals to confirm the components and indicators of teachers' active learning management competency in primary schools in the northeastern of Thailand, as synthesized from the documents. The qualified individuals confirmed the synthesized findings and provided additional details on some indicators to enhance clarity and alignment with the context of primary schools in the northeastern of Thailand. Therefore, the research findings aligned with the components and indicators of teachers' active learning management competency as set by the researchers, consistent with Pimphanchaya Dechkup (2008), who summarized the components of active learning management as including: 1) Curriculum and content analysis for comprehensive knowledge 2) Design of active learning management 3) Use of media, learning resources, and technology 4) Student- centered teaching activities 5) Diverse assessment methods Additionally, consistent with Phonthip Wongpaiboon (2017), who synthesized the components of active learning management as: 1) Curriculum analysis 2) Designing learning content 3) Implementing planned learning activities Similarly, Sarmrit Kangpeng (2019) synthesized the components of active learning management as: 1) Curriculum analysis 2) Designing learning content 3) Learning activities 4) Learning media/resources 5) Learning assessment Furthermore, the Basic Education Core Curriculum Office (2019) established the components of active learning management as: 1) Curriculum analysis 2) Design of active learning activities 3) Implementation of active learning activities 4) Assessment of active learning activities Moreover, Ratana Boonlertpornsiri and colleagues (2020) synthesized the components of active learning management in the 5G era as: 1) Curriculum analysis 2) Learning management 3) Media and learning resources 4) Evaluation Similarly, the Secondary Educational Service Area Office 35 (2021) proposed standard-based components of active learning management,

including: 1) Curriculum analysis 2) Designing learning management 3) Learning management 4) Allocation of media, equipment, tasks 5) Assessment 6) Class schedules Likewise, the Provincial Education Office of Kamphaeng Phet (2021) provided components of active learning management as: 1) Analysis of students 2) Designing standard-based learning management and indicators 3) Implementation of planned learning management 4) Assignment of tasks and workload for teachers 5) Measurement and evaluation 6) Media or learning resources 7) Class schedules

References

Phonthip Wongpaiboon. (2560). **Active Learning and Student Engagement**. Nakhon Pathom : Yansangwon Institute.

Pimphanchet Dechkupt and Phonthip Kangkhan. (2551). **Teacher Competencies and Development Guidelines in a Changing Society**. Bangkok: Chulalongkorn University Book Center.

Pimphanchet Dechkupt. (2561). **Collaborative Active Learning with PLC for Development**. Bangkok : Chulalongkorn University Book Center.

Ratana Boonlertpornsiri. (2563). **Thai Education Management in the 5G Era**. Bangkok : Ramkhamhaeng University.

Rasamee Srinont and colleagues. (2561). **Active Learning Management in Thailand 4.0 Era**. Bangkok : Silpakorn University.

Sarmrit Kangpeng. (2562). **Curriculum and Teaching Management**. Maha Sarakham : Aphichatkan Publishing.

Office of the Basic Education Commission. (2563). **Operational Manual for Promoting and Developing Innovative Educational Media and Technology in the Academic Year 2563**. Phitsanulok: Educational Service Area Office, Phitsanulok District 1.

Office of the Basic Education Commission. (2553). **Teacher Competency Assessment Manual, Fiscal Year 2553**. Bangkok : Office of the Basic Education Commission.

Office of the Basic Education Commission. (2564). **Teaching Management Guidelines in the COVID-19 Pandemic Situation**. Bangkok : Office of the Basic Education Commission.

Office of the Basic Education Commission. (2564). **New Path, New Quality: Teaching Management Guidelines in the COVID-19 Pandemic Situation**. Bangkok : Office of the Basic Education Commission.

Office of the Basic Education Commission. (2564). **Academic Journal of Basic Education Volume 10, Fiscal Year 2564**. Bangkok: Office of the Basic Education Commission.

Office of the Basic Education Commission. (2564). **Directive Guidelines for Developing and Promoting Active Learning Management**. Bangkok : Office of the Basic Education Commission.

Office of the Basic Education Commission. (2562). **Directive Guidelines for Developing and Promoting Active Learning Management**. Bangkok: Office of the Basic Education Commission, Educational Dissemination Unit.

Provincial Education Office of Kamphaeng Phet. (2564). **Active Learning Management Guidelines**. Kamphaeng Phet: Provincial Education Office of Kamphaeng Phet, Ministry of Education.

Christine Stephen (2010) . **Taking active learning into the primary school : a matter of new practices? .** UK **:** Scotland .

Lise McCoy And Others .(2018). **Tracking Active Learning in the Medical school Curriculum : A Learning – Centered Approach.** USA : Still University.

Mayers, C. and Jones, T. (1993). **Promoting active learning: strategies for the college classroom**. San Francisco: Jossey-Bass.

ANALYSIS MEDICAL AND ONLINE MEDIA FOR MEDICAL AND SCIENCE MEDIA STUDENTS.

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Abstract

This research This is a documented study on the use of medical media and online media for medical media and medical science students. The study found that Research related to the education of medical media students and medical sciences in the past 5 years, from the frequency table, it was found that 100% of the media were used in Technology For Learning and the media used in Media For Learning were 100%. 100% / Virtual Learning media usage 40% / Live Streaming media usage 40% / Online Learning media usage 80%

Medical learning media has brought technology and multimedia to help, such as videos about treating one's health by clearly demonstrating various procedures. In the form, there are both animations, images, sounds, content, helping to understand easily. Make students interested in studying to create a correct understanding about taking care of their own health. And in the medical field, there is also technology and design linked to the Metaverse. Virtualize and engage student and teacher at the same time. It can also be used as a teaching aid for medical students as well.

Keywords: Technology For Learning, Media ,VR Met-averse, Medica Media Learning, Virtual Reality, Metaverse.

Introduction

“Medicine teaching” is learning that requires understanding the structure and characteristics of organs. in the body properly In the past, it was often used to learn from real people, such as classmates. Real patients or learn from donated corpses. However, in some situations it is not always possible to learn from the real thing. That's the reason for the development. Models imitate virtual reality to support teaching and learning (Johnstone, 2005). “Models” are three-dimensional objects created by man to imitate the real thing. To help support ideas and imagination from an abstract nature (Abstract) to create images or other forms that can be seen as concrete (Concrete), so the model has been “Simulation based learning” is popular for teaching and learning in medicine and health sciences (Kasatpibal et al., 2016), while “Simulation Based Learning: SBL) is one of the teaching methods that is well suited to the use of simulations, which having simulation situations will encourage learners to learn according to the specified objectives. where students can learn, analyze and

practice Practice solving problems in situations as close to reality as possible (Landeen et al., 2015)

Medical media contains teaching materials about different types of media. for teaching and medical activities also includes creative media general publicity or advertising media as a combination of disciplines in the arts educational technology Communication Arts and medical science by type of media studied It will cover 5 types of media, namely Technology For Learning, Media For Learning, Virtual Learning, Live Streaming, Online Learning.

The learner must be active, in line with Dewey's "Learning by Doing", which Piaget said. When learning occurs, there will be a change in the cognitive structure of the learners. The application of Piaget's theory in teaching and learning will focus on principles.

Emphasize the importance of learners. Learners will be able to control their own learning activities (Self-Regulation) and be the ones who initiate action. It is learning by doing by oneself. The learners and teachers have the duty to train and provide an environment that is conducive to learning by discovery. Give students the opportunity to interact with their surroundings.

Based on a search for research that has a lot of references and is consistent with learning in the Asian region. Related to medical teaching media, technology and multimedia have been brought to help, such as videos about treating their own health by clearly demonstrating various procedures. In the form, there are both animations, images, sounds, content, helping to understand easily. Make students interested in studying to create a correct understanding about taking care of their own health. And in medicine, there is also technology and design. It can also be used as a teaching aid for medical students as well.

Research Objectives

The purpose of this research is to analyze and summarize research results, medical teaching media and online media. The analysis articles are published in international academic journals. by analyzing Research papers in media and learning technology for medical and science media students.

Conceptual Framework

Find the right medical media study materials for medical science students, along with An analysis of medical media models for medical science students and an analysis of methods for learning medical media for medical science students. using 5 research papers.

1. Live Broadcast Lectures on Complete Denture Prosthodontics at Tokyo Medical and Dental University: Comparison of Two Years. Maiko Iwaki, D.D.S., Ph.D.; Manabu Kanazawa, D.D.S., Ph.D.; Masayo Sunaga, R.D.H.,B.L.A.; Atsuhiro Kinoshita, D.D.S., Ph.D.; Shunsuke Minakuchi, D.D.S., Ph.D.
2. Understanding the patient experience through the power of film: A mixed method qualitative research study. Sherri Ogston-Tuck , Kath Baume , Chris Clarke , Simon Heng.
3. Factors Affecting Online Learning Achievement to Enhance Teaching and Learning.

Chanin Tungpantong.

4. All One Needs to Know about Metaverse: A Complete Survey on Technological Singularity, Virtual Ecosystem, and Research Agenda. Lik-Hang Lee, Tristan Braud, Pengyuan Zhou, Lin Wang, Dianlei Xu, Zijun Lin, Abhishek Kumar, Carlos Bermejo, Pan Hui.

5. Learning during simulation instruction virtual situation help with breech birth. Sirisukhum1*Aran Silawan1andBenjamas Manyoo.

Research Methodology

1. An analysis of medical media formats for medical science students
2. An analysis of medical media learning methods for medical science students.

research list	1.Technology For Learning	2.Media For Learning	3.Virtual Learning	4.Live Streaming	5.Online Learning
1. Live Broadcast Lectures on Complete Denture Prosthodontics	×	×		×	×
2. Understanding the patient experience through the power of film	×	×			×
3. Affecting Learning Achievement on online Supplement Learning	×	×		×	×
4. All One Needs to Know about Metaverse: A Complete Survey on Technological Singularity, Virtual Ecosystem, and Research Agenda	×	×	×		×
5. The Effectiveness Comparison of Simulation Learning with Traditional Learning of Clinic Medical Students in Somdejphrajaotaksinmaharaj Hospital : A Case Study Breech Delivery.	×	×	×		
frequency	100%	100%	40%	40%	80%

Table 1 analytical table

Research Discussion

Analysis and conclusions of research, medical and scientific media, the research results showed that Technology For Learning was used 100%, Media For Learning was used 100%, Virtual Learning was used 40%, Live Streaming was used 40%, and Use Online Learning 80%.

Technology For Learning will help develop students to be smart in this intellectual process. Teachers organize information on various subjects in the subjects taught to students to practice through Media For Learning according to the frequency table. It can be seen that it is very important. Both interested presentations through Virtual Learning or Live Streaming to seek information. These were analyzed and formulated as concepts and computer-assisted concept maps were used to connect them into rules and principles. principles to apply until it is concluded as a body of knowledge rationally The accumulated records will continue to be the knowledge repositories of the students. without limitation of time and place through Online Learning.

Live Broadcast Lectures on Complete Denture Prosthodontics at Tokyo Medical and Dental University: Comparison of Two Years Study Design and Institute A cross-sectional study was conducted at the University of Louisville in Louisville, KY, USA during the 2015-2016 academic year from June 2015 to February 2016. The population for our cross-sectional study consisted of: of a sample (n = 85) of junior medical students enrolled in internal medicine clerk University of Louisville Institutional Review Board (IRB) (Iwaki et al., 2013)

Understanding the patient experience through the power of film: A mixed method qualitative research study 7 films have been selected since animation; International dramas, documentaries, biographies and Hollywood. Each film was impossibly shown in an acoustic lecture theater projected onto a large screen for student nurses to pre-register. (adult, child and mental health) for each year of the study from different population groups (n = 49) (Ogston-Tuck et al., 2016).

Although patients with hypovolemic shock are common in clinical practice, nursing students have little chance of coming across them during their practicum. The main focus of this qualitative study was to explore the elements essential for a virtual reality (VR) based simulation program for hypovolemic shock nursing care. To this end, we conducted focus group interviews with three expert groups of 15 (five from each group) experienced clinical nurses (≥10 years) with experience in hypovolemic shock nursing care. Data were collected in June and July 2020, and after transcribing the interviews, the data analysis involved theme development as part of qualitative.

Comparison of learning effectiveness between teaching and learning models The virtual situation and the traditional teaching and learning of clinical students. King Taksin

Hospital: A case study of assisted breech delivery It is a quasi-experimental research. The sample group consisted of 28 clinical students who were evaluated for effectiveness before learning and then divided the samples into 2 groups, group 1 received traditional learning and group 2 received a virtual simulation class.

Medical media formats, such as animations, illustrations, videos, and simulations, can be effective tools for educating medical science students. Each format has its own unique strengths and can be used in different ways to enhance learning and understanding.

Animations and illustrations: These formats can be used to explain complex medical concepts and procedures in a clear and visual way. They can also be used to demonstrate how different systems in the body work together.

Videos Medical training videos can be used to demonstrate procedures and surgeries, providing students with a better understanding of the procedure. They can also be used to show real-life examples of medical cases, which can be beneficial for students to understand the application of the knowledge they've learned.

Simulations Interactive simulations, such as virtual reality and augmented reality, can provide students with a hands-on experience in a simulated environment. This can be especially useful for training in procedures such as surgeries, where it's not possible to practice on live patients.

Online learning platforms Online learning platforms can provide students with access to a wide range of medical media formats, including animations, illustrations, videos, and simulations. These platforms can also provide interactive quizzes and assessments, which can help students to test their understanding of the material.

In conclusion, medical media formats can be an effective way to enhance the learning experience of medical science students. By incorporating a variety of formats, such as animations, illustrations, videos, and simulations, educators can provide students with a more comprehensive understanding of the material. Additionally, online learning platforms can provide students with a more flexible and conve.

the near future Existing health IT innovations such as Augmented Reality (AR) and Virtual Reality (VR) will find more use. VR technology can be used to improve a variety of hospital tasks. both on-site and electronically.surgical training Teaching clinical students using real case simulations and creating virtual hospital experiences are all examples of VR being used in healthcare.Much potential for improving the current medical system will be possible with these technological advances in the future.

Reference

Alongkorn Supatamrong. (2014). **The Influence of System Quality on Usability, Satisfaction and Net Benefits of Program Users. STEAM.** Master of Business Administration, Bangkok University.

Aggelidis, V. P., & Chatzoglou, P. D. (2012). Hospital information systems: Measuring end user computing satisfaction (EUCS). **Journal of biomedical informatics,** 45(3), 566-579.

Bailey, J. E., & Pearson, S. W. (1983). Development of a tool for measuring and analyzing computer user satisfaction. **Management science,** 29(5), 530-545.

Boonserm Wattanakit Kitti Krungkraipetch. (2017). **Model development for manual operation.** for teaching - Model.

Campbell, L. (1998). **Historical Linguistics: An Introduction.** MIT Press.

Clark, G. (1996). **Glossary of CBT/WBT Terms.** Retrieved July 2, 2016, from www.clark.net.pub.

Collis, B. & Moonen, J. (2001). **Flexible learning in a digital world: Experiences and expectations.** London : Routledge.

Chanin Tangpanthong. (2017). **Factors Affecting Achievement in Online Learning to Enhance Teaching and Learning.**

Driscoll, J. (2002). The potential of reflective practice to develop individual orthopaedic nurse practitioners and their practice. **Journal of Orthopaedic Nursing.** 5, 95-103.

Dusadee Musikapadok. (2006). **Moral Cultivation.** Ethics in medical photography Srinagarind Medical.

Holsapple, C. W., & Lee-Post, A. (2006). Defining, assessing, and promoting e-learning success : An information systems perspective. **Decision sciences journal of innovative education,** 4(1), 67-85.

Jalal, D., & Al-Debei, M. M. (2013). Developing and implementing a web portal success model. **Jordan Journal of Business Administration,** 153(954), 1-60.

Jarumon Nukong, & Namon Jeerangsuwan. (2015). Design of Integrated Training Model. in conjunction with MOOC teaching To develop skills in information, media and technology for graduate students. **Journal of Industrial Education King Mongkut Phra Nakhon North,** 6(1), 105-113.

Kemp, S. (2016). **Digital in 2016.** Online: http://wearesocial.com/uk/specialreports/digital-in-2016. Accessed, 09-20.

Khan, B. H. (1997). **Web-Based Instruction.** Englewood Cliffs, NJ: Educational Technology Publications.

Krisana Sikkhaman. (2011). **A Study of Learning Achievement in Business English Communication Course. by using teaching methods Learning.** Retrieved from Bangkok : Sripatum University.

Kantaphon Bandatthong. (2014). **Social networking behavior and group satisfaction.** the elderly in the district Bangkok. Master of Communication Arts, Bangkok University,

Kanlaya Wanichbuncha. (2011). **Statistics for research.** Bangkok: Thammasarn.

Kitdanan Malithong. (2005). **Technology and communication for education.** Bangkok: Limited Partnership Arun printing.

Landeen, J., & Jeffries, P. R. (2008). Simulation. **Journal of Nursing Education,** 47(11).

Lee, L. H., Braud, T., Zhou, P., Wang, L., Xu, D., Lin, Z., ... & Hui, P. (2021). All one needs to know.

Iwaki, M., Kanazawa, M., Sunaga, M., Kinoshita, A., & Minakuchi, S. (2013). Live broadcast lectures on complete denture prosthodontics at Tokyo Medical and Dental University: comparison of two years. **Journal of Dental Education,** 77(3), 323-330.

about metaverse : A complete survey on technological singularity, virtual ecosystem, and research agenda. **arXiv preprint arXiv:2110.05352.**

Maiko Iwaki, Manabu Kanazawa, Masayo Sunaga. (2012). **Live Broadcast Lectures on Complete Denture Prosthodontics at Tokyo Medical and Dental University.** Comparison of Two Years.

Malithong, K. (2005). **Technology and Communication for Education.** Bangkok : Aroon Printing. [in Thai].

Monchai Thienthong. (2002). **Design and Development of Courseware for Computer Assisted Instruction.** Bangkok : Document work and the printing of the Division of Education Services King Mongkut's Institute of Technology North Bangkok.

Nattaporn Thongsri. (2012). Teachers' intention to use tablets under Educational Service Area Office Nakhon Si Thammarat Elementary School Zone 3 by applying the technology acceptance model. Master of Science, Bunditpatana Institute-Administration, Bangkok.

Ogston-Tuck, S., Baume, K., Clarke, C., & Heng, S. (2016). Understanding the patient experience through the power of film: A mixed method qualitative research study. **Nurse education today,** 46, 69-74.

Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1988). Servqual: A multiple-item scale for measuring consumer perc. **Journal of retailing,** 64(1), 12.

Parson, R. (1997). **An Investigation into Instruction available on the world wide.** Retrieved July 18, 2016, from.

Pichaya Sirisukhum, Aran Silawan1 and Benjamas Manyu. (2020). **Comparison of learning effectiveness during learning. model teaching The virtual situation and the traditional teaching and learning of clinical students.** King Taksin Hospital : A case study of assisted breech delivery.

Relan, A. & Gillani, B. (1997). **Web-based Instruction and the traditional classroom: similarities and difference.**

Roscoe. (1975). **Fundamental research statistics for the behavioral sciences.** New York : Holt, Rinehart and Winston.

Srettha Weerathammanon, Areerat Jaipradub. (2018). **The Development of a Integrated Learning Management Model in the Subject of Photography.** for training in childbirth surgery.

Suwit Maesincee. (2013). **The world changes,** Thailand adjusts. Bangkok: SE-EDUCATION PUBLIC COMPANY LIMITED.

Tuphon Thiengyoo. (2015). **Lesson Development on the Internet Network on Computer Components. using learning management Zippa model for Mathayomsuksa 2 students.** Phitsanulok: Master of Education thesis. Educational Technology and Communication Program Naresuan University.

Thanomphon (Tanphiphat) Laohajaratsaeng. (2002). **Designing e-Learning: Principles of design and implementation. Create a website for learning Teach.** Chiang Mai: Chiang Mai University.

Tisna Khaemanee. (2004). **Science of teaching, body of knowledge for effective learning process management.** Bangkok: Publisher of Chulalongkorn University.

Wipha Charoenphantarak. (2015). MOOC: Open Free Education in the Digital Age. **Journal of Education, Thammasat University,** 8(2), 1-15.

Yaowadee Taweewong. (2000). **Medical Photography.** Faculty of Medicine. Siriraj Hospital Mahidol University: Bangkok. expansive Printing art.

THE COMPONENTS OF INNOVATIVE LEADERSHIP OF PRIMARY SCHOOL TEACHERS IN THE NORTHEASTERN THAILAND

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Abstract

This research aims to study the components of innovative leadership characteristics of primary school teachers in the Northeastern Thailand. The study follows a two-step procedure: 1) Document analysis of innovative leadership components of primary school teachers, drawn from 10 sources, to synthesize these components. 2) Confirmation of the innovative leadership components through structured interviews conducted with 7 qualified individuals. The interviews were designed by the researcher and assessed for content validity and reliability of the tool. The structured interview form was then tested. The research findings indicate that the innovative leadership components of primary school teachers consist of four elements: 1. Innovative thinking, comprising 2 indicators: conceptualizing innovation and implementing innovative ideas. 2.Building a community of innovative learning, including three indicators: fostering creative interactions, participation in professional learning communities, and establishing professional learning community networks. 3. Creating innovative learning resources, comprising 3 indicators: developing guidance systems, organizing learning environments, and innovating teaching methods. 4. Innovating creatively, including 3 indicators: fostering innovative thinking, open-mindedness, and adaptability.

Keyword : Innovative Leadership

Introduction

The adoption of new innovations is crucial in modern organizations, including adjusting organizational structures, integrating businesses, and applying pressure to foster creativity and innovation. It's argued that an organization's capability to manage innovation is a key factor in its success (Anderson and Costa, 2010: 15). Innovation is something inherent and always relevant, with many companies innovating to sustain and grow. Organizations must strive to be efficient innovators. Failure to innovate may stem from a lack of management guidance, unclear innovative leadership, deficient innovation processes, failure to differentiate between science, engineering, and innovation, aversion to risk and failure, and insufficient promotion of innovation (Deschamps and Nelson, 2014: 56).

The Office of the Secretary-General of the Education Council has developed the National Education Plan for the years 2017-2036. This long-term plan serves as a strategic framework for education-related agencies, both within and outside the Ministry of Education, guiding the development of education and learning for citizens of all ages, from birth throughout their lives. The key objective of the plan is to focus on ensuring educational opportunities and equality, improving the quality and standards of education, and promoting education for employment and job creation within the context of the country's economy and society, driven by innovation and creativity, under the frameworks of the Wisdom-based society, Lifelong learning society, and Supportive learning environment. These aim to enable citizens to seek knowledge and continuously learn throughout their lives independently.

In addition to the long-standing crisis in Thai education, including disparities in the quality and standards of education between schools, issues with literacy and numeracy, and inequalities in educational opportunities and equality, challenges also arise from small-sized schools in rural areas, centralization of power in educational administration, and even the decentralization of power to schools without adequate responsibility for students. The education system tends to prioritize quantity over quality, producing a workforce that doesn't meet the demands of the labor market and national development in the 21st century. Graduates lack critical thinking, reasoning skills, and learning abilities necessary for the 21st century and work competencies, affecting workforce productivity within the economic and social systems Thailand is facing.

The aforementioned education problems are structural and systemic, rooted in traditional thinking patterns, lacking creativity and adaptability to the rapidly changing world driven by innovation, and are unable to envision a development-aligned education and learning system with Sustainable Development Goals (SDGs) under the concept of Inclusive growth. A system where the majority of citizens equally and universally participate to seek knowledge and learn continuously throughout their lives, which also enables social mobility, leading to collective prosperity in the nation's society and reducing income disparities among various social classes, aiming to help Thailand transition from a middle-income trap to a developed country in the next 15 years (Office of the Secretary-General of the Education Council, 2017: 1).

Currently, there is a shared recognition of the importance of human resources for the success of an organization. Amidst rapid changes, the single most advantageous factor to ensure sustained success for an organization in the long term is the development of human resources, particularly organizational development and leadership development. Leadership development is crucial for organizations as it is directly related to the development of the most critical resources within the organization, and it contributes to the overall continuous

improvement of the organization (Robbins and Judge, 2011: 8).

Leadership development is a systematic and process-oriented approach in designing management practices related to leadership qualities. It helps in accessing and enhancing leadership abilities in various aspects such as self-leadership, leading others, leading the organization, and improving work performance (Sapience Group, 2005: online). Therefore, leadership development for teachers involves increasing knowledge and expertise, not just about their duties, but also about organizational changes, leadership management, and enhancing work efficiency. This development process can be achieved through training, learning from work experience, or participating in job-shadowing activities (Alkin, 1992 : 82).

Given the background and significance of the issue, researchers who are currently involved in education management and development have recognized the importance and the state of the problem. Therefore, they are interested in studying the components of Innovative leadership of primary school teachers in the Northeastern Thailand.

Research Objective

To study the components and indicators of innovative leadership primary school teachers in the Northeastern Thailand.

Research Methods

This research utilized a document analysis research method to study the components of innovative leadership qualities of primary school teachers in the northeastern Thailand. The detailed steps of the research methodology consist of 2 stages are as follows:

1. Document Study to analyze and synthesize the components of innovative leadership qualities of primary school teachers in the Northeastern Thailand. This was based on theoretical concepts from scholars and related research works. The study examined 9 relevant sources according to the theoretical frameworks and research works of scholars and researchers:

1) Study of Innovative Leadership Qualities based on Foreign Scholars' Concepts of elementary school teachers, based on the perspectives of educators, educational organizations, and various sources, encompassing 4 references. These include George (2012), Patel (2012), Horth & Vehar (2012) and Miller, Klokgiers & Deppen (2012). Study of Innovative Leadership Qualities based on Local Scholars' Concepts: Titinan Nantasri (2020), Anusorn Nampradit and Chuchip Phutthaprasit (2019), Phaithoon Sinlarat (2012), Office of Educational Innovation Development, SEAMEO (2016), National Innovation Agency (2010).

2) Synthesis of Innovative Leadership Qualities by distributing frequencies from multiple sources and summarizing based on a frequency criterion of 6 or more, which is equal

to or greater than 60% of the total frequency. It includes: 1) Innovative Thinking 2) Creating Innovative Learning Communities 3) Establishing Innovative Learning Resources 4) Fostering Innovation Creation. The researcher presented these components derived from the synthesis in Step 1 to qualified individuals for confirmation in the subsequent Step 2.

2. Confirmation of the Components of Innovative Leadership of primary School Teachers in the Northeastern Thailand. This step involved 5 qualified individuals, selected based on the following criteria: 2 members from the education management and school administration group, 2 members from the educational management academic group, and 1 member from the teaching group. These individuals have experience working or being involved in contexts related to the development of innovations in the Northeastern Thailand. They are experts in educational management, have experience in school administration in the Northeastern Thailand, and have research publications related to leadership qualities or innovative leadership. Their role was to confirm the components of innovative leadership qualities derived from the synthesis in Step 1 of the research. In this stage, a research quality assessment tool was used for evaluation. This tool included a checklist and an open-ended questionnaire to provide additional insights and recommendations.

Research Results

1. Results of the Synthesis of the Components of Teachers' Innovative Leadership.

The results of synthesizing the components of teachers' innovative leadership qualities, derived from studying theoretical concepts of scholars and relevant research both domestically and internationally, were presented in a frequency table. The researcher extracted information from the content analysis of documents into the synthesis table, showing frequencies. Components with frequencies of 6 or more, equivalent to or exceeding 60%, were selected as components of teachers' innovative leadership qualities. It was found that teachers' innovative leadership qualities consist of 4 components: 1) Innovative Thinking 2) Creating Innovative Learning Communities 3) Establishing Innovative Learning Resources 4) Fostering Innovation Creation, as shown in Table 1.

Table 1: Frequency Analysis of Components of Innovative leadership of primary school teachers in the Northeastern Thailand

Components of Innovative Leadership / Resources for research	George (2012)	Patel (2012)	Horth & Vehar (2012)	Miller, Klokgiers & Deppen (2012)	Titinan Nantasri (2020)	Anusorn Nampradit and Chuchip Phutthaprasit (2019)	Phaithoon Sinlarat (2012)	Office of Educational Innovation Development, SEAMEO (2016)	National Innovation Agency (2010)	Frequency
Innovative Thinking	✓	✓			✓	✓	✓	✓	✓	7
Creating Innovative Learning Communities	✓	✓			✓	✓	✓		✓	6
Establishing Innovative Learning Resources	✓	✓	✓	✓		✓			✓	6
Fostering Innovation Creation	✓			✓	✓	✓		✓	✓	6
Risk Management				✓		✓		✓	✓	4
School Management		✓	✓				✓		✓	4
Developing Innovation Strategies				✓		✓		✓		3
Leadership Attributes	✓	✓		✓						3
Continuous Learning		✓	✓					✓		3
Access to Information Technology	✓	✓	✓							3

1) Innovative thinking, consisting of 2 indicators: defining innovative ideas and implementing innovative ideas.

2) Creating a community of innovative learning, consisting of 3 indicators: creating interactive relationships, participating in professional learning communities, and establishing professional learning community networks.

3) Establishing innovative learning sources, consisting of 3 indicators: creating guidance systems, organizing environments, and creating teaching innovations.

4) Creating innovative solutions, consisting of 3 indicators: innovative thinking, openness, and adaptability. Summary of the synthesis results: The components are shown in Table 2.

Table 2: Synthesis of Content Related to Components of Innovative Leadership of Primary School Teachers in the Northeastern Thailand

Components	Standard Operating Procedures	Indicators
1. Innovative Thinking	Skills in using knowledge to stimulate and encourage staff to collectively analyze strengths, areas for improvement, problems, and obstacles. Then, develop ideas and put them into practice to achieve the set objectives.	1. defining innovative ideas. 2. implementing innovative ideas.
2. Creating Innovative Learning Communities	Skills and abilities in creating innovative learning communities to foster knowledge exchange, active participation in work practices to achieve goals, and collaboratively solving problems through creative communication.	1. creating interactive relationships. 2. participating in professional learning communities. 3.establishing professional learning community networks.
3. Establishing Innovative Learning Resources	Skills and abilities in creating learning resources and utilizing innovations for teaching, providing consultations, developing conducive work environments, resulting in an efficient work culture, and achieving maximum effectiveness for students and colleagues.	1. creating guidance systems 2. organizing environments 3. creating teaching innovations.
4. Fostering Innovation Creation	Skills and abilities in creative thinking, coming up with new ideas and innovative approaches, flexible and diverse thinking, as well as integrative thinking methods to apply, finding new ways of working that are creative and aligned with the school's work characteristics and context.	1. thinking 2. openness 3. adaptability

2. Confirmation of the Components of Innovative Leadership of Primary School Teachers in the Northeastern Thailand

The results of confirming the components of innovative leadership of primary school teachers in the Northeastern Thailand, summarized from the evaluations of qualified individuals in terms of usefulness, appropriateness, and feasibility, revealed that there are 4 main components of innovative leadership qualities of teachers: 1) Innovative Thinking, consisting of 2 indicators: defining innovative thinking and putting innovative thinking into practice. 2) Creating Innovative Learning Communities, consisting of 3 indicators: fostering creative interactions, participation in professional learning communities, and building networks of professional learning communities. 3) Establishing Innovative Learning Resources, consisting of 3 indicators: developing guidance systems, creating conducive environments, and fostering teaching innovation. 4) Innovating Creatively, consisting of 3 indicators: innovative thinking, open-mindedness, and adaptability, as shown in Figure 1.

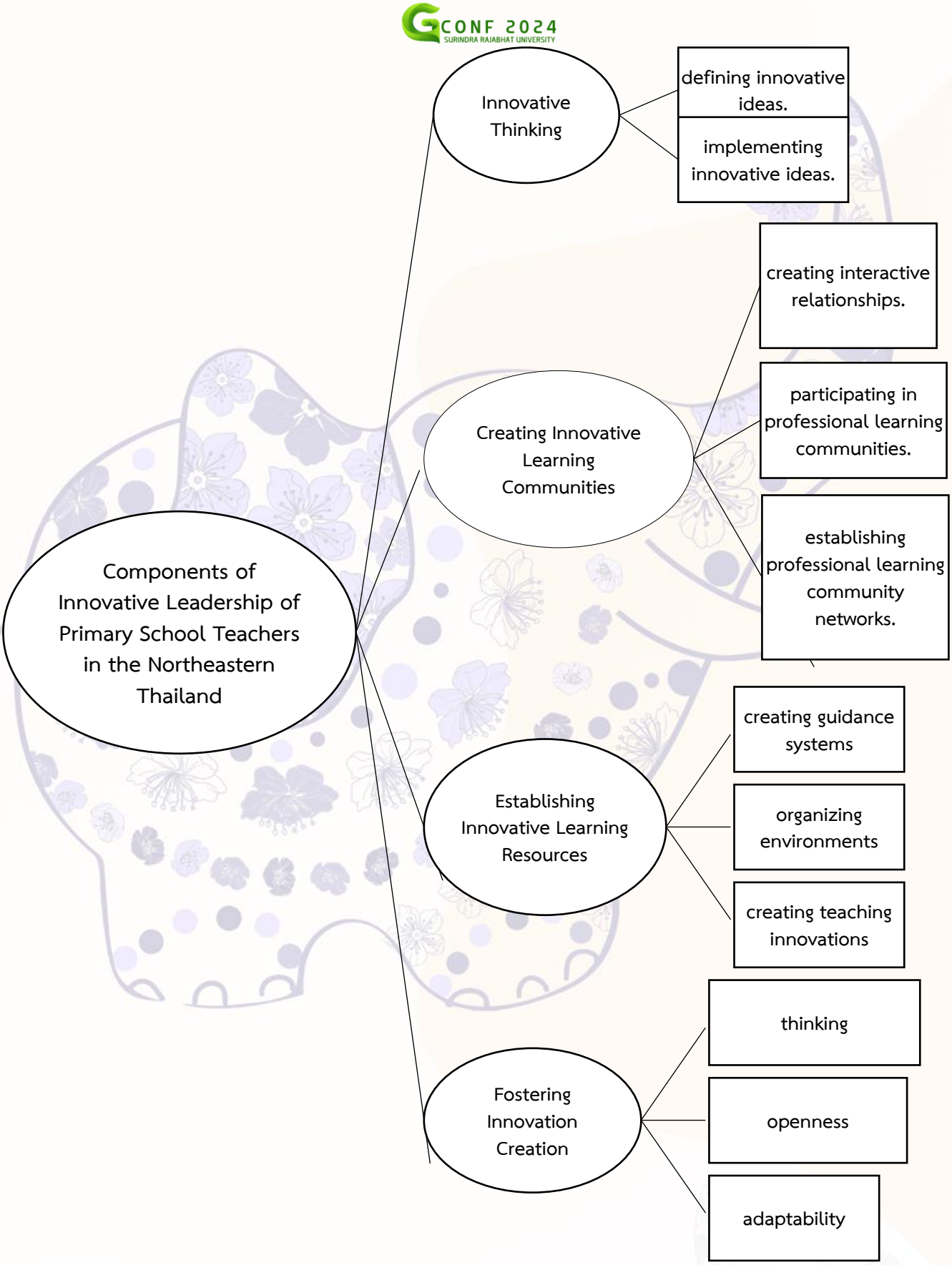

Figure 1 Components of Innovative Leadership of Primary School Teachers in the Northeastern Thailand

Research Discussion

The study of the components of innovative leadership of primary school teachers in the Northeastern Thailand was conducted through the synthesis of relevant documents and research, as well as interviews with qualified individuals. This aimed to obtain components and indicators of innovative leadership qualities that align with the context of schools in the Northeastern Thailand. The study revealed that there are 4 main components of innovative leadership qualities of teachers: Innovative Thinking, Creating Innovative Learning, Communities Establishing Innovative Learning Resources, Innovating Creatively. These main components consist of 11 indicators in total. The research findings resulted from a study to develop indicators of innovative leadership qualities. Researchers reviewed various theoretical concepts related to innovative leadership qualities and integrated them with interviews with qualified individuals to confirm the components and indicators of innovative leadership qualities obtained from document synthesis. The qualified individuals provided confirmation based on the synthesized information, and some indicators were further elaborated to enhance clarity and better align with the context of primary schools in the Northeastern Thailand.

Based on the research findings, the components and indicators of innovative leadership qualities align with the framework set by Puweena Kanthin (2017), who studied the innovative leadership qualities of public school administrators in Chiang Mai Educational Service Area Office 5. The research revealed that innovative leadership qualities consist of the following four main components: 1) Vision towards change and motivation of staff 2) Participation in teamwork 3) Ethical leadership 4) Creation of an innovative organizational atmosphere and fostering creativity. These main components are comprised of 11 indicators in total. Additionally, they align with Titinan Nantasiri's (2020) study on developing indicators of innovative leadership qualities of educational administrators under the supervision of the Educational Service Area Office in the Northeastern region. Nantasiri's study found that innovative leadership qualities of educational administrators consist of 5 main components, 20 sub-components, and 96 indicators, categorized as: 1) Innovative Vision with 19 indicators 2) Teamwork and Participatory Innovation with 26 indicators 3) Creative Thinking and Innovation Skills with 13 indicators 4) Innovative Role Performance with 18 indicators 5) Innovative Personality with 20 indicators.

The components of innovative leadership qualities of educational administrators are highly appropriate, with an overall high level of compliance, and the core components with the highest standard weights are those related to demonstrating innovative role performance. This is in line with Allan Lee's (2019) study on leaders of creative and innovative thinking: a meta-analysis review, which found that leaders of creative thinking and innovation must

continuously enhance their capabilities to guide the development of policies that support creativity and innovation. Additionally, it aligns with Raechel French and Wesley Imms' (2020) case study on transitioning from traditional classrooms to innovative learning environments: strategies for success. The study found that many schools are currently transitioning from traditional classrooms to flexible environments that support diverse teaching methods. These schools envision a future where cultural management of teaching and innovative spaces will lead to deeper student involvement in learning. However, several of these schools have faced challenges due to their organizational structures and vision not yet fully supporting innovation.

The case study of four schools in Australia and New Zealand also reveals that distributing power to schools and initiating changes can create a shared learning environment, organizational culture, structure, and collaborative strategies that facilitate successful transitions from traditional classrooms to innovative environments. This is in line with Arlene Pagaura's (2020) study on characteristics of innovative leadership of school administrators in the Philippines: impact on educational management. The study found that innovative leadership is particularly important in the 21st century, and the success of any organization depends on the type of leaders managing it. The characteristics of school administrators fall into four dimensions: vision, team building, relationship building, and risk management. This study can serve as a guideline for educational planners.

Research Suggestions

1. There should be a study on the model to development of innovative leadership of secondary school teachers.
2. There should be a study on the components of innovative leadership of teachers in other affiliations, such as the Special Education Office, schools under local government organizations, Vocational Education Committee offices, the Department of Lifelong Learning Promotion, and so on.

References

Ministry of Education. (2016). **Operational Meeting Guidelines for Project Implementation "San Phalang Pracharat" Basic Education and Leadership Development Project.** Bangkok : Kuruprint Ladprao.

Ministry of Education. (2020). **Strategic Plan of the Ministry of Education (2020-2022)**. Bangkok : Kuruprint Ladprao.

Titinan Nantasri. (2020). **Development of Indicators for Innovative Leadership of School Administrators Affiliated with the Office of Primary Education Area Region 5,**

Northeastern Thailand. Doctoral Dissertation, Educational Administration and Development, Sakon Nakhon Rajabhat University.

Teerawat Rungrajun. (2014). **Professional Competence in Education Management and Administration in the Education Reform Era for the Second Round and the External Evaluation Round 3.** (8th Edition). Bangkok: Kaew Fang Publishing.

Paveena Kanthin. (2017). **Innovative Leadership Characteristics of School Administrators in Pracharat Schools, Educational Service Area, Chiang Mai District 5.** Master's Thesis, Educational Administration, Faculty of Education, Chiang Mai University.

Phaitoon Sinlarat. (2012). **The CCPR Model: A New Perspective of Creative Leadership and Productivity**. Bangkok: Chulalongkorn University Printing House.

Office of the National Economic and Social Development Council. (2017). **National Economic and Social Development Plan No. 12 (2017 - 2021)**. Bangkok: Office of the Prime Minister and Royal Gazette.

Office of the Prime Minister. (2018). **National Strategy for the 20-Year (2018 - 2037)**. Bangkok: Office of the Prime Minister and Royal Gazette.

The Institute for the Promotion of Teaching Science and Technology (IPST). (2016). **Educational Leadership Development Program for Pracharat School Managers.** Bangkok: The Institute for the Promotion of Teaching Science and Technology.

National Innovation Office. (2010). **Innovation Management for Executives (3rd edition).** Bangkok: Ministry of Science and Technology.

Sukanya Chaemchoy. (2017). **School Management in the Digital Age.** Phitsanulok: Phitsanulok.com.

Anusorn Nampradit and Chuchipha Phutthaprasert. (2019). **Developing Innovative Leadership Styles of School Administrators in Sarasan Group.** Journal of Development Administration, Graduate School of Development Administration, **National Institute of Development Administration,** 59(1), 98-120.

Allan Lee. (2019). Leadership creativity and innovation: a meta-analytic. **European Journal of Work and Organizational Psychology**, 29(1) : 1-35.

George. (2012). Innovation for inclusive growth : Towards a theoretical framework and a research Agenda. **Journal of Management Studies**, 49 (4), 661-683.

Horth, D. M. & Vehar, J. (2012). **Becoming a leader who fosters innovation.** Baffles : Guildford & KingLynn.

Miller, Klokgiers & Deppen. (2012). **Diffusion of innovations.** New York: Simon & Schuster.

Pagaura, A. (2020). **Innovative leadership attributes of school administrators in the Philippines: Implications for educational management**. Philippines : Bukidnon State University.

Patel. (2012). Evolutionary crossroads in developmental biology**. Development**, 139 (11), 2637-2638.

Raechel French and Wesley Imms. (2020). Case studies on the transition from traditional classrooms to innovative learning environments: Emerging strategies for success. **Improving Schools: SAGE Journals**, *23*(2), 175–189.

ปัจจัยที่ส่งผลต่อความพึงพอใจต่อบริการทางการเงินระหว่างแอปพลิเคชันและแชทและมีความสุข (กรณีศึกษาเฉิงตู ประเทศจีน)

FACTORS AFFECTING SATISFACTION WITH FINANCIAL SERVICES BETWEEN WECHAT AND ALIPAY APPLICATIONS (CASE STUDY OF CHENGDU, CHINA)

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Abstract

As digital financial services grow, understanding user satisfaction with mobile payment applications like WeChat and Alipay becomes crucial. This study focuses on Chengdu, examining two main factors: external influences such as market trends and regulations, and internal factors including service quality and innovation. By employing quantitative research methods, including surveys and data analysis, we assess how these elements impact user satisfaction. The results indicate that both external and internal factors significantly shape user experiences. External factors align with market dynamics and regulatory frameworks, while internal factors emphasize the need for continuous improvement in service quality and user interface design. This study offers insights into optimizing digital financial services, providing actionable recommendations for service providers to enhance user satisfaction. The findings contribute to the broader understanding of user engagement in digital finance, helping to tailor services that meet evolving user demands.

Keywords: WeChat. Ailpay. digital payments. financial technology. Internet finance

Abstract

เมื่อบริการทางการเงินดิจิทัลเติบโตขึ้น การทำความเข้าใจความพึงพอใจของผู้ใช้กับแอปพลิเคชันการชำระเงินผ่านมือถือ เช่น WeChat และ Alipay จึงกลายเป็นสิ่งสำคัญ การศึกษานี้มุ่งเน้นไปที่เฉิงตู โดยพิจารณาปัจจัยหลักสองประการ ได้แก่ อิทธิพลภายนอก เช่น แนวโน้มและกฎระเบียบของตลาด และปัจจัยภายใน รวมถึงคุณภาพและนวัตกรรมการบริการ ด้วยการใช้วิธีการวิจัยเชิงปริมาณ รวมถึงแบบสำรวจและการวิเคราะห์ข้อมูล เราจะประเมินว่าองค์ประกอบเหล่านี้ส่งผลต่อความพึงพอใจของผู้ใช้อย่างไร ผลลัพธ์บ่งชี้ว่าปัจจัยทั้งภายนอกและภายในกำหนดประสบการณ์ของผู้ใช้อย่างมีนัยสำคัญ ปัจจัยภายนอกสอดคล้องกับการเปลี่ยนแปลงของตลาดและกรอบการกำกับดูแล ในขณะที่ปัจจัยภายในเน้นย้ำถึงความจำเป็นในการปรับปรุงคุณภาพการบริการและการออกแบบส่วนต่อประสานกับผู้ใช้อย่างต่อเนื่อง การศึกษานี้นำเสนอข้อมูลเชิงลึกเกี่ยวกับการเพิ่มประสิทธิภาพบริการทางการเงินดิจิทัล โดยให้คำแนะนำที่สามารถนำไปปฏิบัติได้สำหรับผู้ให้บริการเพื่อเพิ่มความพึงพอใจของผู้ใช้ การค้นพบนี้มีส่วนช่วยให้เกิดความเข้าใจที่กว้างขึ้นเกี่ยวกับการมีส่วนร่วมของผู้ใช้ในด้านการเงินดิจิทัล ซึ่งช่วยปรับแต่งบริการที่ตอบสนองความต้องการของผู้ใช้ที่เปลี่ยนแปลงไป เวอร์ชันนี้ยังคงรักษาสาระสำคัญและข้อค้นพบจากการศึกษาของคุณในขณะที่

Keywords:วีแชท อัยเพย์. การชำระเงินแบบดิจิทัล เทคโนโลยีทางการเงิน การเงินทางอินเทอร์เน็ต

Introduction

WeChat and Alipay, pillars of China's dynamic mobile payment landscape, have undergone a transformative evolution, reflecting broader trends in global financial technology (ChengTianQing, 2022) .This evolutionary journey has not only reshaped the global financial landscape but also ignited extensive discussions and reflections worldwide. This comprehensive study investigates the intricate factors influencing user satisfaction with WeChat and Alipay financial services, integrating approaches from prior research on financial ecosystems (Dong et al., 2020).

Internationally, WeChat and Alipay symbolize China's prowess in financial technology, guiding global digital payment trends and navigating complex regulatory landscapes (Hasan et al., 2020). They stand resilient against formidable competition from international tech giants entering the financial technology arena, showcasing China's influence in shaping the future of digital finance on a global scale.

Within China, WeChat and Alipay transcend their roles as dominant forces in the mobile payment market. They seamlessly evolve into comprehensive financial service providers, acting as catalysts for financial innovation, influencing evolving consumer behaviors, and making substantial contributions to financial inclusion, particularly in rural and remote areas. The profound impact of these platforms on China's economic development and social stability is immeasurable.

Zooming into a more localized context, in Chengdu, WeChat and Alipay seamlessly integrate into the fabric of daily life. Beyond their core financial services, these platforms offer a myriad of life-enhancing conveniences, contributing to Chengdu's vibrant technological ecosystem. This ecosystem acts as a magnet, attracting talent and resources, fostering a robust local financial environment that injects vitality into the city's burgeoning digital economy.

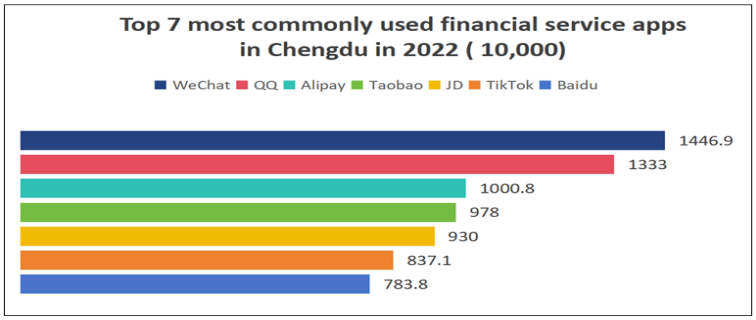

Figure 1: Top 7 most commonly used financial service apps in Chengdu in 2022 (10,000)
Sources: China Business Information Network,2022

In essence, this comprehensive exploration delves into the multifaceted impact of WeChat and Alipay on the financial landscape, particularly within the context of Chengdu, China. This review explores their impact on global financial discussions, domestic consumer behavior and their integration into local lifestyles, aiming to uncover valuable insights into the factors that influence user satisfaction. By synthesizing global trends, country dynamics and local integration, we aim to highlight the importance of these platforms within the broader narrative of the evolution of financial technology, highlighting their role in shaping the digital finance landscape and influencing user perceptions.

Research Objectives

1. To study the impact of external factors on WeChat and Alipay financial services satisfaction and user loyalty.
2. To study the impact of internal factors on WeChat and Alipay financial services satisfaction and user loyalty.

Research conceptual framework

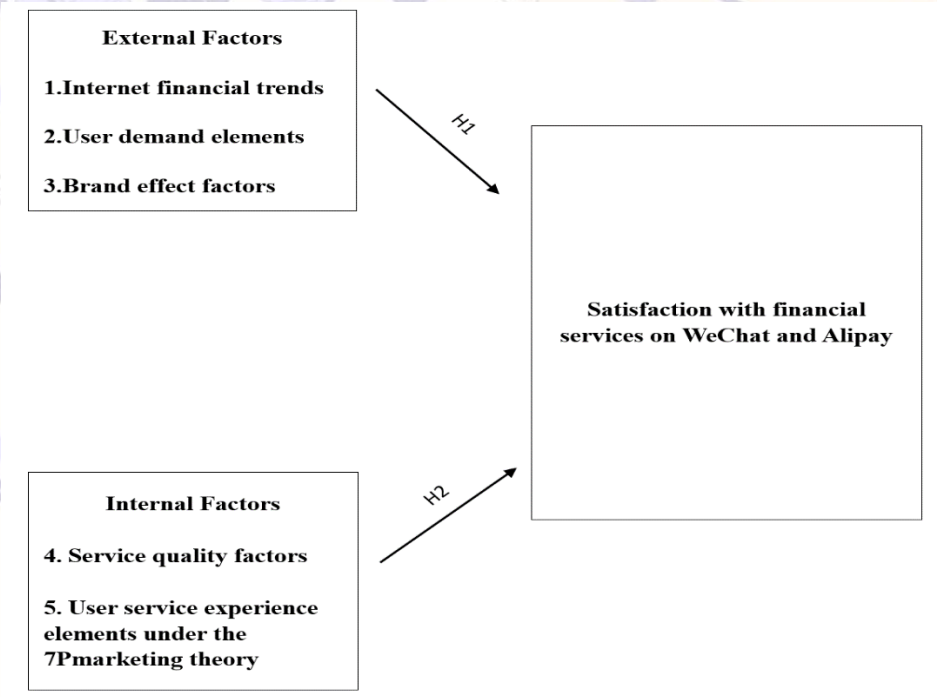

Figure 2 : Research conceptual framework
Source : author （2023）

Research Hypothesis

Based on the above conceptual framework, the hypotheses of this study are as follows:

H1: Changes in external factors are positively related to adjustments in financial service satisfaction on WeChat and Alipay.

H2: Changes and progress of internal factors are positively related to financial service satisfaction on WeChat and Alipay.

Research Methods

1. Introduction to research design

This study, employing a quantitative research design (Perng et al., 2007), spanned six months from July 2023 to December 2023. During this period, we distributed questionnaires to analyze user satisfaction with WeChat and Alipay financial services in Chengdu, focusing on user preferences, attitudes, and behavioral patterns.

2. Population and sampling procedures

Population: The target population of this study is users in Chengdu who use WeChat and Alipay for financial transactions.

Sampling method: A stratified random sampling method is used to ensure that the sample is representative of users of different ages, genders and professional backgrounds. The sample size was predetermined to be 459 users to ensure the validity and reliability of the statistical analysis.

3. Research tools and measuring instruments

Description: This study mainly uses self-designed questionnaires as research tools. The questionnaire contains multiple-choice questions to assess user satisfaction with financial services and related influencing factors.

Validation and Reliability: The questionnaire was designed and pre-tested and reviewed by experts to verify its validity and reliability.

4. Data collection procedures

Process: Distribute questionnaires through online platforms and social media, utilize WeChat and Alipay user groups for recruitment, and ensure anonymity and confidentiality during data collection.

Ethical Considerations: All participants in the study provided informed consent, and study procedures were approved by the institutional ethics committee.

5. Data analysis

Technology: SPSS software is used for data analysis including descriptive statistics, factor analysis, and regression analysis to identify the main factors affecting user satisfaction

(Wirtz, 2011).

Interpretation: The results of the analysis will be discussed in comparison with existing literature to explain the key determinants of satisfaction with financial services on WeChat and Alipay.

6. Limitations and Challenges

Limitations: The sample of this study is limited to the Chengdu area and may not fully represent the user experience in other areas of China.

Challenges: Ensuring high response rates and participant honesty was a challenge during the data collection process, and anonymous survey and confidentiality measures were taken to increase participation rates and data authenticity. in conclusion

By using a systematic quantitative research method, this study aims to gain an in-depth understanding of the factors influencing user satisfaction with WeChat and Alipay financial services in Chengdu. Through a carefully designed questionnaire and rigorous data analysis process, this study hopes to provide an empirical basis for financial service providers to optimize services and improve user satisfaction.

Research Results

This section aims to present the research results on user satisfaction of WeChat and Alipay financial services in Chengdu area. Through the analysis of questionnaire data, we obtained user satisfaction information in multiple dimensions such as service quality, user experience, and brand effect.

Overall Satisfaction

Table 1. Use frequency of WeChat and Alipay financial services

		frequency	percentage	valid percentage	cumulative percentage
valid	Never used	26	5.7	5.7	5.7
	Rarely use	82	17.9	17.9	23.5
	Every day	229	49.9	49.9	73.4
	Several times a month	57	12.4	12.4	85.8
	Several times a week	65	14.2	14.2	100.0
	Total	459	100.0	100.0	

Source : author （2023）

Table 2 WeChat and Alipay: User Needs Satisfaction Assessment

		frequency	percentage	valid percentage	cumulative percentage
valid	Basically not satisfied	48	10.5	10.5	10.5
	Basically satisfied	158	34.4	34.4	44.9
	Completely unsatisfied	38	8.3	8.3	53.2
	Completely satisfied	144	31.4	31.4	84.5
	Neutral	71	15.5	15.5	100.0
	Total	459	100.0	100.0	

Source: author （2023）

Through Table 1 and 2, we can see the comparison between WeChat and Alipay users in terms of overall satisfaction. The overall satisfaction level of Alipay users is slightly higher than that of WeChat users, which may be related to Alipay’s continued investment in financial service innovati

Service quality satisfaction

Table 3 Survey and statistics on service quality of WeChat and Alipay

		frequency	percentage	Effective percentage	accumulative perception
valid	difference	55	12.0	12.0	12.0
	very bad	2	.4	.4	12.4
	beyond compare	144	31.4	31.4	43.8
	good	128	27.9	27.9	71.7
	neutrality	130	28.3	28.3	100.0
	amount to	459	100.0	100.0	

Source: author （2023）

Table 3 shows in detail the satisfaction scores of WeChat and Alipay on various indicators of service quality. The data shows that the two major platforms have similar scores in terms of response speed, interface friendliness and error handling, but in terms of personalized service provision, Alipay has received higher evaluations.

Analysis of influencing factors Security and trust

Table 4 Security feature assessment and risk management statistics

		Password protection function is powerful	Risk reminder is timely and clear	The authentication process is secure and highly efficient	Transaction record protection is perfect, not easy to be tampered with	Two-factor authentication when paying for enhanced security	Password protection function is powerful
The number of cases	valid	459	459	459	459	459	459
	hiatus	0	0	0	0	0	0
average value		3.00	3.07	3.03	3.02	2.97	3.05
median		3.00	3.00	3.00	3.00	3.00	3.00
standard deviations		1.335	1.333	1.312	1.335	1.347	1.375

Source: author （2023）

Table 5 Password protection function evaluation

		frequency	percentage	Effective percentage	accumulative perception
Valid		86	18.7	18.7	18.7
		72	15.7	15.7	34.4
		135	29.4	29.4	63.8
		88	19.2	19.2	83.0
		78	17.0	17.0	100.0
Amount to		459	100.0	100.0	

Source: author （2023）

Tables 4 and 5 show users’ views on the security and trust of WeChat and Alipay. The results show that although both platforms receive high ratings in terms of security features and risk management, users have slightly higher trust in Alipay.

Table 6 WeChat and Alipay financial service use channel convenience survey

		frequency	percentage	Effective percentage	accumulative perception
valid	discommodiousness	30	6.5	6.5	6.5
	convenient	132	28.8	28.8	35.3
	Very inconvenient	36	7.8	7.8	43.1
	Very convenient	109	23.7	23.7	66.9
	Overall convenience	152	33.1	33.1	100.0
	amount to	459	100.0	100.0	

Source: author （2023）

Table 6 summarizes users’ evaluations of the convenience of using channels for WeChat and Alipay financial services. The data reflects that Alipay has higher user satisfaction in terms of coverage of payment scenarios and simplification of transaction processes.

Subgroup satisfaction analysis

The impact of age distribution on satisfaction

Table 7 Age statistics

		frequency	percentage	valid percentage	cumulative percentage
valid	18-25 years old	133	29.0	29.0	29.0
	Under 18 years old	48	10.5	10.5	39.4
	26-35 years old	98	21.4	21.4	60.8
	36-45 years old	54	11.8	11.8	72.5
	46-55 years old	92	20.0	20.0	92.6
	Over 56 years old	34	7.4	7.4	100.0
	Total	459	100.0	100.0	

Source : author （2023）

Table 7 shows the impact of users of different age groups on WeChat and Alipay financial service satisfaction through age distribution. Young user groups are more satisfied with the financial services of the two major platforms, which may be related to their higher digital acceptance and pursuit of new things.

Hypothesis Testing

This section delves into the implications of the findings related to hypotheses H1 and

H2, and how these findings correspond to the three objectives of the study. We analyzed the determinants of user satisfaction around the service quality, security and user experience of WeChat and Alipay financial services.

Table 8 External Factors' Impact on User Loyalty to Digital Financial Platforms

Variable	Coefficients	Std.Er.	t	p>|t|	95% Conf. interval Lower	95% Conf. Interval Upper
const	3.3872	0.188	18.027	0.000**	3.018	3.757
Brand Effect Encoded	-0.1616	0.029	-5.479	0.000***	-0.22	-0.104
Brand Choice Encoded	-0.0794	0.049	-1.613	0.107	-0.176	0.017
Market trends Encoded	0.0201	0.041	0.487	0.626	-0.061	0.101
Regulatory changes Encoded	0.0002	0.037	0.006	0.995	-0.073	0.074
Economic Factors Encoded	-0.0195	0.062	-0.312	0.755	-0.142	0.103

p<0.05 p<0.01

Source: author （2023）

Table 8 focuses on how external factors such as market trends, regulatory changes, and economic conditions influence user loyalty towards WeChat and Alipay, addressing Hypothesis 2. The table displays regression coefficients that measure the impact of each factor on loyalty, a key dimension of customer behavior within the financial technology ecosystem. A notable finding from this table is the significant negative coefficient for the Brand Effect Encoded variable, suggesting that even well-established brands must continuously earn their users' loyalty, which is not guaranteed by brand recognition alone. This insight is aligned with the conceptual framework, indicating that external factors have complex and nuanced effects on user loyalty to digital financial services.

Table 9 Internal Service Quality Factors Affecting Digital Finance Satisfaction

Variable	Coefficients	Std.Er.	t	p>|t|	95% Conf. interval Lower	95% Conf. Interval Upper
const	2.8434	0.176	16.174	0.000***	2.498	3.189
Service quality Encoded	-0.0636	0.111	-0.575	0.566	-0.281	0.154
User experience Encoded	-0.0184	0.038	-0.485	0.628	-0.093	0.056
Service Innovation Encoded	-0.0879	0.039	-2.281	0.023**	-0.164	-0.012
Customer support Encoded	0.0669	0.035	1.91	0.057*	-0.002	0.136
Service Customization Encoded	0.1049	0.058	1.796	0.073*	-0.01	0.220

p<0.05
p<0.0
Source: author （2023）

Table 9 delves into the influence of internal factors like service quality, user experience, and service innovation on the overall satisfaction with WeChat and Alipay's financial services. This directly corresponds with Hypothesis 2, positing that the evolution and enhancement of internal factors lead to higher satisfaction levels. Noteworthy in this table is the negative coefficient for Service Quality Encoded, prompting a reevaluation of the assumption that higher quality always correlates with increased satisfaction. This counterintuitive finding suggests that other factors, possibly user experience or innovation, might play a more significant role in shaping user satisfaction. This table solidifies the framework's assertion that internal service dynamics are crucial for user satisfaction within the realm of digital finance.

Research Discussion

This study has critically assessed the impacts of external and internal factors on user satisfaction with WeChat and Alipay services in Chengdu. Hypothesis 1 suggested that changes in external factors like market dynamics and regulatory frameworks would positively affect user satisfaction. The findings indicate that while external factors do influence satisfaction, their impact is relatively moderate, suggesting that external conditions alone are not strong predictors of user satisfaction.

Hypothesis 2 proposed that advancements in internal factors, specifically service quality and innovation, would directly correlate with increased user satisfaction. The data strongly supports this hypothesis, showing that internal improvements, particularly in service innovation and customer support, are crucial in enhancing user satisfaction. Users respond more dynamically to changes within the services themselves than to external environmental

factors.

These results highlight the pivotal role of service providers in continuously improving and innovating their offerings to meet user expectations and drive satisfaction. The study suggests a strategic focus on internal service enhancements to foster a more satisfied and loyal user base.

Research Suggestions

Based on the results of this study, it is recommended that future research be expanded to other cities or regions to explore the impact of regional differences on user satisfaction with financial services, and to use qualitative methods to gain an in-depth understanding of user needs and behaviors. At the same time, financial service providers should strengthen personalized services, optimize user experience, and strengthen security measures to enhance user satisfaction and trust.

References

Anjani, H. D., Irham, I., & Waluyati, L. R. (2018). Relationship of 7P marketing mix and consumers' loyalty in traditional markets. **Agro Ekonomi**, 29(2), 261-273.

Chen, L., Lin, Z., Liu, L., Shao, W., Zhang, R., ... & Chen, J. (2021). Lenvatinib Targets FGF Receptor 4 to Enhance Antitumor Immune Response of Anti–Programmed Cell Death-1 in HCC. **Hepatology,** 74(5), 2544-2560.

ChengTianQing.(2022). Supervision research on mobile payment risks under Internet finance-based on WeChat, Payment case analysis. **Inner Mongolia University of Finance and Economics.**

Chen, Y., Xu, S., Lyulyov, O., & Pimonenko, T. (2023). China’s digital economy development: incentives and challenges. **Technological and Economic Development of Economy,** 29(2), 518-538.

Domazet, I. S., & Neogradi, S. (2019). Digital marketing and service industry: Digital marketing in the banking industry. In Managing Diversity, **Innovation, and Infrastructure in Digital Business** (pp. 20-40). IGI Global.

Dong, J., Yin, L., Liu, X., Hu, M., Li, X., & Liu, L. (2020). Impact of internet finance on the performance of commercial banks in China. **International Review of Financial Analysis,** 72, 101579.

Dong, J., Yin, L., Liu, X., Hu, M., Li, X., & Liu, L. (2020). Impact of internet finance on the performance of commercial banks in China. **International Review of Financial Analysis,** 72, 101579.

Hasan, M. M., Popp, J., & Oláh, J. (2020). Current landscape and influence of big data on finance. **Journal of Big Data,** 7(1), 1-17.

Hasan, M. M., Yajuan, L., & Khan, S. (2022). Promoting China’s inclusive finance through digital financial services. **Global Business Review,** 23(4), 984-1006.

Li, B., Wang, F., Wang, K., Qiao, J., Xu, D., Yang, Y., ... & Liu, J. (2022). Metal sulfides based composites as promising efficient microwave absorption materials: a review. **Journal of Materials Science & Technology,** 104, 244-268.

Perng, Y. H., Hsia, Y. P., & Lu, H. J. (2007). A service quality improvement dynamic decision support system for refurbishment contractors. **Total Quality Management & Business Excellence,** 18(7), 731-749.

Rasif, H., & Wang, J. (2017). Negative correlation between core muscle function and body composition in young people aged 18-30 years. **International Journal of Sport, Exercise and Health Research,** 1(1), 49-53.

Tallón-Ballesteros, A. J. (Ed.). (2023). **Modern Management Based on Big Data IV: Proceedings of MMBD 2023 (Vol. 370).** IOS Press.

Wirtz, B. W. (2011). Business model management. **Design–Instrumente–Erfolgsfaktoren von Geschäftsmodellen,** 2(1).

Wang, L., Yu, X., Wang, C., Pan, S., Liang, B., Zhang, Y., ... & Li, B. (2017). The anti-ErbB2 antibody H2-18 and the pan-PI3K inhibitor GDC-0941 effectively inhibit trastuzumab-resistant ErbB2-overexpressing breast cancer. **Oncotarget,** 8(32), 52877.

Wei, S. (2023). Analysis of the Development Strategies of Commercial Banks Under the Background of The Internet Banking: Take Chinese Rural Banks as An Example. **Frontiers in Business, Economics and Management,** 10(3), 37-39.

Ye, W., Chen, W., & Fortunati, L. (2023). Mobile payment in China: A study from a sociological perspective. **Journal of Communication Inquiry,** 47(3), 222-248.

Zhenming, S. H. I., Hongchao, Z. H. E. N. G., Ming, P. E. N. G., & Limin, Z. H. A. N. G. (2016). Breaching mechanism analysis of landslide dams considering different spillway schemes - a case study of tangjia-shan landslide dam. **Journal of Engineering Geology,** 24(5), 741-751.

Zhou, X., Navavongsathian, A., Thornjareankul, N., Rungruang, P., Assawasitisilp, D., Chen, W. K., & Jayavelu, P. (2022). Analysis of the Profitability of the Shipbuilding Industry through Market Economy Theory. **APHEIT International Journal,** 11(2), 87-103.

อิทธิพลนวัตกรรมโมเดลธุรกิจที่มีอิทธิพลต่อผลการดำเนินงาน: กรณีศึกษา บริษัทแพลตฟอร์มข้อมูลขนาดใหญ่ ในเมืองหางโจว มณฑลเจ้อเจียง ประเทศจีน

THE INFLUENCE OF BUSINESS MODEL INNOVATION ON FIRM PERFORMANCE: A STUDY OF BIG DATA PLATFORM ENTERPRISES IN HANGZHOU ZHEJIANG PROVINCE, CHINA

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Abstract

In the rapidly evolving digital economy of Hangzhou, Zhejiang Province, this study explores the intricate relationships between business model innovation (BMI) and firm performance within big data platform companies. Utilizing a comprehensive dataset from a survey of 413 decision-makers across 5,751 enterprises, our analyses leverage statistical tools including reliability and validity testing, and notably, regression analysis, to clarify the impacts of value proposition, value creation, and value capture innovations on firm performance. Our findings reveal significant positive correlations between these BMI dimensions and enhanced firm performance, highlighting the paramount importance of continuous innovation for maintaining competitive advantages and driving economic outcomes in technology-driven markets. The results underscore the critical role of value capture innovation as the most impactful among the studied dimensions.

Keywords: Firm performance,Big data platform,Business model innovation

Introduction

In today's digital era, big data emerges as a cornerstone for enterprises by revolutionizing business operations and societal interactions through extensive data ecosystems(Guo, L, 2009 : 71). Amidst these developments, BMI emerges as a crucial strategy for the sustainable growth of big data platform enterprises, reflecting the essential role of effective data management and value creation in fostering enterprise performance and economic expansion (Zhu Fangfang, 2018:109).

Mentera, Gocke, and Zeeb proposed in 2022 that BMI has a significant impact on organizations, in which progressive BMI enhances the fit between individuals and organizations, while radical BMI reduces it. The importance of exploring changes in the internal organizational dynamics of BMI beyond financial performance measures is highlighted. Guo(2022) put forward the view,

emphasizing that business model innovation is the key to the success and survival of digital start-ups, especially by decomposing the business model innovation architecture into three elements: value proposition, value creation and value capture, to explore how these innovations promote digital start-up performance. Based on a survey of digital start-ups in China, we find that value proposition innovation is positively related to digital start-up performance and that this relationship is mediated through value creation and value capture innovation. By examining the impact mechanism of business model innovation on corporate performance, this study provides new insights into the field of business model research and strengthens the understanding of the demand-side perspective of business model innovation.

The selection of Hangzhou for this research is strategic, considering its competitive edge in big data, which provides a comprehensive context for exploring how big data technology influences BMI and enterprise performance.This research aims not only to offer insights for big data enterprises in Zhejiang and beyond but also to serve as a strategic guide for similar cities worldwide, thereby contributing to the broader discourse on digital transformation and performance optimization in the big data sector(Miroshnychenko,et al.2022:670).

Research Objectives

To determine the BMI influence of on firm performance in big data platform companies, in hangzhou, zhejiang province,china.

Research Conceptual Framework

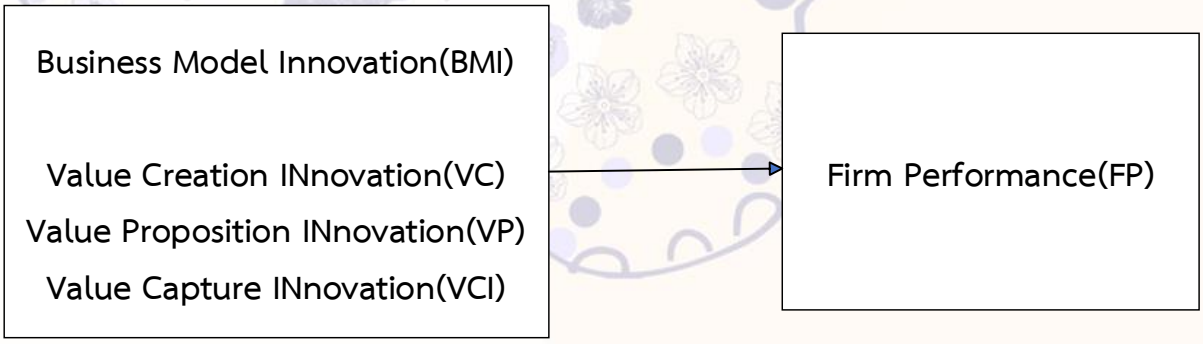

Figure 1: Research Conceptual Framework

Research Hypotheses

The BMI in big data platform enterprises positively influences their firm performance.

Research Methods

In this research, the focus was on a targeted population of decision-makers, managers, and key personnel from a delineated group of 5,751 enterprises classified as big data platform

companies in Hangzhou, Zhejiang Province, China. These companies are identified based on their engagement with substantial data processing capabilities, integration of advanced analytics into their operational strategies, and provision of data-centric services or products that significantly influence market trends and business dynamics. This precise demographic was chosen to examine the effects of value innovation practices on firm performance.To determine an appropriate sample size, the Yamane (1967) formula was utilized, which calculated a sample of approximately 374 respondents based on an expected error margin of 5%. However, to enhance the robustness of our analysis, the sample was slightly increased to approximately 400 respondents.

To ensure that the sample is representative, this study will adopt a simple random sampling method.This method intends to randomly select respondents from the identified 5751 big data platform companies located in Hangzhou, Zhejiang Province, China. The purpose of simple random sampling was to ensure that each business had an equal chance of being selected to participate in the study, so that the sample fairly reflected the entire target group.

Research Results

1. Reliability Testing

Reliability analysis aims at detecting the agreement between two or more identical items, and the results show that higher agreement means that the content analysis is more credible.In general, good questionnaire reliability coefficients are usually above 0.8.If the coefficient is between 0.7 and 0.8, the reliability of the questionnaire is acceptable;if the coefficient is less than 0.6, the questionnaire should be considered to be discarded.

Table 1 Reliability Statistics

variable	Number	Cronbach α
Value Creation innovation (VC)	3	0.813
Value Proposition innovation(VP)	3	0.808
Value Capture innovation(VCI)	3	0.805
Firm Performance(FP)	6	0.915
Overall questionnaire	15	0.896

2. Validity Analysis

This analysis provides an in-depth look at a company's strategy and effectiveness in innovation and value creation by using the Kaiser-Meyer-Olkin (KMO) test and Bartlett's test of sphericity, as well as principal component analysis (PCA).

Table 2 KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.905
Bartlett's Test of Sphericity	Approx. Chi-Square	3098.376
	df	105
	Sig.	0.000

The sampling suitability of the KMO measure is 0.905, indicating that the sample data are well suited for factor analysis. The significance level of Bartlett's sphericity test is 0.000, which rejects the null hypothesis of no correlation between variables and confirms the suitability of factor analysis.

Table 3 Variable factor analysis results

Code	Element			
	1	2	3	4
VC1			0.816	
VC2			0.835	
VC3			0.781	
VP1		0.783		
VP2		0.812		
VP3		0.814		
VCI1				0.769
VCI2				0.842
VCI3				0.820
FP1	0.827			
FP2	0.782			
FP3	0.779			
FP4	0.812			
FP5	0.793			
FP6	0.806			

Through principal component analysis, we identified four factors that focus on a company's financial performance (FP), value creation (VC), value proposition (VP), andvalue capture innovation (VCI) . The loading values of these factors show the correlation of each strategy or initiative with these factors, thus revealing the underlying structure and themes of the company's innovation activities.

3. Regression analysis

3.1 Correlation analysis

In this analysis, we explore the correlation between value creation innovation, value proposition innovation, value capture innovation and corporate performance. The analysis conducted using SPSS 27.0 shows that all correlation coefficients are significant at the 0.01 level, revealing that there is a significant positive relationship between these innovation dimensions and between them and corporate performance.

Table 4 Correlation analysis

	Value Creation innovation(VC)	Value Proposition innovation(VP)	Value capture innovation(VCI)	Firm performance(FP)
Value Creation innovation(VC)	1			
Value Proposition innovation (VP)	.419**	1		
Value capture innovation(VCI)	.322**	.353**	1	
Firm performance (FP)	.413**	.428**	.420**	1

**. Correlation is significant at the 0.01 level (2-tailed).

3.2 Regression analysis

Through regression analysis using SPSS 27.0, we deeply explored the impact of three independent variables: value creation innovation, value proposition innovation and value capture innovation on corporate performance. The analysis results reveal that these three types of innovation activities have a significant positive impact on corporate performance. The unstandardized coefficients are value creation innovation 0.232, value proposition innovation 0.247 and value capture innovation 0.273 respectively, showing that each type of innovation improves corporate performance. direct contribution. The standardized coefficients (Beta values) further reveal their relative importance in the model, which are 0.228, 0.241 and 0.262 respectively.

The statistical indicators of the model show its good explanatory power and significance: R value is 0.554, R square value is 0.307, and adjusted R square value is 0.302, which means that the model can explain 30.7% of the total variation in corporate performance. The F value is 60.406, and the significance level is $p<0.000$, confirming the statistical significance of the model. The test results of tolerance and variance inflation factor (VIF) show that the model

does not have serious multicollinearity problems, ensuring the stability and reliability of the regression analysis results.

When ranking impact, value capture innovation ranks first with its highest Beta value (0.262), indicating that it has the most significant positive impact on corporate performance. This is followed by value proposition innovation (Beta = 0.241) and value creation innovation (Beta = 0.228), ranking second and third respectively. This result not only confirms that all types of innovation activities are critical to improving corporate performance, but also emphasizes that companies should pay special attention to the role of value-capturing innovation in the innovation management process.

Table 5 Regression analysis

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
	(Constant)	0.762	0.192		3.974	0.000		
Firm performance	VC	0.232	0.047	0.228	4.916	0.000	0.790	1.266
(FP)	VP	0.247	0.048	0.241	5.144	0.000	0.772	1.296
	VCI	0.273	0.047	0.262	5.820	0.000	0.839	1.192
R				0.554				
R Square				0.307				
Adjusted R Square				0.302				
F		60.406			sig		0.000	

Research Discussion

This study explores how value proposition, value creation, and value capture innovations impact the performance of big data platform enterprises in Hangzhou, highlighting the essential role of continuous innovation in maintaining competitive advantage in fast-paced markets. Through quantitative analysis, it is demonstrated that these types of business model innovation significantly boost firm performance, affirming theories that advocate for relentless innovation in competitive sectors.

Comparative analysis with similar studies in other tech-centric regions suggests that while the positive impacts of such innovations are consistent, external factors like market dynamics, regulatory environments, and technological advancements could modify these effects. For example, regions with supportive regulatory policies may experience more pronounced benefits from similar innovations.

Despite robust findings, this research is limited by its use of convenience sampling, which might not fully represent the diversity of big data platform enterprises beyond Hangzhou. Future studies are encouraged to apply a more diverse sampling strategy and to explore how external influences interact with business model innovations in varying geographical and economic contexts. This approach will enhance the understanding of the scalability and adaptability of business model innovations in the global digital economy.

Research Suggestions

Focusing on big data platform companies, this study reveals significant positive effects of value proposition innovation, value creation innovation and value capture innovation on firm performance. Enterprises should continuously introduce significant product or service innovations to meet the unmet customer needs in the market, so as to improve market competitiveness and customer loyalty. Regularly updating technology and equipment, optimizing operational processes, and actively building partnerships are essential to enhance a company's ability to provide intelligent solutions. At the same time, developing new revenue models and cost structure innovations play an important role in effectively capturing market value and enhancing corporate profitability and market share.

Future research can explore the causal relationship between these elements of value innovation and enterprise performance through longitudinal research design, expand the scope of research to different industries or fields, and further study the interaction between these elements of innovation and their comprehensive impact on enterprise performance. This approach will determine if specific types of big data companies, depending on their maturity or market conditions, benefit more from particular innovations.

References

Bigliardi, B., & Filippelli, S. (2021). **Investigating circular business model innovation through keywords analysis. Sustainability,** 13(9), 5036.

Chen, X. H., Feng, Z. Y., & Yu, L. M.. (2016). **Enterprise business model transformation under internet thinking. Research on Business Economics,** 10, 87-88.

Cheng, Wei. (2019). A review of business model innovation research. **Value Engineering,** 38(23), 287-289.

Deng, T. T.. (2020). **Multi-case study on business model innovation of Internet platform enterprises.** CNKI.

Geissdoerfer, M., Vladimirova, D., & Evans, S. (2018). Sustainable business model innovation: A review. **Journal of cleaner production,** 198, 401-416.

Guo, H., Guo, A., & Ma, H. (2022). Inside the black box: How business model innovation

contributes to digital start-up performance. **Journal of Innovation & Knowledge,** 7(2), 100188.

Guo, L.. (2009). Research on the evolution mechanism of business model innovation based on value chain. **Value Engineering,** 28(10), 71-73.

Latifi, M. A., Nikou, S., & Bouwman, H. (2021). Business model innovation and firm performance: Exploring causal mechanisms in SMEs. **Technovation,** 107, 102274.

Massa, L., & Tucci, C. L. (2013). Business model innovation. **The Oxford handbook of innovation management,** 20(18), 420-441.

Menter, M., Göcke, L., & Zeeb, C. (2022). The organizational impact of business model innovation: assessing the person-organization fit. **Journal of Management Studies.**

Miroshnychenko, I., Strobl, A., Matzler, K., & De Massis, A. (2021). Absorptive capability, strategic flexibility, and business model innovation: Empirical evidence from Italian SMEs. **Journal of Business Research,** 130, 670-682.

Shakeel, J., Mardani, A., Chofreh, A. G., Goni, F. A., & Klemeš, J. J. (2020). Anatomy of sustainable business model innovation. **Journal of cleaner production,** 261, 121201.

Vaska, S., Massaro, M., Bagarotto, E. M., & Dal Mas, F. (2021). The digital transformation of business model innovation: A structured literature review. **Frontiers in Psychology,** 11, 539363.

Yu, Laiwen, & Feng, Zhiyong. (2014). Perspectives of business model innovation cloud computing enterprises. 21-52.

Zhu, Fangfang. (2018). Research frontiers and prospects of platform business models. **China Circulation Economy**. (05), 108-117.

ผลกระทบของตลาดดิจิทัลที่มีต่อความตั้งใจซื้อออนไลน์ธุรกิจอาหารขนาดเล็กของผู้บริโภคในเมืองซีอัน ประเทศจีน

THE IMPACT OF DIGITAL MARKETING ON ONLINE PURCHASE INTENTIONS IN SMALL FOOD BUSINESSES IN CIXAN, CHINA

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Abstract

In an era where digital technologies are profoundly transforming consumer behaviors, the role of digital marketing in shaping purchase decisions is increasingly critical. This study explores the impact of digital marketing on online purchase intentions among consumers of small food businesses in Xian City, China. Utilizing a questionnaire, data were gathered from 406 consumers who had interacted with small food businesses via online channels such as Douyin, Toutiao, Sina Weibo, and WeChat. Descriptive statistics and multiple regression analysis were employed to analyze the data. The results indicate that product awareness (β = 0.261), feedback and customer compliance (β = 0.178), convenience (β = 0.221), and consumer brand relationship (β = 0.238) significantly enhance online purchase intentions at a 0.05 level of significance. This research enriches the academic discourse on how digital marketing can influence consumer behavior, specifically in the context of small food businesses within the rapidly evolving urban markets of China.

Keywords: digital marketing, online engagement, small food business, digital consumer behavior, online purchase

Introduction

In the evolving landscape of global commerce, digital technologies have become pivotal, reshaping business operations and consumer interactions across various industries. This transformation is particularly pronounced in the realm of digital marketing, where traditional approaches are being reconsidered in light of emerging digital capabilities (Evans, 2017 : 205-223; Verhoef et al., 2015 : 174-181). Xian City in China, with its vibrant small food business sector, provides an ideal setting for examining these shifts, as it epitomizes the dynamic interplay between technological advancement and market practices. Recent research highlights the transformative potential of digital marketing, noting its significant impact on disrupting traditional marketing models and altering consumer purchase patterns. For small

food businesses, which typically operate with limited marketing budgets compared to larger chains, digital marketing offers a cost-effective strategy to enhance visibility and engagement. This is particularly relevant in a culturally diverse and economically varied market like China, where consumer behaviors and preferences are rapidly evolving (Dodson, 2016 : 68 ; Erlangga, 2021 : 3672-3678; Purwanto et al., 2022 : 402-411; Suryani et al., 2020).

Despite the extensive literature on digital marketing and its impacts on consumer behavior, there is a notable gap regarding its application within the small food business sector in lesser-known Chinese cities such as Xixan. Previous studies predominantly focus on larger enterprises or global brands, often overlooking how smaller entities in less prominent regions leverage digital marketing. Additionally, the unique cultural, economic, and social dynamics of Xixan City might affect the efficacy of digital marketing strategies differently compared to more globally recognized urban centers (Baierle et al., 2022 : 11779; Luo, 2022 : 344-361).

This research seeks to fill these gaps by exploring how various dimensions of digital marketing influence online purchase intentions among consumers of small food businesses in Xixan. It examines specific insights into the effectiveness of strategies like product awareness, feedback responsiveness, and consumer privacy concerns, and how these influence consumer behavior in a localized setting. The study also considers the challenges small businesses face in adopting digital marketing strategies that are effective in cosmopolitan areas but may require adaptation to suit local consumer behaviors and technology adoption rates.

Given the strategic importance of digital marketing in today's digital and economic landscape, this research aims to contribute valuable insights to the existing literature. By elucidating how different dimensions of digital marketing impact consumer behavior specifically in the context of Xian's city rapidly evolving market, the findings are expected to assist practitioners in optimizing their digital marketing strategies and help policymakers in supporting the small business sector in the digital age.

Research Objective

To evaluate the impact of digital marketing on online purchase intentions among consumers of small food businesses in Xian City, China.

Research Conceptual Framework

As internet penetration deepens, small food businesses in Xian City are increasingly utilizing digital marketing to expand their reach and connect with a broader audience. This study examines several key aspects of digital marketing — product awareness, feedback and customer compliance, convenience, consumer brand relationship, and information security and personal privacy — which play crucial roles in shaping online purchase intentions, a vital

outcome for businesses aiming to capitalize on e-commerce platforms (Novitasari et al., 2022 : 7-16).

1. Digital Marketing Overview

Digital marketing has transformed promotional strategies through the adoption of digital technologies. Since the late 20th century, this evolution has reshaped the marketing landscape, extensively favoring digital platforms. As consumer preferences shift towards digital interactions, the efficiency and prevalence of digital marketing campaigns have significantly increased, impacting consumer behavior across various sectors (Desai & Vidyapeeth, 2019 : 196-200). Alghizzawi (2019 : 24-31) highlights how digital marketing enhances competitiveness in the tourism sector by influencing electronic word-of-mouth, social media engagement, and mobile app utilization.

2. Elements of Digital Marketing Influencing Purchase Intentions

This study identifies five pivotal factors of digital marketing that influence online purchase intentions, especially relevant for small food businesses:

2.1 Product Awareness: Vital for introducing new products and revitalizing existing brands, effective digital marketing campaigns through SEO, social media, and content marketing enhance product visibility and consumer recognition, essential for driving purchase intentions (Kopp, 2022; Shuteyev, 2023).

2.2 Feedback and Customer Compliance: Digital platforms facilitate direct customer feedback, providing businesses with critical insights into consumer satisfaction and product improvement. Compliance with marketing standards ensures transparency and trust, crucial for maintaining consumer loyalty (Joshi, 2018 : 1-8; Shaik & Poojasree, 2021 : 18-23).

2.3 Convenience: Defined by the ease with which consumers can interact with and purchase from digital platforms at any time and from any location, convenience influences the overall effectiveness of digital marketing strategies in driving sales (Alkharabsheh & Zhen, 2021 : 1823-1834; Srivastava & Kaul, 2014 : 1028-1037).

2.4 Consumer Brand Relationship: The emotional connections forged between brands and consumers through digital marketing are integral to fostering loyalty and repeat purchases. These relationships are often cultivated through personalized interactions and community engagement within digital spaces (Bonchek & Bapat, 2018 : 30; Ho & Wang, 2015 : 1-16).

2.5 Information Security and Personal Privacy: Ensuring the security of consumer data and respecting privacy are paramount in maintaining trust and encouraging consumer participation in online markets. Effective management of these concerns mitigates risk perceptions and enhances consumer willingness to engage with digital platforms (Armesh et al., 2010 : 223; Quach et al., 2022 : 1299-1323; Gurung & Raja, 2016 : 348-371).

This literature review establishes a robust foundation for exploring how digital marketing influences online purchase intentions. By analyzing these five variables, this research aims to provide a comprehensive understanding of their collective impact on consumer behavior in the context of small food businesses in Xian City, China. The research conceptual framework is depicted in Figure 1, summarizing the relationships examined in this study.

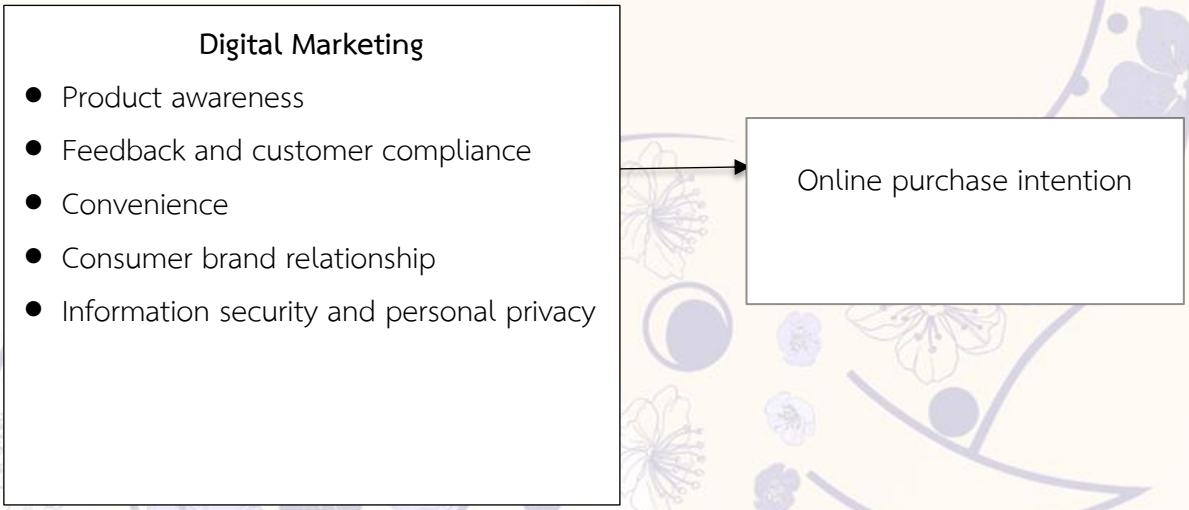

Figure 1: Research Conceptual Framework

Research Hypothesis

H1: Digital marketing dimensions—Product awareness, Feedback and customer compliance, Convenience, Consumer brand relationship, and Information security and personal privacy—positively affect the online purchase intentions of consumers in small food businesses in Xian City, Shaanxi Province, China.

Research Methods

1. Research Type

This quantitative study utilized an online questionnaire to collect data from consumers who have made purchases from small food businesses in Xi'an City via platforms like Douyin, Toutiao, Sina Weibo, and WeChat.

2. Duration of the Research

The research was conducted over a period of five months, from November 2023 to March 2024. This timeframe includes the design of the study, data collection, data analysis, and preparation of the manuscript.

3. Population and Sample

The target population consists of consumers using the aforementioned online channels, with an unknown total size. Using Cochran’s formula for indeterminate populations,

the study aimed for a 95% confidence level with a 5% margin of error, establishing a sample size of 385. To enhance reliability, 406 questionnaires were distributed.

4. Sample Selection Method

Judgment sampling, a nonprobability technique, was employed to select participants with direct experience in online purchases from the specified businesses. This method facilitated accessible and efficient data collection.

5. Data Collection

Primary data were gathered using the refined online questionnaire, which was developed after reviewing relevant domestic and international literature and piloted with 30 participants to ensure reliability (Cronbach’s alpha = 0.857). Secondary data from academic sources further framed the research.

6. Data Analysis

Descriptive statistics, including mean and standard deviation, summarized the data. Multiple linear regression analysis examined the relationships among variables. Responses were rated on a 5-point Likert scale, ranging from 'Strongly Agree' (4.21-5.00) to 'Strongly Disagree' (1.00-1.80).

Research Results

The survey was conducted among 406 consumers who have made online purchases from small food businesses in Xian City. Data were collected using an online questionnaire. The research findings are as follows:

General information of the sample group

The study analyzed 406 consumers from small food businesses in Xi'an City. The demographic breakdown revealed that 53.4% were female and the majority aged between 25-30 years (41.1%). Most respondents frequented full-service restaurants (45.6%). Usage of digital marketing by these businesses was relatively low, with only 30.8% employing it. Visitation patterns showed that 55.4% visited these businesses occasionally, and spending patterns indicated that 44.8% spent less than ¥500 monthly. This demographic profile provides insights into consumer behavior and business interaction within the local food industry.

Table 1 Mean and Standard Deviation of Digital Marketing Factors

Digital marketing	Mean	Standard Deviation	Definition of Level
Product awareness	4.04	0.56	High
Feedback and customer compliance	4.19	0.54	High
Convenience	4.24	0.53	Highest
Consumer brand relationship	4.18	0.58	High
Information security and personal privacy	3.99	0.55	High
Total	**4.13**	**0.55**	**High**

According to Table 1, the result explained that: The average value of digital marketing is 4.13, followed by the average value of convenience is 4.24, the average value of feedback and customer compliance is 4.19, the average value of consumer brand relationship is 4.18, the average value of product awareness is 4.04, and the average value of information security and personal privacy is 3.99.

Hypothesis Testing

Multiple regression analysis was used to test the hypotheses. Preliminary checks confirmed linearity between the independent and dependent variables. Results are detailed below:

Table 2 Analysis of Variance (ANOVA)

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	52.376	5	10.475	88.873	.000[b]
Residual	47.147	400	.118		
Total	99.522	405			

a. Dependent Variable: Online purchase intention

b. Predictors: (Constant), Information security and personal privacy, Product awareness, Consumer brand relationship, Convenience, Feedback and customer compliance

Table 2 presents the ANOVA results, which evaluate the influence of digital marketing factors—product awareness, feedback and customer compliance, convenience, consumer brand relationship, and information security and personal privacy—on online purchase intentions within small food businesses in Xi'an, Shaanxi Province, China. An F-test value of 430.874 confirms significant effects from at least one independent variable at the .05 significance level. Subsequent detailed analyses of each variable’s contribution are conducted through multiple linear regression, as shown in Table 3.

Table 3 Factors influencing online purchase intention by digital marketing

Variables	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.455	.221		2.058	.040

Table 3 Factors influencing online purchase intention by digital marketing (CONT.)

Product awareness (X1)	.261	.037	.296	6.974	.000
Feedback and customer compliance (X2)	.178	.036	.195	4.951	.000
Convenience (X3)	.221	.036	.234	6.067	.000
Consumer brand relationship (X4)	.238	.033	.277	7.293	.000
Information security and personal privacy (X5)	.008	.031	.009	.272	.786

$R = .725$ $R^2 = .526$ a. Dependent Variable: Online purchase intention

The multiple regression analysis using the enter method identified significant predictors of online purchase intentions among consumers in small food businesses in Xi'an City. Out of five independent variables, four showed statistically significant differences at the 0.05 level. Product awareness (X1) emerged as the most influential predictor, followed by consumer brand relationship (X4), convenience (X3), and feedback and customer compliance (X2). The regression model, with a coefficient of multiple determination (R^2) of 0.526, indicates that these four variables together explain 52.6% of the variance in online purchase intentions. The predictive equation formed is:

$$Y = 0.455+0.261X_1+0.178X_2+0.221X_3+0.238X_4$$

Research Discussion

This study highlights the positive impact of digital marketing factors—product awareness, feedback and customer compliance, convenience, and consumer brand relationship—on online purchase intentions in small food businesses in Xi'an, Shaanxi Province, China. These factors not only enhance consumer engagement but also support businesses in adapting to digital market dynamics (Peter and Dalla Vecchia, 2021 : 251-265). The ability to accurately deliver product information and engage through social media platforms boosts consumer trust and the likelihood of transactions, mirroring findings by Rashid et al. (2021 : 70-80) that digital marketing can significantly improve business practices among small entrepreneurs during disruptive periods like the COVID-19 pandemic.

Research Suggestions

This study’s insights into the digital marketing effectiveness in small food businesses in Xi'an highlight several actionable strategies:

1. **Targeted Digital Marketing Training:** Small businesses should receive targeted training in key digital marketing areas like SEO and social media to enhance product awareness and customer engagement.
2. **Customize Marketing to Local Needs:** Tailoring marketing strategies to reflect the unique cultural and economic landscape of Xi'an can improve the relevance and effectiveness of these campaigns.
3. **Enhance Consumer Engagement:** Businesses should focus on strengthening customer relationships through interactive online platforms, using personalized content to foster loyalty and increase purchase intentions.
4. **Continuous Strategy Updates:** Keeping digital marketing strategies updated with current trends and consumer preferences is crucial for maintaining competitive advantage.
5. **Expand Research:** Further studies are needed to explore digital marketing's long-term impacts across various regions and business sizes, providing a broader understanding of its benefits and challenges.

By implementing these recommendations, small food businesses can better leverage digital marketing to connect with consumers and drive growth.

References

Alghizzawi, M. (2019). The role of digital marketing in consumer behavior : A survey. **Int. J. Inf. Technol. Lang. Stud,** 3(1), 24-31.

Alkharabsheh, O. H. M., & Zhen, B. H. (2021, April). The Impact of Content Marketing, Social Media Marketing and Online Convenience on Consumer Buying Decision Process. In CoMBInES-Conference on Management, Business, Innovation, **Education and Social Sciences**. 1(1) : 1823-1834.

Armesh, H., Salarzehi, H., Yaghoobi, N. M., Heydari, A., & Nikbin, D. (2010). The effects of security and privacy information on trust & trustworthiness and loyalty in online marketing in Malaysia. **International Journal of Marketing Studies,** 2(2), 223.

Baierle, I. C., da Silva, F. T., de Faria Correa, R. G., Schaefer, J. L., Da Costa, M. B., Benitez, G. B. & Benitez Nara, E. O. 2022. Competitiveness of food industry in the era of digital transformation towards agriculture 4.0. **Sustainability,** 14(18), 11779.

Bonchek, M., & Bapat, V. (2018). The most successful brands focus on users—not buyers. **Harvard Business Review,** 2(07).

Desai, V. & Vidyapeeth, B. 2019. Digital marketing: A review. **International Journal of Trend**

in Scientific Research and Development, 5(5), 196-200.

Dodson, I. (2016). **The art of digital marketing: the definitive guide to creating strategic, targeted, and measurable online campaigns.** John Wiley & Sons.

Erlangga, H. (2021). Effect of digital marketing and social media on purchase intention of Smes food products. **Turkish Journal of Computer and Mathematics Education (TURCOMAT),** 12(3), 3672-3678.

Evans, G. L. 2017. Disruptive technology and the board: The tip of the iceberg. Economics and Business Review, 3(1), 205-223.

Gurung, A. & Raja, M. K. 2016. Online privacy and security concerns of consumers. **Information & Computer Security,** 24(4), 348-371.

Ho, C. W., & Wang, Y. B. (2015). Re-purchase intentions and virtual customer relationships on social media brand community. **Human-centric computing and information sciences,** 5, 1-16.

Joshi, A. (2018). Digital technologies for enhancing customer experience**. Sansmaran Research Journal,** 1-8.

Kopp, C. M. (2022). **What Is Brand Awareness? Definition, How It Works, and Strategies.** [Online]. Available: https://www.investopedia.com/terms/b/brandawareness.asp.

Luo, Y. (2022). A general framework of digitization risks in international business. **Journal of international business studies,** 53(2), 344-361.

Novitasari, D., Pebrina, E. T., Sutardi, D., Nugroho, Y. A., & Putra, F. (2022). Pelatihan Digital Marketing dan Social Media Marketing Terhadap Pelaku UMKM di Tangerang. **Journal of Community Service and Engagement,** 2(2), 7-16.

Peter, M. K. & Dalla Vecchia, M. (2021). The digital marketing toolkit: a literature review for the identification of digital marketing channels and platforms. **New trends in business information systems and technology: Digital innovation and digital business transformation,** 251-265.

Purwanto, D. K., & Nugraha, A. K. N. A. (2022). The Shift of Consumer Online Purchase Behavior: Covid-19 Pandemic as A Situational Variable. **International Journal of Business and Technology Management,** 4(3), 402-411.

Quach, S., Thaichon, P., Martin, K. D., Weaven, S., & Palmatier, R. W. (2022). Digital technologies: Tensions in privacy and data. **Journal of the Academy of Marketing Science,** 50(6), 1299-1323.

Rashid, S. M. R. A., Hassan, F., Sharif, N. M., Rahman, A. A., & Mahamud, M. A. (2021). The role of digital marketing in assisting small rural entrepreneurs amidst Covid-19 movement control order (MCO): A case study in Peninsular Malaysia. **Academic Journal of Interdisciplinary Studies,** 10(4), 70-80.

Shaik, D., & Poojasree, M. V. (2021, May). Consumer protection in e-commerce: A legal and compliance framework in the digital market. In 1st **International Conference on Law and Human Rights 2020 (ICLHR 2020)** (pp. 18-23). Atlantis Press.

Shuteyev, P. (2023). **Awareness, Consideration & Decision: How To Convert At Each Stage.** [Web log comment] Available https://snov.io/blog/awarenessconsideration-decision-what-to-convert-with-at-each-stage/

Srivastava, M., & Kaul, D. (2014). Social interaction, convenience and customer satisfaction: The mediating effect of customer experience. **Journal of retailing and consumer services,** 21(6), 1028-1037.

Suryani, T., Fauzi, A. A., & Nurhadi, M. (2020). **The effect of website and social media on customer behavior responses** (Doctoral dissertation, STIE Perbanas Surabaya).

Verhoef, P. C., Kannan, P. K. & Inman, J. J. (2015). From multi-channel retailing to omni-channel retailing : introduction to the special issue on multi-channel retailing. **Journal of retailing,** 91(2), 174-181.

ปัจจัยที่มีอิทธิพลต่อการตั้งใจใช้บริการการชำระเงินผ่านแอพพลิเคชั่นวีแชท ในมหาวิทยาลัยภาษาต่างประเทศกว่างสี : กรณีศึกษา ส่วนขยายทฤษฎีรวมการยอมรับและการใช้เทคโนโลยี

FACTORS INFLUENCING THE INTENTION TO USE OF WECHAT PAYMENT IN GUANGXI UNIVERSITY OF FOREIGN LAUNGUAGES: A CASE STUDY OF UTAUT2 MODEL

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Abstract

The purpose of this study is To Determine the Influence of performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, price value, habit on intention to use WeChat payment among students at Guangxi University of Foreign Languages, China. price value, habit on intention to use WeChat payment among students at Guangxi University of Foreign Languages, China. SPSS26.0 software was used to statistically analyze and hypothesis test 400 valid questionnaires. The study found that habits have the greatest degree of influence on students' intention to use WeChat payment. Based on the findings, this study proposes reasonable suggestions on strengthening the intention of WeChat payment consumers to use WeChat payment, which is instructive for managers of WeChat platforms in colleges and universities.

Keywords: UTAUT2 Model; Intention to Use; WeChat Payment; Influence factors

Introduction

Under the impact of the epidemic, global consumption patterns have shifted, and online transactions have become the choice of more consumers, a change that has accelerated the decline of cash payments and driven the rise in the global transaction volume of digital payments. According to S&P Global's "Global Online Payments and FinTech Ecosystem Report 2021," the epidemic has accelerated a shift in payment behavior, with one-third of users globally using digital payments starting in 2020, and more than half (52%) of consumers shifting all or most of their in-store purchases to online, and 59% of consumers using at least one form of digital payment. 59% of consumers have used at least one digital payment service (Qian Charlie

Li, 2022). The prosperous development of the mobile payment industry and its huge profit space of capital information has intensified the competition in the mobile payment market. Tencent launched WeChat Payment has accumulated enough customer volume after the pavement of WeChat usage, and the development of WeChat Payment on this basis is in line with the trend of the times also caters to the individual needs of consumers, WeChat Payment, as a derivation of WeChat, is a unique mode of mobile payment. WeChat, as a social platform, has a strong user base, however, the number of users or active users of WeChat Payment is very different from the number of WeChat active users (Yuan, 2018).

As the application of mobile payment becomes more and more widespread, barcode payment has the advantages of convenient payment and low application threshold, which makes WeChat payment, a non-cash payment method, more and more accepted by people, and colleges and universities should adapt to the pace of the new era of digitization and informatization, and on the basis of the opening of the WeChat public number and other information dissemination functions, do their best to expand the function of WeChat services, improve the function of the mobile payment service, and build a college WeChat payment system to provide the majority of students with a better, faster, more timely, more accurate and smarter way of collecting fees (Jiang & Luo, 2018). College students, as a consumer payment group of the young generation with personalization, have diverse user experiences, so WeChat payment and other network payment means are also increasingly reflecting the influence factors of the college student group's willingness to use WeChat payment (Yang, Cao & Li, 2017).

Research Objectives

1. To Analyze the levels of performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, price value, habit, and intention to use WeChat payment among students at Guangxi University of Foreign Languages, China.
2. To Determine the Influence of performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, price value, habit on intention to use WeChat payment among students at Guangxi University of Foreign Languages, China.

Research conceptual framework

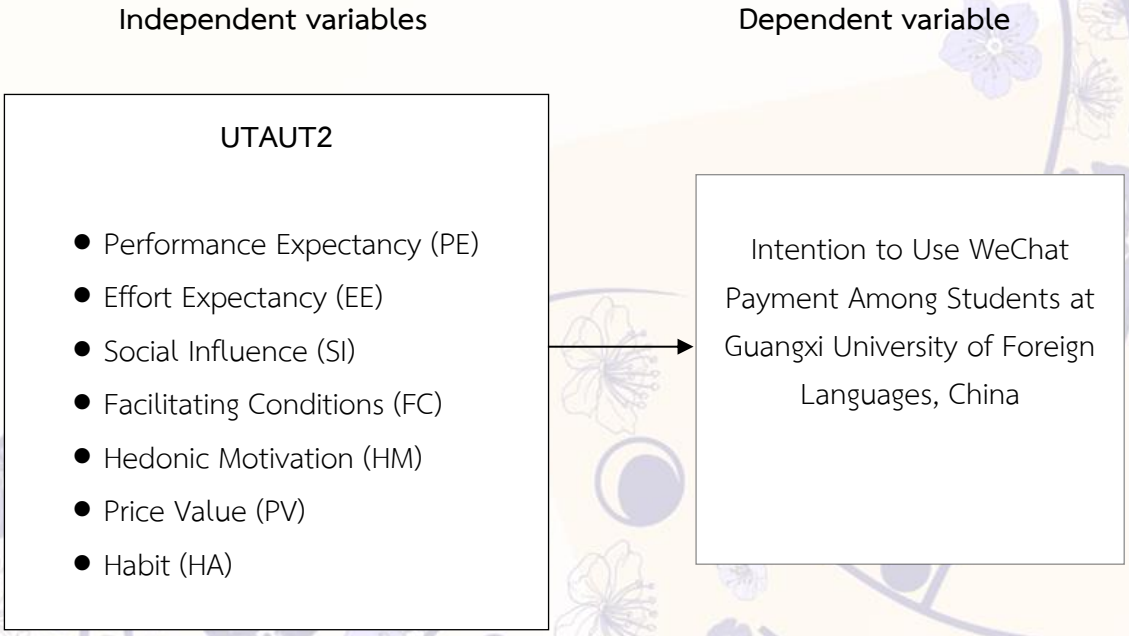

Figure 1 : Research conceptual framework

Research Hypothesis

H1 : Performance Expectancy (PE) positively influences the intention to use WeChat Payment.

H2 : Effort Expectancy (EE) positively influences the intention to use WeChat Payment.

H3 : Social Influence (SI) positively influences the intention to use WeChat Payment.

H4 : Facilitating Conditions (FC) positively influence the intention to use WeChat Payment.

H5 : Hedonic Motivation (HM) positively influences the intention to use WeChat Payment.

H6 : Price Value (PV) positively influences the intention to use WeChat Payment.

H7 : Habit (HA) positively influences the intention to use WeChat Payment.

Research Methods

In order to investigate the UTAUT2 model factors-performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, price value, and habit on students' willingness to use WeChat payment, this study adopted a quantitative research method. The population of this study is current college students at the University of Foreign Languages in Guangxi. According to the study the total number of students enrolled in the university known to be surveyed is: 33,000, citing the sample size calculation method

developed by the statistician Yamane, T. (1967), a margin of error of 5% was applied and 400 enrolled university students were selected. The sampling method was mainly a simple random sampling technique. The researcher chose the appropriate measurement scale for the study by reading a large number of relevant studies based on previous literature studies and hypotheses. The established scale was used for each questionnaire item with appropriate modifications. The questionnaire was divided into four sections:

The first part is a screening question. The second part is the basic information of the respondents. The third part is the use of WeChat payment. The fourth part is the survey of factors influencing users' intention to use WeChat Pay. This section adopts a 5-point Likert scale from "strongly disagree" to "strongly agree" with values of 1, 2, 3, 4, and 5 points respectively.

The questionnaire was pretested before the formal test, and the pretest questionnaire was analysed for reliability and validity to ensure the structure of the questionnaire design and the validity of the formal test. In this study, the pretest was randomly selected to survey 30 university students. SPSS 26.0 was used to calculate the Cronbach α values in the data variables; if the value obtained is more significant than 0.6, it means that the value has high confidence and can be used. If the result is less than 0.6, the value has low confidence and needs to be excluded. This study used this method to derive Cronbach's alpha values greater than 0.7 for all variable factors, and the overall questionnaire's Cronbach's alpha value was 0.982. Based on these results, it means that the above variables are reasonable and can be analysed.

Information was collected through an electronic online questionnaire and the data was analyzed after collection. Descriptive statistical analysis, correlation analysis and multiple linear regression analysis were performed on the findings.

Research Results

Respondent Profile and WeChat Payment Usage Survey

The respondents were 159 males (39.75%) and 241 females (60.25%). Distribution by age. Mainly distributed between 18-20 years old, 256 people accounted for 64% of the total; age 21-23 years old a total of 129 people, accounting for 32.25%. Since the respondents of this study are college students, the age distribution of the sample is more concentrated, which shows that the distribution of the sample is basically in line with their actual age distribution in school. Distribution by grade. The educational level of the respondents is undergraduate, of which 174 are freshmen, accounting for 43.5%; 73 are sophomores, accounting for 18.75%; 115 are juniors, accounting for 28.75%; and 38 are seniors, accounting for 9.5%.

Categorized by the main reason for using WeChat Pay, 318 respondents chose to use WeChat Pay because of convenience (the ability to pay anytime, anywhere), accounting for 79.5% of the total sample size. Categorized by the most frequent use of WeChat Pay, 328

people used WeChat Pay to pay for campus services or products, accounting for 82% of the total sample size. Categorized by the purpose of WeChat Payment use, Paying for food and beverages on or off-campus had 364 people, accounting for 91%; Online shopping had 319 people, accounting for 79.75%; Transportation costs (e.g., taxis, public transport) had 303 people, accounting for 79.5% of the total sample. Transportation costs (e.g., taxis, public transportation) accounted for 303 people (75.75%); Bill payments (e.g., tuition, utilities, mobile phone) accounted for 344 people (86%); Transferring money to friends or family accounted for 274 people (68.5%); and Online shopping accounted for 319 people (79.75%). Transferring money to friends or family (274 or 68.5%); and for other payments (14 or 3.5%).

Categorized by the frequency of using WeChat payment through the school's public platform, there were 151 college students who used WeChat payment multiple times a day, accounting for 37.75% of the total sample; once a day accounted for 7.5%; once every 2 to 3 days accounted for 14.5%; once every 4 to 5 days and once a week had the same frequency of use, both accounting for 4.75%; once every 2 to 3 weeks and once every 1 to 2 months respectively accounted for 4.5% and 8.5%; and the group that basically does not use WeChat payment through the campus WeChat platform also accounted for 17.75%.

Descriptive statistics results of variables

This study focuses on the descriptive statistical analysis of the scores of the measurement question items for each variable. The specific mean and standard deviation of each variable were calculated to obtain the basic statistical description of the scores of the variables in this study, as shown in Table 1.

Table 1: Table of descriptive statistical analysis of research variables

Variables	Mean value of a variable	Variable standard deviation
Performance expectancy	4.01	0.89
Effort expectancy	4.20	0.88
Social influence	3.79	0.92
Facilitating conditions	3.98	0.91
Hedonic motivation	3.94	0.90
Price value	3.69	0.95
Habit	3.92	0.85
Intention to Use WeChat Payment	3.94	0.84

Based on the criteria of the above measurement indicators, we can see from the above table that the mean values of the eight variables measured are above 3, indicating that the users in the sample have a strong perception of each variable. From the standard deviation

point of view, the standard deviation of the data presented by the eight variables is less than 2, and the degree of dispersion is small, indicating that the data has a good accuracy.

Multiple linear regression analysis was performed on the study data to verify whether the hypotheses were valid.

Table 2 : Results of linear regression analysis

	Unstandardized coefficient		Standardized coefficient	t	Significance P	VIF
	B	Standard Errors	Beta			
a constant (math.)	0.275	0.095	-	2.883	0.004**	-
PE	-0.017	0.042	-0.017	-0.396	0.692	4.181
EE	0.011	0.046	0.012	0.241	0.810	5.068
SI	0.094	0.033	0.103	2.873	0.004**	2.757
FC	0.110	0.046	0.119	2.398	0.017*	5.334
HM	0.115	0.050	0.124	2.309	0.021*	6.172
PV	0.096	0.037	0.108	2.589	0.010*	3.762
HA	0.531	0.041	0.536	12.802	0.000**	3.783
R^2=0.818 Adjusted R^2=0.815 F=252.057 P=0.000						

Dependent variable: IU

Note: *P<0.05， **P<0.01

PE represents Performance expectation, EE represents Effort expectation, SI represents Social influence, FC represents Facility conditions, HM represents Hedonic motivation, PV represents Price value, HA represents Habit, IU represents Intention to Use WeChat Payment.

The results show that the regression model of this study is statistically significant, F=252.057 P=0.000, P<0.05,indicating that there is a linear relationship between the independent and dependent variables. In general, when the significance level of the t-test is less than 0.05, we can assume that the possibility (probability) of being correct in making the decision to accept the original hypothesis is 95% or more. As can be seen from Table 2, in this regression model, social influence, convenience, hedonic motivation, price value and habit have a significant positive effect on the willingness to use WeChat Pay; and habit (β = 0.531) has the greatest effect on the willingness to use. Performance expectation and effort expectation have no significant effect on the willingness to use WeChat payment.

Research Discussion

This study used an electronic online questionnaire to explore the influence of factors on students' willingness to use WeChat payment based on the UTAUT2 model. The following conclusions were drawn from this study: social influence, convenience conditions, hedonic motivation, price value and habit have a significant positive effect on the willingness to use WeChat payment. The degree of influence is in descending order: habit, hedonic motivation, convenience conditions, price value and social influence. There is no significant correlation between performance expectation and effort expectation and willingness to use.

According to the results of the study, performance expectations and effort expectations do not have an influential relationship on students' willingness to use WeChat payment. This is similar to the findings of Zhang and Lin (2016) that most of the college students have been able to use internet products very skillfully, so they have enough knowledge and ability to use it easily. Zhang and Lin (2016) have also mentioned in their study that Venkatesh has stated that effort expectation does not have a significant effect on more experienced users. This is consistent with the results of this study. The results of linear regression analysis show that social influence has a significant positive effect on willingness to use. This is consistent with the study of Yan (2019), from the social attributes of human beings, people living in specific organizations and groups will be affected by the influences from the surrounding environment and the crowd, and develop the tendency to be consistent with the behaviors and attitudes of the majority of people in the group. Convenience conditions have a significant positive effect on the willingness to use WeChat. The results of this study are consistent with the results of Liu (2015) in his empirical analysis of consumers' continued willingness to use WeChat Pay in his study of WeChat Pay. When the WeChat payment platform provides online purchase of product services, it is necessary to make consumers feel the convenience of using WeChat payment to ensure that they will continue to use WeChat payment. Hedonic motivation has a significant positive effect on the intention to use, which is consistent with the results analyzed in Cao's (2020) study, in which consumers use shopping as a way of releasing pressure and finding pleasure, and they expect to enjoy pleasure during the shopping process on WeChat's online shopping-like platforms. On the other hand, through the WeChat public platform can satisfy users' hedonic pleasure in the social dimension. Price value has a significant positive effect on willingness to use. Users who perceive that the benefits of using WeChat Pay to shop are greater than the monetary costs they pay will have greater trust as well as greater willingness to use. Habit has a significant positive effect on willingness to use. This result is similar to the study of Zhang and Lin (2016), in which the habit factor has the greatest influence on college students' willingness to use WeChat payment. The survey population of this study

is a group of college students, WeChat is an essential platform for them to contact with their families, friends, classmates and teachers, especially they need to log in to the school WeChat public platform frequently to deal with school affairs, so their habitual behaviors will have a great impact on their willingness to use WeChat payment.

The findings of this study can provide several important contributions to the academic and practical fields:

1) User Behavior Comprehension: The study elucidates the determinants shaping students' adoption of WeChat Payment, providing a nuanced understanding of young consumers' interaction with digital financial services.

2) Strategic Implications: The findings hold implications for educational institutions and policy makers, guiding the formulation of initiatives aimed at fostering a digital payment culture on campus.

3) Payment Solutions Enhancement: For fintech entities, this research offers user-centric insights critical for refining digital payment offerings to meet the preferences of a technologically adept cohort.

Research Suggestions

As explored in this study, there are shortcomings and limitations in our research, and there is a need for a deeper understanding of the social influences on the adoption of digital payments, and of how young consumers think about interacting with digital financial services, which can lead to a wider acceptance of digital payments. Therefore, we need to conduct more in-depth research in the future:

1) This study used random sampling method to survey the students of Guangxi University of Foreign Languages, and finally collected 400 valid questionnaires. The sample is representative to a certain extent, but the scope of the study is limited, and it is necessary to expand the sample size and area to a certain extent.

2) Considering the limitations of the research methodology, this study focused on using quantitative methods. Therefore, future studies could use other research methods such as qualitative concepts through in-depth interviews, focus groups and other qualitative data collection techniques.

References

Ajzen, I. (1991). The Theory of Planned Behavior. **Organizational Behavior and Human Decision Processes,** 50(2), 179–211.

Bao, R. Q. (2017). A study of factors influencing open education learners' willingness to use mobile learning. **Journal of Distance Education** (03), 102-112.

doi:10.15881/j.cnki.cn33-1304/g4.2017.03.012.

Cao, X. (2020). **Master's Degree (Dissertation, Southeast University) on Influencing Factors of Users' Intention to Use WeChat Online Shopping Applets.** https://link.cnki.net/doi/10.27014/d.cnki.gdnau.2020.002226doi:10.27014/d.cnki.gdnau.2020.002226.

Chen, J. & Zhu, X. D. (2015). A study on factors influencing WeChat payment users' usage behavior based on UTAUT and ITM integration perspective. **Modern Intelligence** (04), 35-40.

Chen, R. G. (2020). Research on the Influence of Consumer Intention and Behavior of Mobile Banking App under the Perspective of Complex System. **Journal of Jilin College of Commerce and Industry.** (02), 65-71. doi:10.19520/j.cnki.issn1674-3288.2020.02.012.

Chung, N., Han, H., & Joun, Y. (2015). Tourists’ intention to visit a destination: The role of augmented reality (AR) application for a heritage site. **Computers in Human Behavior.** 588-599.

Davis, F. D., Bogozzi, R., P., & Warshaw, P., R. (1989). User acceptance of computer technology : A comparison of two theoretical models. **Management Science,** 35, 982-1003.

Hou, P. & Zhou, M. R. (2018). Analysis of Influential Factors on College Students' Acceptance of WeChat Marketing Based on TAM Model - Taking Nanjing University of Posts and Telecommunications as an Example. **Operation and Management**. (05), 131-137. doi:10.16517/j.cnki.cn12-1034/f.2018.05.038.

Hu, J. (2016). **Master of WeChat Payment Adoption Behavior Research Based on UTAUT Model (Dissertation, Wuhan University of Technology).** https://kns.cnki.net/kcms2/article/abstract?v=wcPNn8Zia7M7oRIq4ZYZrvSv609xPOB-NQIRtw96Xb-b_wll0fLxbtqz-QFeOGCIAmlyBVWkg56-uOyL90vEIwfb73YSax238WYfGge4cjYCIjgKYc2ucKME_hynsbwQZAK-AiXhDroux6BIEk0qfw==uniplatform=NZKPTlanguage=CHS.

Jiang, C. F. & Luo, J. P. (2018). Internet+ boosts the application of WeChat payment in colleges and universities***. Science and Technology Economic Market.*** (03), 6-7.

Li, L.Y., & Xie, Q. (2020). A model study of factors influencing willingness to use WeChat Pay based on user perception. **E-commerce**. (04), 68-69. doi:10.14011/j.cnki.dzsw.2020.04.032.

Liu, C. (2015). **Empirical Analysis of Consumers' Willingness to Continuously Use WeChat Payment (Master's thesis, Northeast University of Finance and Economics).** https://kns.cnki.net/KCMS/detail/detail.aspx?dbname=CMFD201501&filename=1015

550090.nh

Liu, H. L. (2014). **Research on User Acceptance Model of Mobile Payment Based on UTAUT Master's Degree (Dissertation, Guangdong University of Technology).** https://kns.cnki.net/kcms2/article/abstract?v=wcPNn8Zia7NXpBMJ7KlccGkE5ZDHrx-5qMmtmKQMkvKpmzZGmhmcboAfmAWQPjXzCBPoZ3uCm9LloRIBkhKd7fGDsOgqV_dckmksTWdbil9Sfjk9tQJyBtj1O2DoxnV7krjQVVZLHp7sxnkwiv4Qww==&uniplatform=NZKPT&language=CHS

Mi, G. B. (2022). **Research on Influencing Factors of AR Beauty Users' Willingness to Use in W Company Based on UTAUT2 Model Master's Degree (Dissertation, Zhejiang University of Science and Technology, China).** https://link.cnki.net/doi/10.27786/d.cnki.gzjlg.2022.000734doi:10.27786/d.cnki.gzjlg.2022.000734.

Qian, H. Charlie Li, S. (2022). **New Opportunities in a New Landscape | Global Digital Payment Trends 2022. Zhihu.** https://zhuanlan.zhihu.com/p/468247240

Sun, L.Y., Wang, B. & Wu, Q. J. (2020). Understanding User Acceptance of Short Video App - Based on Modified UTAUT2 Model. **Journal of Shandong Institute of Commerce and Industry**. (06), 85-95.

Venkatesh, V., Morris, M.G., Davis, F.D., & Davis, G.B. (2003). User Acceptance of Information Technology: Toward a Unified View. **MIS Quarterly,** 27, 425-478.

Venkatesh, V., Thong, J. Y., & Xu, X. (2012). Consumer acceptance and use of information technology: extending the unified theory of acceptance and use of technology[J]. **MIS quarterly,** 36,157-178.

Wu, X. F. (2008). **Analysis of Key Factors Influencing User Acceptance of Mobile Internet M.S. (Dissertation, Beijing University of Posts and Telecommunications).** https://kns.cnki.net/kcms2/article/abstract?v=wcPNn8Zia7PC-arjRlajwBCMOqfSpiwsqoE6E5yFDW6iqiSpfnFossXMNl1Ldk555IwWu3s_1oYc6y7Y8Q0H-efXOVb7WJcbaCZjRT8n4ol6dBFbxFT8vSdmTM3WcqR6QVHmKHMxjL-BQJITKtC1xw==&uniplatform=NZKPT&language=CHS

Xu, Z. (2014). Impacts and Implications of WeChat Payment's Innovative Development on Financial Consumers. **Zhejiang Finance**. (06), 35-37+21.

Yan, C. H. (2019). **Research on consumer acceptance behavior of unmanned retail based on UTAUT2 Master's Degree (Dissertation, Henan University).** https://kns.cnki.net/kcms2/article/abstract?v=v5HVlYuqh9rrH2jOvfE-GEXMtG_XkyHvN97iJLumbjVU4c3uCUmood0eCzqoHdudg23q3xekHTCKuf2UHbfs_RECjZgGBLGOvkWA0jeqUDCoS6NtlxI1WpBrGRyECxdmzhq13VkAW_krjSOs2T3qSg==&uniplatform=NZKPT&language=CHS

Yang, F. M. & Zhang, Z. Q. (2020). Model construction and empirical evidence of the influence of e-book users' willingness to use e-books. **Library and Intelligence Work**. (09), 85-94. doi:10.13266/j.issn.0252-3116.2020.09.010.

Yang, H. R., Cao, C. C., & Li, J. Q. (2017). Survey analysis of college students' willingness to use WeChat payment. **Industry and Technology Forum.** (05), 113-115.

Yuan, S. H. (2018). **Master of Empirical Research on Factors Influencing Consumers' Willingness to Use WeChat Payment (Dissertation, Zhengzhou University).** https://kns.cnki.net/kcms2/article/abstract?v=wcPNn8Zia7MSHj9P-NVXrXutnW8LbaFNW1qotVOYnikydPCxOVWUssdlgEmb8cXK50VFEcEe2DbC1yflj4QxwERajD1F5q0hXme3HD7jwW3obEKU4j9_xtoQiXZT1vWlbYokSF0_ig86D4AhnhYmVg==uniplatform=NZKPTlanguage=CHS

Zhang, M. & Lin, S. (2016). A study on the influencing factors of college students' behavior towards the use of instant messaging software. **Shanghai Management Science**. (04), 66-70.

COMMUNITY PARTICIPATION IN THE CONSERVATION OF THE ANCIENT JARIENG NORKAEW CULTURAL HERITAGE WISDOM OF BAN DONG MAN, KHOR KO SUB-DISTRICT, MUEANG DISTRICT, SURIN PROVINCE

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Abstract

This research aimed to study community participation in the conservation of the ancient Jarieng Norkaew cultural heritage wisdom of Ban Dong Man, Khor Kho Sub-district, Mueang District, Surin Province and to explore approaches for developing cultural learning innovations using the ancient Jarieng Norkaew wisdom heritage in three languages (Khmer Surin, Thai, and English) of the Khmer ethnics in Ban Dong Man, Ko Kho Sub-district, Mueang District, Surin Province. The study employed mixed methods, utilizing both qualitative and quantitative approaches. Data were collected from 54 key informants, including local sages and community leaders, selected through purposive sampling, and consultations with five experts in cultural studies and performing arts to ensure data precision. Quantitative analysis utilized descriptive statistics—percentages, means, and standard deviations—via statistical software to identify trends and relationships. Qualitative data were gathered through in-depth interviews and content analysis, revealing significant themes and narratives that highlighted personal and community experiences in heritage conservation. The results from the study revealed a moderate understanding of cultural heritage among the community, with an average knowledge score of 3.41 out of 5, accompanied by minimal variation in responses (standard deviation of 0.04). Active community involvement in conservation efforts was robust, indicated by an average score of 3.92, although there was some variability (standard deviation of 0.64). The implementation of cultural learning innovations in Khmer Surin, Thai, and English within Ban Dong Man effectively integrated the ancient Jarieng Norkaew wisdom heritage into educational curricula and utilized digital tools to engage the community. Despite economic challenges and globalization impacts, these measures significantly boosted community participation, thereby ensuring the sustainability of the heritage conservation efforts. These findings highlighted the essential roles of continual innovation and active community engagement in preserving and enriching cultural identities.

Keywords: Community participation, Conservation, Ancient Jarieng Norkaew, Cultural heritage wisdom

Introduction

The preservation of cultural heritage is fundamental to sustaining the continuity of community life, encapsulating essential elements such as lifestyle, thoughts, beliefs, values, customs, rituals, and wisdom. Culture is not merely reflective of daily life but also fosters community collaboration in creating, accumulating, and instilling these values, which are then transmitted across generations as a rich and enduring heritage. This heritage not only promotes societal growth—both spiritual and material—but also bolsters peace and sustainability within society.

Cultural heritage comprises both tangible assets, like archaeological sites, and intangible assets, or "Cultural Intellectual Heritage" as defined by Thai law. This includes elements such as language, performing arts, and traditional craftsmanship. The responsibility to conserve, restore, and promote these assets is enshrined in Article 43 of the Thai Constitution of 2017, underscoring the role of individuals and communities in this endeavor. Additionally, Thailand prioritizes the protection of its cultural heritage through various legislative acts and promotes the sustainable and systematic preservation of cultural intellectual heritage to perpetuate invaluable knowledge and practices (Intra-amnuey, 2017).

The ancient Jarieng Norkaew of the Khmer ethnic community in Ban Dong Man, Khor Kho Sub-district, Mueang District, Surin Province, is recognized as Intangible Cultural Heritage. This classification is aligned with Thailand’s Department of Cultural Promotion, which categorizes cultural intellectual heritage into four main aspects: language, folk literature, performing arts, and social practices. Jarieng Norkaew, a form of singing that involves a lyrical dialogue between men and women, is characterized by its sophisticated and metaphor-rich verses. The performance structure of Jarieng Norkaew involves two groups—men and women—engaging in a poetic exchange that is central to local cultural expressions and resembles central Thai folk songs in its alternating lyrical dialogue (Chomdee et., 2013).

This traditional recreation not only symbolizes the romantic interplay between young men and women but also serves as a cultural conduit during significant festivals such as the Songkran festival. The use of "Chong," meaning fabric, as a medium in these performances, adds a layer of interactive enjoyment and cultural richness (Latlao et al., 2015)

Through this study, we aim to explore community participation in the conservation of Jarieng Norkaew and to develop innovative approaches for cultural learning that utilize the heritage in three languages—Khmer Surin, Thai, and English. Our goal is to enhance the practices of cultural heritage preservation, contributing significantly to the discourse on

cultural sustainability and innovation. This research not only seeks to understand but also to actively participate in the safeguarding and enhancement of a treasured cultural legacy, ensuring its continuity for future generations.

Research Objectives

1. To study Community participation in the conservation of the ancient Jarieng Norkaew cultural heritage wisdom of Ban Dong Man, Khor Kho Sub-district, Mueang District, Surin Province.

2. To explore approaches for developing cultural learning innovations using the ancient Jarieng Norkaew wisdom heritage in three languages (Khmer Surin, Thai, and English) of the Khmer ethnics in Ban Dong Man, Ko Kho Sub-district, Mueang District, Surin Province.

Research Design and Methodology

This study employed a mixed-methods approach to deeply understand community engagement in the conservation of Jarieng Norkaew's cultural heritage in Ban Dong Man, Khor Kho Sub-district, Mueang District, Surin Province. Integrating both qualitative and quantitative research methods, the study utilized various tools and statistical software for thorough data analysis. The research was structured into four main phases: Pre-Research, Data Collection, Data Analysis, and Presentation of the Research Report.

Pre-Research Phase

In the initial phase, researchers:

- Surveyed cultural heritage collection methods following guidelines from the Cultural Studies Institute and the Department of Cultural Promotion.
- Gathered data on the ancient Jarieng Norkaew heritage from diverse sources, both local and international.
- Collaborated with community leaders and stakeholders to plan data collection. During the Data Selection Stage, the team selected 54 informants, including local sages and community leaders including five experts in cultural studies and performing arts were engaged to ensure the accuracy and precision of data selection. The team scheduled field data collection sessions and prepared by reviewing relevant documents and conducting preliminary community surveys to ensure tools and methods were appropriate for the local context and languages.

Data Collection Phase

This phase involved two key forums:

- The First Community Forum focused on discussing the role of community management in developing cultural wisdom and strategies for preserving the Jarieng Norkaew heritage. Topics covered included unique performances and conservation strategies.
- The Second Community Forum emphasized community involvement in developing cultural learning innovations using the Jarieng Norkaew heritage in three languages.

Data were collected through interviews, focus groups, and questionnaires, with meticulous documentation and verification to ensure data accuracy.

Data Analysis Phase

The data analysis phase was meticulously divided into three distinct segments:

- **Quantitative Analysis:** Utilizing statistical software, this part of the analysis involved conducting a comprehensive examination of survey data. Descriptive statistics such as percentages, means, and standard deviations were used to identify trends and relationships within the data. This method provided a clear quantitative understanding of the variables involved.
- **Qualitative Analysis:** This component focused on in-depth interviews and content analysis to extract significant themes and narratives. The qualitative analysis was crucial for capturing the depth of personal experiences and community insights related to the conservation of cultural heritage.

Presentation of Research Report

In the final phase, the data was meticulously organized and systematized. A forum was conducted to verify the accuracy of the information, ensuring that the findings were robust before sharing them with the community. The research effectively summarized and documented community involvement, highlighted current issues, and outlined conservation approaches. This comprehensive methodology facilitated the development of a strategic plan aimed at protecting and preserving cultural heritage, and it also led to the formulation of beneficial policy recommendations. Furthermore, the outcomes of the research are set to be synthesized and utilized to develop cultural learning innovations. These innovations will leverage the ancient Jarieng Norkaew heritage, presented in three languages—Khmer-Surin, Thai, and English—specific to the Khmer ethnic group in Ban Dong Man, Khor Kho subdistrict, Mueang district, Surin province. This initiative will be advanced in the next phase of the process, enhancing the educational and cultural engagement of the community.

Research Findings

The finding of community participation in the conservation of the ancient Jarieng Norkaew cultural heritage wisdom of Ban Dong Man, Khor Ko Sub-district, Mueang District, Surin Province.

Table 1: Demographic Information of Survey Respondents in Ban Dong Man, Khor Kho Sub-district, Mueang District, Surin Province

Categories	Sub-Categories	Numbers	Percentage
Gender	Male	15	27.27%
	Female	39	72.73%
Marital Status	Laity	54	100%
Age	Under 20 years	2	3.70%
	31-40 years	2	3.70%
	Over 40 years	50	92.59%
Family Status	Single	8	15.38%
	Married	46	84.62%
	Primary education	30	54.72%
	Lower secondary education	21	39.62%
	Bachelor’s degree	1	1.89%
	Above bachelor’s degree	2	3.77%
Duration of Residence	Under 20 years	2	3.77%
	21-30 years	2	3.77%
	31-40 years	17	32.08%
	Over 40 years	33	60.38%
Membership in Khmer Ethnic Community	Yes	54	100%
	Community leader/local leader	6	11.32%
	Leader in performing arts/music	5	9.43%
	Local resident with cultural expertise	43	79.25%
Total		**54**	**100**

Table 1 presented the demographic survey of Ban Dong Man in Khor Kho Sub-district, revealing significant insights about the local population. The survey showed a predominant female representation at 72.73%, with most of the population over 40 years old, constituting 92.59%. This age distribution might have influenced local cultural, social, and economic dynamics, particularly as they related to community leadership and engagement. In terms of marital status and family status, all participants were part of the laity with a high percentage

of married individuals (84.62%), indicating a stable family-oriented community structure. Educational levels were predominantly at the primary and lower secondary level, with minimal higher education, reflected by only 1.89% having a bachelor’s degree and 3.77% holding qualifications above a bachelor's degree. All respondents were members of the Khmer ethnic community, with a substantial portion (79.25%) identifying as residents with cultural expertise. This suggested a strong community identity and significant engagement with cultural preservation. However, formal positions such as village elders, community leaders, and educational leaders were minimally filled, which might have posed challenges for organized community activities and leadership succession. Overall, these findings suggested that while Ban Dong Man was a community deeply engaged with its cultural heritage, there were potential gaps in formal leadership and higher education that could have impacted its future development.

Table 2: Knowledge Level on the Cultural Intellectual Heritage of Ancient Jarieng Norkaew of the Khmer Community in Ban Dong Man, Khor Kho Sub-district, Mueang District, Surin Province

Knowledge about the Cultural Intellectual Heritage of Ancient Jarieng Norkaew	$\bar{x}$	SD	Quality Level of Knowledge
1. Knowledge about the history and origins of Ancient Jarieng Norkaew	3.38	0.74	Moderate
2. Knowledge about the lyrics of Ancient Jarieng Norkaew	3.43	0.84	Moderate
3. Knowledge about the melodies of Ancient Jarieng Norkaew	3.42	0.86	Moderate
4. Knowledge about the musical instruments used in Ancient Jarieng Norkaew	3.38	0.88	Moderate
5. Knowledge about the traditional attire for performing Ancient Jarieng Norkaew	3.42	0.84	Moderate
6. Knowledge about the meanings of each piece of attire in Ancient Jarieng Norkaew performances	3.45	0.85	Moderate
7. Knowledge about the dance moves used in Ancient Jarieng Norkaew performances	3.38	0.84	Moderate
8. Knowledge about the staging of Ancient Jarieng Norkaew performances	3.42	0.84	Moderate
Total	**3.41**	**0.04**	**Moderate**

Table 2 presented, in the community of Ban Dong Man, Khor Kho Sub-district, Mueang District, Surin Province, a survey that was conducted to assess the knowledge level concerning the Cultural Intellectual Heritage of Ancient Jarieng Norkaew among the Khmer community members. The results indicated a moderate overall understanding, with an average knowledge score of 3.41 out of a possible 5, and a low standard deviation of 0.04, pointing to consistent responses across participants. The survey explored several dimensions of the cultural heritage, including history and origins, lyrics, melodies, musical instruments, traditional attire, the meanings behind each piece of attire, dance moves, and staging of performances. Each of these components received scores ranging from 3.38 to 3.45, consistently reflecting a moderate level of knowledge. For instance, the knowledge about the history and origins, as well as the musical instruments used in Ancient Jarieng Norkaew, both scored 3.38, while the understanding of the meanings of each piece of attire reached slightly higher at 3.45. This uniform moderate knowledge level across different facets of Ancient Jarieng Norkaew suggested that the community held a foundational grasp of this ancient tradition but might have benefited from more focused educational initiatives. Enhancing knowledge through such programs could have fostered a deeper connection with and preservation of their cultural heritage, ensuring its transmission to future generations with greater fidelity and enthusiasm. The consistency in the moderate knowledge scores across various categories underlined an opportunity for growth in cultural education within the community.

Table 3: Community Participation in the Conservation of the Cultural Intellectual Heritage of Ancient Jarieng Norkaew of the Khmer Community in Ban Dong Man, Khor Kho Sub-district, Mueang District, Surin Province

Community Participation in the Conservation of Cultural Intellectual Heritage	$\bar{x}$	SD	Quality Level of opinion
1. Your involvement in presenting issues related to the conservation of the cultural intellectual heritage of ancient Jarieng Norkaew	3.34	0.62	Moderate
2. Your involvement in planning the conservation of the cultural intellectual heritage of ancient Jarieng Norkaew	3.32	0.61	Moderate
3. Your involvement in executing conservation activities for the cultural intellectual heritage of ancient Jarieng Norkaew	3.30	0.64	Moderate

Community Participation in the Conservation of Cultural Intellectual Heritage	$\bar{x}$	SD	Quality Level of opinion
4. Your involvement in benefiting from the conservation of the cultural intellectual heritage of ancient Jarieng Norkaew to ensure its perpetuation	3.32	0.61	Moderate
5. Your participation in activities aimed at perpetuating the cultural intellectual heritage of ancient Jarieng Norkaew	3.28	0.63	Moderate
6. How important do you think it is to conserve the cultural heritage of Jarieng Norkaew?	4.53	0.61	Most
7. Do you think that developing cultural learning innovations using the three languages (Khmer Surin, Thai, and English) can sustainably conserve the cultural heritage of Jarieng Norkaew?	4.55	0.61	Most
8. Do you think developing cultural learning innovations into a local curriculum (in Khmer Surin, Thai, and English) can help sustain the cultural heritage of Jarieng Norkaew?	4.49	0.61	Most
9. Do you think that integrating this cultural learning innovation into school curricula (in Khmer Surin, Thai, and English) can help sustain the cultural heritage of Jarieng Norkaew?	4.55	0.57	Most
10. Do you think that developing these innovations into local school curricula can effectively contribute to the long-term conservation of the cultural heritage of Jarieng Norkaew?	4.47	0.64	Most
Total	**3.92**	**0.64**	**Much**

Table 3 presented the survey conducted in Ban Dong Man, Khor Kho Sub-district, Mueang District, Surin Province, assessing community participation in the conservation of the Cultural Intellectual Heritage of Ancient Jarieng Norkaew. The findings reflected a moderate level of active community involvement across various aspects of conservation, with an overall average score of 3.92, indicating "much" involvement, and a standard deviation of 0.64, suggesting some variability in responses. Specifically, the community's engagement in presenting, planning, executing, and benefiting from conservation efforts uniformly indicated

moderate involvement. Scores in these categories ranged narrowly from 3.28 to 3.34, underscoring a consistent but moderate commitment to conservation activities. For example, involvement in presenting issues related to the heritage scored 3.34, while participation in activities aimed at perpetuating the heritage was slightly lower at 3.28. Contrastingly, the community's valuation of the importance of conserving Ancient Jarieng Norkaew's cultural heritage and their attitudes toward innovative methods for its preservation scored significantly higher. Responses to questions about the importance of conservation and the potential of cultural learning innovations utilizing three languages (Khmer Surin, Thai, and English) for sustainable preservation scored between 4.47 and 4.55, indicating a strong recognition of the significance of these efforts.

Notably, there was a high level of agreement on the effectiveness of integrating cultural learning innovations into local and school curricula. The community strongly believed that these strategies could effectively contribute to the long-term conservation of the cultural heritage, which suggested a forward-looking approach to heritage preservation that embraced educational innovation and multilingual inclusivity.

These findings suggested that while the community's current participation in conservation activities was moderate, there was a robust acknowledgment of the importance of cultural heritage and a strong endorsement of innovative educational approaches to ensure its perpetuation. This indicated potential for enhancing community engagement through focused educational programs that leveraged local and linguistic diversities to bolster conservation efforts.

The finding of approaches for developing cultural learning innovations using the ancient Jarieng Norkaew wisdom heritage in three languages (Khmer Surin, Thai, and English) of the Khmer ethnics in Ban Dong Man, Ko Kho Sub-district, Mueang District, Surin Province.

Data for this study were collected through two focus groups, interviews, and a questionnaire from Section 4, which consisted of open-ended questions on community participation in the conservation of the cultural heritage of Ancient Jarieng Norkaew within the Khmer community in Ban Dong Man, Khor Kho Sub-district, Mueang District, Surin Province. To analyze the data, a combination of qualitative research methods was employed, including Thematic Analysis (Braun & Clarke, 2006), Narrative Analysis (Riessman, 1993), and Grounded Theory (Glaser & Strauss, 1967).

Thematic Analysis was used to identify, analyze, and report patterns or themes within the data, enabling researchers to systematically organize and describe the dataset. This process involved coding the data, identifying themes among the codes, and interpreting the broader meanings of these themes in relation to the research question. Narrative Analysis was applied to understand how individuals construct and communicate their experiences and

identities through stories. This method involved examining the structure and content of narratives to explore participants' interpretations of their lives and the surrounding world. Grounded Theory was utilized to develop theories directly from the data, starting without preconceived notions and building through rigorous data coding and analysis. The objective was to identify a core category and explore its relationships with other categories to formulate a comprehensive explanatory theory.

The steps for data analysis included:

- Data Collection: Gathering all narratives, transcriptions, and records from interviews and discussions about the cultural heritage.
- Coding: Implementing open coding to segment the data into manageable parts and labeling these segments with codes that summarize their content.
- Theme Development: Identifying recurring patterns or themes using Thematic and Narrative Analysis. For Grounded Theory, axial coding was used to connect these codes.
- Review and Refine: Evaluating the themes or developing theories against the data to ensure their accurate reflection of the collected information.
- Report: Compiling a detailed report that outlines the findings, supported by direct quotes from the data, and offering recommendations based on these insights.

The collected data revealed that responses on community participation in the conservation of the cultural heritage of Ancient Jarieng Norkaew can be organized into these distinct areas:

General Understanding of Cultural Conservation

Local sages and community leaders are instrumental in preserving Jarieng Norkaew's heritage by organizing oral history projects, storytelling sessions, and educational workshops. These initiatives help transmit invaluable cultural knowledge to younger generations and integrate modern elements into traditional practices, making them more accessible and relevant. Furthermore, these leaders advocate for the heritage's conservation and use cultural events to strengthen community ties and foster a collective identity.

Community Participation in Cultural Conservation

Inclusive activities such as community workshops, educational programs, and the integration of Jarieng Norkaew into school curricula encourage hands-on experiences with traditional music, dance, and attire. These initiatives are complemented by celebratory festivals and digital tools that promote the heritage globally, enhancing community pride and participation.

Challenges and Barriers in Cultural Conservation

Several challenges impede conservation efforts, including a generational disinterest in traditional practices, economic constraints, urban migration, and globalization which risks homogenizing unique cultural identities. Additional barriers include an aging population of cultural practitioners, insufficient governmental support, and the complexities of integrating traditional practices with modern technology. Addressing these challenges requires strategic planning and community involvement.

Innovations in Learning and Participation in Cultural Conservation

Innovative approaches such as hosting cultural festivals, developing an online presence, and creating community-based educational programs are vital. These efforts are supported by artistic collaborations, incentive programs, and cultural exchange initiatives that enrich understanding and foster global interest. Continuously assessing and engaging the community through surveys and educational workshops is crucial for adapting conservation strategies to evolving needs.

Future Perspectives on Community Participation in Cultural Conservation

Future initiatives must be community-driven, focusing on inclusivity and sustainability. Establishing cultural education centers and fostering partnerships with educational institutions are pivotal. Additionally, supporting local artists, hosting cultural festivals, and implementing digital platforms for education can significantly enhance community engagement and pride in the heritage.

Impact and Outcomes of Community Participation in Cultural Conservation:

Conservation efforts have profoundly impacted the local community and the broader cultural landscape by enhancing cultural identity, facilitating intergenerational bonding, and providing educational opportunities. Economic benefits arise from cultural tourism, while artistic innovations keep the heritage dynamic and appealing. National and international recognition of these efforts has empowered the community, enhancing its resilience and capacity to tackle challenges.

Community Participation in Creating Innovative Cultural Learning

The implementation of multilingual education using the Ancient Norkaew Wisdom Heritage has proven to be a dynamic approach to conservation. This strategy not only preserves linguistic diversity but also enhances learning outcomes and broadens cultural

exchange. It empowers the community by involving them in the representation and education of their heritage, ensuring its relevance and continuity in a diverse and changing world.

Research Discussion

The findings of this study significantly reinforce and expand upon established theories in cultural heritage studies, particularly regarding community participation in conservation. The research underscores the theories presented by Smith and Akagawa (2009), emphasizing the indispensable role of local communities as stewards of cultural heritage and the transmission of this heritage across generations (Smith & Akagawa, 2009). In Ban Dong Man, the community's robust engagement in cultural preservation activities supports these theories, demonstrating the effectiveness of community custodianship in maintaining and enhancing cultural heritage.

Moreover, the study contributes to the discourse on participatory conservation methods. Aligning with Silverman’s (2015) examination of community involvement in heritage preservation, this study illustrates how such participatory practices are not only theoretical concepts but are effectively applied in contexts like Ban Dong Man (Silverman, 2015). These practices, which include organizing cultural events and educational programs, foster reciprocal relationships between heritage professionals and community members, thereby enhancing the sustainability of cultural heritage.

However, the research also reveals significant challenges in preserving intangible cultural elements, such as oral traditions. These findings resonate with Vecco’s (2010) concerns about the vulnerability of intangible heritage and suggest that while communities value their heritage, there might be gaps in understanding or communicating the deeper historical and cultural contexts to younger generations (Vecco, 2010). This challenges existing knowledge by highlighting the necessity for more targeted educational strategies that address the transmission of intangible heritage.

Additionally, the integration of technology in heritage engagement strategies reflects findings by Srinivasan et al. (2009), who discussed the positive impacts of digital tools in making heritage more accessible (Srinivasan et al., 2009). In this study, digital media was instrumental in connecting youth and global audiences to local cultural heritage, thereby enhancing educational outcomes and engagement.

Educational programs, which are crucial for deepening community connection to their heritage, align with Avrami et al.'s (2000) observation on the importance of education in heritage conservation (Avrami et al., 2000). The active involvement of the community in public performances and the integration of heritage into school curricula reflect Aikawa’s (2004) findings on how such activities serve as both celebration and conservation tools (Aikawa, 2004).

Overall, the study supports existing theories but also extends them by identifying challenges such as leadership succession and the need for formal recognition in community-led conservation efforts. These challenges point to the need for evolving conservation strategies that balance traditional and modern approaches to ensure the dynamic preservation of cultural heritage. This aligns with Stefano et al. (2012), who highlighted how community-led efforts could foster community bonds and cultural pride (Stefano et al., 2012). Thus, this discussion underscores the continuous relevance of community participation in heritage conservation and the need for adaptive strategies to address emerging challenges in the field.

Conclusion

Community involvement is fundamental to the preservation and promotion of cultural heritage, as it motivates individuals and groups to actively safeguard their distinct cultural identities. This is highlighted by the preservation of Jarieng Norkaew, a traditional Khmer singing practice, which draws on the collective knowledge and enthusiasm of the local community. Such participation is essential for preserving and transmitting cultural values, rituals, and wisdom, fostering a strong sense of identity, belonging, and pride among community members.

Cultural heritage plays a critical role in supporting community life and social growth by establishing a foundation for collective identity and cohesion. It comprises crucial elements like lifestyle, beliefs, customs, and rituals that define a community. By preserving and celebrating these elements, communities not only strengthen their social bonds but also promote spiritual and material growth. Furthermore, cultural heritage aids in intergenerational bonding by serving as a conduit for passing knowledge and traditions from one generation to the next, enhancing family ties and community connections. The economic impacts of cultural preservation are also significant, including tourism, job creation, and the revitalization of local economies through unique cultural products and experiences. These initiatives not only stimulate economic development but also foster peace and sustainability by promoting mutual respect among diverse groups.

To enhance cultural heritage conservation, it is essential to develop educational programs that integrate cultural heritage into school curricula and community workshops, targeting younger generations. Strengthening leadership through training and succession planning is crucial for maintaining effective heritage conservation. Additionally, adopting modern technologies can make cultural heritage more accessible, especially to younger and global audiences. Preserving intangible cultural heritage through targeted strategies like documentation and public events and leveraging the economic potential of cultural heritage

for tourism and local development are also vital for sustaining conservation efforts and supporting the economic wellbeing of communities.

Research Suggestions

Here are a couple of focused research suggestions that could further explore and enhance the conservation of cultural heritage, particularly in contexts like the Jarieng Norkaew study:

Evaluating Educational Interventions:

Research to evaluate the impact of specific educational interventions on community awareness and engagement with cultural heritage. This could include longitudinal studies to track changes in perception and participation following the integration of cultural heritage topics into local school curricula, as well as community workshops. The study would aim to identify which educational formats (e.g., interactive workshops, digital learning platforms, school curricula) are most effective in different community segments, particularly among the youth.

Exploring the Role of Cultural Leadership in Heritage Preservation

Conduct a comparative analysis of different leadership structures in cultural conservation efforts across various communities. This research would examine how leadership influences the effectiveness of heritage conservation initiatives and explore models for effective community leadership, including strategies for leadership training and succession planning. The goal would be to provide actionable insights into building robust leadership frameworks that can sustain and enhance cultural conservation efforts over time.

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References

Aikawa, N. (2004). An historical overview of the preparation of the UNESCO International Convention for the Safeguarding of the Intangible Cultural Heritage. **Museum International,** 56(1-2), 137-149.

Avrami, E., Mason, R., & de la Torre, M. (Eds.). (2000). **Values and heritage conservation**. Getty Conservation Institute.

Belfiore, E. (2009). On the measurement of impact: A study of how evaluation of impacts of arts and cultural events on their communities. **Cultural Trends,** 18(1), 83-101.

Bortolotto, C. (2007). From objects to processes: UNESCO's 'intangible cultural heritage'. **Journal of Museum Ethnography,** 19, 21-33.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. **Qualitative Research in Psychology,** 3(2), pp. 77-101.

Chomdee, A., et al. (2013). **Traditional Kui Zoology of Surin Province.** Department of Cultural Promotion.

Kirshenblatt-Gimblett, B. (2004). Intangible heritage as metacultural production. **Museum International,** 56(1-2), 52-65.

Glaser, B. G., & Strauss, A. L. (1967). **The Discovery of Grounded Theory: Strategies for Qualitative Research**. Chicago: Aldine.

Intra-amnuey, W. (2017). **Act to Promote and Preserve the Cultural Heritage of Intellectual Property, B.E. 2559 (2016).** Retrieved from https://www.parliament.go.th

Latlao, L., et al. (2015). **Artistic Thesis on Mochongniang Laor Dance**. Kalasin College of Dramatic Arts.

Riessman, C. K. (1993). **Narrative Analysis**. Newbury Park, CA: Sage.

Silverman, H. (Ed.). (2015). **Heritage in action: Making the past in the present**. Springer International Publishing.

Smith, L., & Akagawa, N. (Eds.). (2009). **Intangible heritage**. Routledge.

Srinivasan, R., Boast, R., Furner, J., & Becvar, K. M. (2009). Digital museums and diverse cultural knowledges: Moving past the traditional catalog. **The Information Society,** 25(4), 265-278.

Stefano, M. L., Davis, P., & Corsane, G. (Eds.). (2012). **Safeguarding intangible cultural heritage.** Boydell Press.

Vecco, M. (2010). A definition of cultural heritage: From the tangible to the intangible. **Journal of Cultural Heritage,** 11(3), 321.

การพัฒนาผลิตภัณฑ์โดยใช้เทคนิคการแปลงหน้าที่เชิงคุณภาพ (QFD) กรณีศึกษา: ผลิตภัณฑ์ข้าวเกรียบเห็ด

PRODUCT DEVELOPMENT BY USING QUALITY FUNCTION DEPLOYMENT TECHNIQUE (QFD): A CASE STUDY OF MUSHROOM CRACKER PRODUCT

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Abstract

The objectives of this research are to study the quality processes and to develop a product, Mushroom Crackers, by using a Four-phase Model of a Quality Function Deployment Technique (QFD). Firstly, customer’ voices are collected by interviewing, then the results from the interviews are used as a basis for designing questionnaires to collect samples’ satisfaction on the product. At a 95% confidence level, a sample size is 70 samples. Secondly, the results from the questionnaires are analyzed using four phases of QFD which are: 1) Performance requirements, 2) Product design, 3) Process design and 4) Process control. The results from an analysis of QFD point out that the product should be developed in terms of product’s flavor, characteristics and packaging. For the flavor, paprika, tom yum, and seaweed flavors are added. For the characteristics, product’s quality, visual appeal and net weight are controlled. For the packaging, new designs of label and packaging are presented. Then, samples’ satisfaction on the developed product is collected. The results show that the total average satisfaction score of the product is increased from 6.85 to 8.62 or an increase of 25.84%. These scores mean the product is developed form only an acceptable level or expected quality to be an excellent level or desire quality.

Keywords: Product Development, Quality Function Deployment (QFD), Mushroom Crackers

Introduction

It can be stated that a Mushroom Cracker is a new interesting product in a snack food market in Thailand. Mushrooms are considered an economically important agricultural product due to extensive research and development in their cultivation techniques, enabling year-round production. They can be cultivated in various locations, allowing farmers to learn and practice mushroom farming independently. With minimal cultivation space and readily available local materials, mushroom cultivation offers a promising source of income for farmers (Klung Kraben Bay Development Study Center, 2013 : 4).

Nestled in the village of Don Manao, Huai Krajae district, Kanchanaburi province, Thailand, lies the Don Manao Vegetable and Love Community Enterprise. The enterprise's foundation lies in the area's sandy loam soil, which is well-suited for cultivating water-efficient crops. Recognizing the potential of mushrooms as a year-round source of income, the enterprise's members embarked on a journey to establish a comprehensive mushroom farm. Their approach to mushroom cultivation is characterized by a systematic and integrated management system, encompassing every stage from spawn inoculation to distribution. This dedication to quality has earned them certification from the Ministry of Agriculture and Cooperatives, solidifying their reputation as a producer of high-quality mushrooms.

Don Manao Vegetable and Love Community Enterprise, despite its success in mushroom cultivation, faced a recurring challenge, market oversupply during certain seasons. This overabundance led to a decline in mushroom prices, posing a significant financial strain on the farmers. Determined to overcome this obstacle, the enterprise members convened to brainstorm solutions. They concluded that creating new edible products derived from their abundant mushroom supply would be a viable strategy. With this goal in mind, they embarked on a journey to transform their oyster mushrooms into delectable mushroom crackers. This innovative product aimed to not only add value to their mushrooms but also extend their shelf life, ensuring long-term consumption and generating supplemental income for the community. However, recognizing the niche nature of mushroom crackers, they acknowledged the need to identify and target a specific customer base. To effectively reach their target audience, the enterprise members embarked on a market research endeavor. They meticulously gathered data and insights, which would serve as the foundation for refining their product and aligning it with consumer preferences. Additionally, they sought to enhance their production processes, ensuring the highest quality standards. Through this multifaceted approach, Don Manao Vegetable and Love Community Enterprise demonstrated its resilience and commitment to innovation. By transforming a market challenge into an opportunity, they paved the way for sustainable growth and prosperity for their community.

Research Objectives

The objectives of this research are to study the quality processes in a mushroom cracker production process and to develop a new mushroom cracker product that will be able to response to customer needs and satisfaction by using a Four-phase Model of a Quality Function Deployment Technique (QFD).

Literature Review

Product Life Cycle

Product life cycle presents the life of a product in the market with concerns business or commercial costs and sales measures. There are four major product life cycle stages. 1) Market development stage, it is a stage that the product is first brought to market which sales are low and slowly creep along. 2) Market growth stage, it is a takeoff stage that size of the total market rapidly expands, and the demand begins to accelerate. 3) Market maturity stage, it is a stage that the product price has been decreased, because of an increase of product volume. The demand level offs and grows only at the replacement and new family-formation rate. 4) Market decline stage, it is a stage of sales drift downward, because product begins to lose consumer appeal (Levitt, 1965).

Customer Satisfaction

According to Kano model, there are three categories of customer preferences. 1) Basic quality or expected quality: the requirements that the customers expect. If done poorly, customers are very dissatisfied and if done well, customer are neutral. 2) Performance quality or desire quality: the features that give a proportionate increase in customer satisfaction as they are invested in. 3) Excitement quality or attractive quality: the needs that are not expected by customers, if the product can provide, the customers are excited (Rotar and Kozar, 2017 : 339-351).

Quality Function Deployment (QFD)

Quality Function Deployment is a process and set of tools that used for defining customer requirements that provides a defined set of matrices for converting voices of customer into measurable design targets and then convert them into engineering specifications and plans to produce the products that will be able to fulfill those requirements (Quality-one international, 2018). As shown in Figure 1, there are four phases in the QFD process: 1) Performance requirements, 2) Product design, 3) Process design and 4) Process control. Relationships between elements are evaluated and a more specific aspect of customer requirements are represented in each phase, whereas only the most important aspects from each phase are deployed into the next phase (Akao, 2004). The most important phase is the first phase that is called “The House of Quality” which concerns converting voices of customer into measurable design inputs. The design inputs will be used in the next three phases for identifying detailed engineering specifications and plans to produce the products. (Hauser and Clausing, 1988 : 63-73).

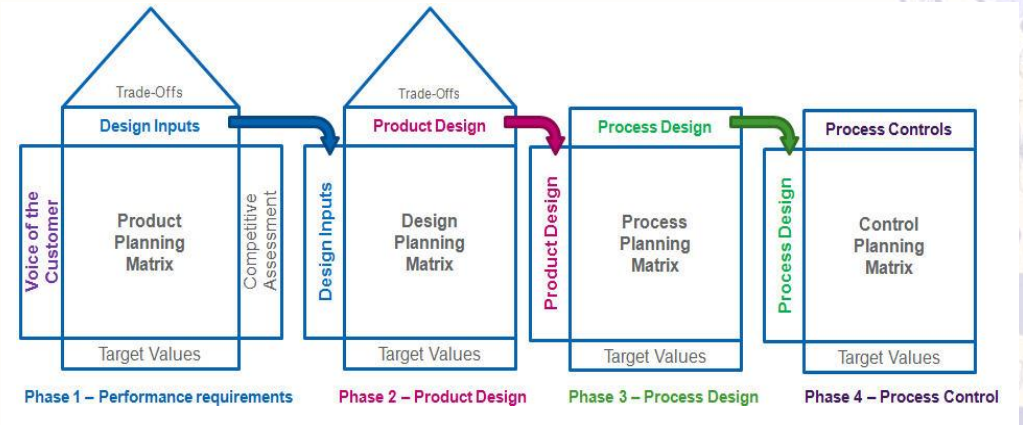

Figure 1: Quality function deployment process (Elite Consulting Ltd., 2018)

Quality Function Deployment (QFD) is a widely used tool in product development research, as evidenced by numerous research papers. For example:

An application of Quality Function Deployment (QFD) Technique for Product Development and Process Improvement of Hair Conditioner. The study results can solve the quality problems of hair conditioner products, develop products that meet customer needs, and control the production process to produce hair conditioner effectively and efficiently with results that meet product design (กรกนก สนธิศิริ, 2560).

A study on a quality process of a coffee bean-goat milk soap product to develop products that meet customer needs using the Quality Function Deployment (QFD) technique. The study converted customer needs into technical requirements, leading to the development of a new product with changes in packaging and product characteristics. The evaluation results showed that the average satisfaction score increased from 5.58 to 7.55, representing a percentage increase of 35.26% (ณัฐดนัย เสาร์แดง และ ภัทราภรณ์ รุดโถ, 2560)

A study on a banana processing to develop new product, banana crisps, for sale, with distinctive branding and packaging to attract consumers. Driven by these challenges, the researcher explored the application of Quality Function Deployment (QFD) to develop banana crisp products. The study focused on enhancing product packaging and branding to align with consumer preferences and gain acceptance in the Ban Pho Thale community. The overall evaluation of product development revealed a level of utmost satisfaction (พิมพ์อักษร เทียงกระโทก, 2560).

An application of Quality Function Deployment (QFD) Technique to enhance the business processes of a rubber sheet business. The analysis led to the development of improvement strategies for the business's products and workflow. Following the implementation of these strategies, customer satisfaction was found to have increased (อัญชลี ศรีจันทร์ และ มณฑลี

ศาสนนันทน์, 2560).

A quality improvement of 2-ton trucks to meet customer needs and enhance satisfaction using Quality Function Deployment (QFD). The study proposed two improvement approaches: quality improvement and product innovation. The results showed a 36% increase in customer satisfaction with process quality improvement and a 12.45% increase in satisfaction with product innovation compared to the original product (สมศักดิ์ สุวรรณมิตร และ ดำรงค์ ทวีแสงสกุลไทย, 2553).

Research Methodology

Population and Sample

A research population is about 1,000 which is a current customer of the Don Manao Vegetable and Love Community Enterprise who used to consume the mushroom cracker product. A research sample is selected by using a nonprobability sampling or convenience sampling method. By using an equation below (Kanlaya Wanichbuncha, 1999) at a 95% confidence level, 50% population proportion and 12% error, a sample size is 67 samples. However, the research uses 70 samples.

$$n = \left(\frac{Z}{e}\right)^2 p(1-p)$$

$$n = \left(\frac{1.96}{0.12}\right)^2 0.5(1-0.5) \approx 67$$

Research Process

The research is conducted follow these steps as shown in Table 1.

Table 1 Research Process

Factors	Tools	Outputs
1. Customer needs	In-depth Interview	Voice of customer
2. Impact of factors on customer satisfaction	1st Questionnaire	Important factors on customer satisfaction
3. Customer satisfaction of a current product	2nd Questionnaire	Level of customers’ satisfaction of a current product
4. Organization's goal level for enhancing customer satisfaction	3rd Questionnaire	The organization's goal level of each important factor

Factors	Tools	Outputs
5. Production process	Observation	Quality processes
6. Product properties and functions analysis	QFD technique (Four-phase Model)	Product properties and functions
7. Product design and development		Developed product
8. Customer satisfaction of a developed product	4th Questionnaire	Level of customers’ satisfaction of a developed product

Research Tools

1. In-depth Interview: to conduct the study, customer needs are first identified through the in-depth interviews. These customer needs are then grouped and summarized into requirement characteristics, which serve as the basis for developing a questionnaire.

2. Questionnaire: Four Questionnaires as follows are used as the input data for analysis in the QFD technique.

1St Questionnaire: Assessing the impact of factors on customer satisfaction with mushroom cracker product

2nd Questionnaire: Assessing the level of customer satisfaction with current mushroom cracker product characteristics

3rd Questionnaire: Assessing the organization's goal level for enhancing customer satisfaction with mushroom cracker product characteristics

4th Questionnaire: Assessing the level of customer satisfaction with developed mushroom cracker product characteristics

Research Results

Voices of Customer and Current Product Satisfaction

The in-depth interviews show that the current product need to be developed in aspects of flavor, quality, visual appeal, net weight, label and packaging. The samples’ satisfaction on the current Mushroom Crackers is collected by using questionnaires. The result shows that the total average satisfaction score of the current product is 6.85 (from the full score of 10). This score means the product is in an acceptable range. The before-development product is shown in Figure 2.

Figure 2: Before-development product

QFD Phase I: Performance requirements

This phase is the hose of quality that the voices of customer are converted into measurable design inputs. The result of this phase is a list of technical requirements as shown in Table 2.

Table 2 Technical Requirements

	Technical Requirement	Relative Technique Requirement Importance
1	Product label	13.09
2	Ingredient information	10.78
3	Packaging shape	9.36
4	Material of packaging	9.08
5	Flavoring powder	8.58
6	Product shelf life	8.47
7	Packaging appearance	7.20
8	Price	6.51
9	Net weight	5.26
10	Frying method	4.78
11	Size of mushroom crackers pieces	4.43
12	Standard of production process	3.73
13	Flame Intensity	2.70
14	Color of mushroom crackers	2.20
15	No synthetic scent	2.00
16	Raw material (mushroom) quality	1.83

QFD Phase II: Product Design

In this phase, the design inputs or technical requirements, which is a result of phase I, are converted into part characteristics that explain the detailed characteristics of each product component or part. The result of this phase is shown in Table 3.

Table 3 Part Characteristics

	Part Characteristics	Important weight score
1	Product pricing	25.72
2	Packaging design appeal	11.95
3	Variety of packaging option	11.33
4	Raw material quality	10.79
5	Label design and product information	10.04
6	Healthy seasoning powders	8.24
7	Thickness of pieces	8.04
8	Effectiveness of packaging in maintaining product freshness	7.76
9	Transparent packaging	6.13

QFD Phase III: Process Design

In this phase, the part characteristics, which is a result of phase II, are converted into process parameters that explain the detailed engineering parameters concerned in the mushroom cracker production process. The result of this phase is shown in Table 4.

Table 4 Process Parameters

	Process Parameter	Important weight score
1	An ability to compete with competitors	26.84
2	Cost analysis	15.59
3	Material quality control	10.57
4	An ability to supply material	10.57
5	An ability to supply packaging	7.01
6	Resources management	6.36
7	Worker skills	6.05
8	Packaging design	5.86
9	An ability to design for manufacturing	3.56
10	Product quality control	3.46
11	Machine capacity and flexibility	3.08
12	Production planning	1.03

QFD Phase IV: Process Control

In this phase, process control planning is created for controlling the process parameters, which is a result of phase III. There are eight process involved in the mushroom cracker production which shown in Figure 3.

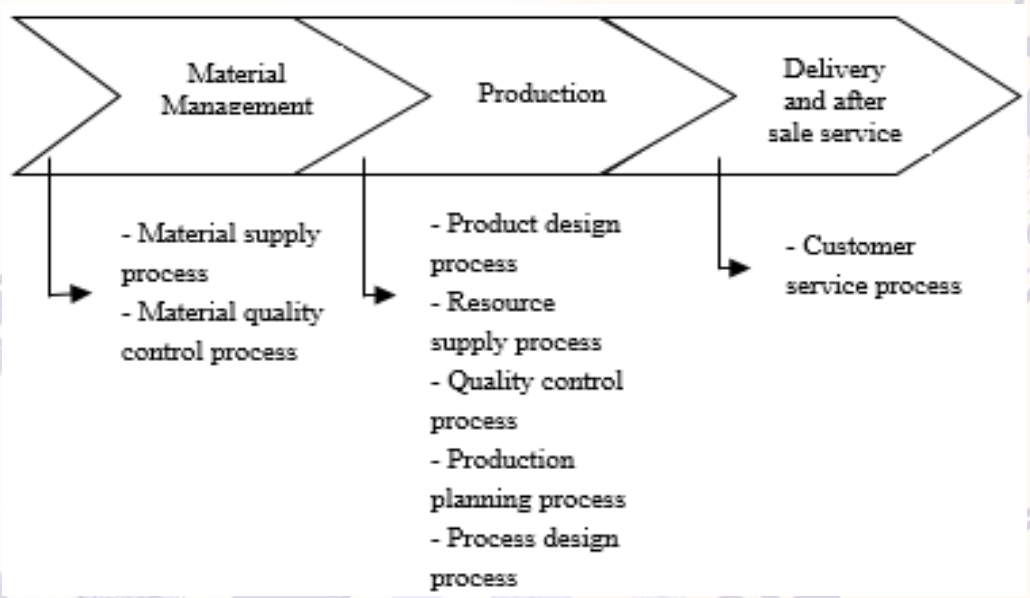

Figure 3: Process control

For the quality control process, the production of mushroom crackers at Don Manao Vegetable and Love Community Enterprise is characterized by meticulous attention to detail, ensuring consistently high quality and visual appeal. Two key aspects of their process exemplify this commitment to excellence:

1. Precision Slicing: To achieve uniform and aesthetically pleasing slices, the enterprise has carefully designed and implemented specialized cutting tools. These tools ensure that each mushroom is sliced with precision, resulting in consistently sized and shaped cracker pieces as shown in Figure 4.

Figure 4: Precision Slicing

2. Color Control: The color of the mushroom crackers serves as a visual indicator of their doneness. As shown in Figure 5, to achieve the desired golden hue, the enterprise controls the following factors during the frying process:

1) **Flame Intensity**: The intensity of the flame directly influences the heat transfer rate, affecting the browning of the crackers. By carefully adjusting the flame, they achieve even coloration without burning or undercooking the crackers.

2) **Oil Temperature**: The temperature of the oil plays a crucial role in the frying process. Maintaining the optimal oil temperature at 170 °C ensures that the crackers cook evenly and develop the desired golden color without becoming greasy or overcooked.

3) **Frying Duration**: The precise duration of the frying process is critical for achieving the perfect texture and color. By carefully monitoring the frying time at around 7-9 seconds, they ensure that the crackers retain their crispness while developing the desired level of doneness.

Through these meticulous control measures, Don Manao Vegetable and Love Community Enterprise consistently produces mushroom crackers that are not only visually appealing but also perfectly cooked, ensuring a delightful culinary experience for their customers.

Figure 5: Color control

Developed Product Satisfaction

The results from an analysis of QFD point out that the product should be developed in terms of product’s flavor, characteristics and packaging. In terms of flavor, paprika, tom yum, and seaweed flavors are added. For the flavor, paprika, tom yum, and seaweed flavors are added. For the characteristics, product’s quality, visual appeal and net weight are controlled. For the packaging, new designs of label and packaging are presented. The samples’ satisfaction on the developed product is collected by using questionnaires. The result shows that the total average satisfaction score of the developed product is 8.62 (from the full score of 10). This score means the product is in an excellent range. The after-development products and packaging are shown in Figure 6 and 7.

Figure 6: Flavor and label development

Figure 7: Packaging development

Conclusions

The samples’ satisfaction on the current Mushroom Crackers is collected and the result shows that the total average satisfaction score of the current product is 6.85. The results from an analysis of customer requirements using QFD technique point out that the product should be developed in terms of product’s flavor, characteristics and packaging. Then, samples’ satisfaction on the developed product is collected. The result shows that the total average satisfaction score of the developed product is 8.62 or it is an increase of 25.84%. These scores mean the product is developed form only an acceptable level or expected quality to be an excellent level or desire quality. Aligned with other existing research studies, it can be stated that an implementation of the QFD technique can help to design and develop a new product that is able to response to customer requirements and satisfaction.

Recommendations

There is a high business competition in the current business environment. End users have lots of choices and their requirements are changed quickly. Thus, manufacturers should continuously develop their products for maintaining an ability to response to customer needs. For further research, the QFD technique and this research methodology can be repeatedly conducted for developing other different types of products in other business areas.

Acknowledgment

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References

Elite Consulting Ltd. (2018). **QFD**. URL: https://elite-consulting.com/quality_processes/dfss/qfd/, accessed on 15/03/2018.

J. R. Hauser and D. Clausing. (1988). The House of Quality. **The Harvard Business Review**, May-June, No. 3 : 63-73.

Kanlaya Wanichbuncha. (1999). **Statistical Analysis: Statistics for Decision Making**. Fourth Editin. Bangkok. Chulalongkorn University Printing.

Klung Kraben Bay Development Study Center. (2013). **Economic Mushroom Cultivation.** First Edition : 4.

L. J. Rotar and M. Kozar. (2017). The use of Kano model to enhance customer satisfaction. **Organizacija**. Vol. 50, no. 4 : 339-351.

Quality-one international. (2018). **Quality function deployment (QFD)**. URL: https://quality-one.com/qfd/, accessed on 15/03/2018.

T. Levitt. (1965). **Exploit the Product Life Cycle**. Harvard Business Review.

Y. Akao. (2004). **Quality function deployment: integrating customer requirements into product design**. New York. NY: Productivity Press, Inc.

กรกนก สนธิศิริ. (2560). **การประยุกต์ใช้เทคนิคการกระจายหน้าที่การทำงานเชิงคุณภาพเพื่อพัฒนาผลิตภัณฑ์และปรับปรุงกระบวนผลิต กรณีศึกษาครีมนวดบำรุงเส้นผม.** วิทยานิพนธ์วิศวกรรมศาสตรมหาบัณฑิต, มหาวิทยาลัยเกษตรศาสตร์ วิทยาเขตศรีราชา.

ณัฐดนัย เสาร์แดง และ ภัทราภรณ์ รุดโถ. (2560). **การพัฒนาผลิตภัณฑ์โดยใช้เทคนิคการแปลงหน้าที่เชิงคุณภาพ กรณีศึกษาผลิตภัณฑ์สบู่นมแพะสูตรเมล็ดกาแฟ”** ปริญญานิพนธ์วิศวกรรมศาสตรบัณฑิต สาขาวิชาวิศวกรรมอุตสาหการ, มหาวิทยาลัยศิลปากร.

พิมพ์อักษร เทียงกระโทก. (2560). **การประยุกษ์ใช้เทคนิคการแปลงหน้าที่เชิงคุณภาพในการพัฒนาผลิตภัณฑ์ใหม่.** วิทยานิพนธ์ปริญญามหาบัณฑิต สาขาวิชาเทคโนโลยีอุตสาหกรรม, บัณฑิตวิทยาลัย มหาวิทยาลัยสงขลานครินทร์.

สมศักดิ์ สุวรรณมิตร และดำรงค์ ทวีแสงสกุลไทย. (2553). **การปรับปรุงคุณภาพของผลิตภัณฑ์รถยนต์บรรทุก 2 ตันโดยใช้เทคนิค QFD.** http://cuir.car.chula.ac.th/handle/123456789/16730, accessed on 21/04/2023.

อัญชลี ศรีจันทร์ และมณฑลี ศาสนันทน์. (2560). **การประยุกต์ใช้เทคนิคการกระจายหน้าที่เชิงคุณภาพเพื่อปรับปรุง กระบวนการทางธุรกิจ กรณีศึกษา ธุรกิจกล้ายางพารา.** http://tujournals.tu.ac.th/tsti/detailart.aspx?ArticlelD=5911. accessed on 21/04/2023.

การพัฒนาทักษะการถอดความของนักศึกษาที่เรียนภาษาอังกฤษเป็นภาษาต่างประเทศ โดยใช้กระบวนการถอดความ 7 ขั้นตอน

ENHANCING PARAPHRASING SKILLS OF EFL STUDENTS THROUGH A 7-STEP PARAPHRASING PROCESS

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Abstract

This paper presents the results of enhancing paraphrasing skills of EFL students at Rajamangala University of Technology Isan through a 7-step paraphrasing process: (1) make an understanding of a source text, (2) identify a shared language, (3) identify a main point, (4) paraphrase with one’s own words, (5) do a self-review, (6) have peers review, and (7) have two teachers review for grading. Scoring is based on four criteria: (1) preserving the original meaning of the source text, (2) adjusting by using one’s own words, (3) having a similar length to the source text, and (4) no adding of new information. The incomplete paraphrase that fails to meet these four elements receives no points. In data collection, the students are assigned to complete a paraphrasing practice kit containing 10 worksheets designed in accordance with the 7-step paraphrasing process. The results revealed that the 7-step paraphrasing process had a positive impact on students’ paraphrasing skills. The students’ success rate in producing complete paraphrases increased steadily from 80% on the first worksheet to 100% on the last four worksheets. Notably, the most common error was failing to preserve the original meaning of the source text. Additionally, students demonstrated significant learning retention through improved performance on a post-test compared to a pre-test, with statistical significance at the .05 level. They also perceived the positive impact of the 7-step paraphrasing process on their improved paraphrasing skills.

Keywords: paraphrase, paraphrasing skills, paraphrasing process

บทคัดย่อ

บทความนี้นำเสนอผลการพัฒนาทักษะการถอดความของนักศึกษาที่เรียนภาษาอังกฤษเป็นภาษาต่างประเทศ ณ มหาวิทยาลัยเทคโนโลยีราชมงคลอีสาน โดยใช้กระบวนการถอดความ 7 ขั้น คือ 1) ทำความเข้าใจข้อความต้นฉบับ 2) หาคำที่เป็นภาษาทั่วไป 3) หาจุดสำคัญ 4) เขียนถอดความด้วยคำพูดของตนเอง 5) ตรวจทานเอง 6) ให้เพื่อนช่วยตรวจทาน และ 7) ส่งอาจารย์สองท่านเพื่อตรวจให้คะแนน โดยมี

เกณฑ์การให้คะแนน คือ 1) มีความหมายคงเดิม 2) มีการปรับใช้คำพูดของตนเอง 3) มีความยาวใกล้เคียงกับต้นฉบับ และ 4) ไม่มีการเพิ่มข้อมูลใหม่ หากขาดข้อใดข้อหนึ่ง ถือว่า ไม่สมบูรณ์ และจะได้ 0 คะแนน ในการเก็บรวบรวมข้อมูล นักศึกษาได้รับมอบหมายให้ทำชุดฝึกทักษะการถอดความที่ประกอบด้วยใบงาน 10 ชิ้นที่ออกแบบตามกระบวนการการถอดความทั้ง 7 ขั้น ผลการวิจัยพบว่า กระบวนการถอดความ 7 ขั้น มีส่วนช่วยให้เกิดผลเชิงบวกต่อทักษะการถอดความของนักศึกษา นักศึกษามีอัตราความสำเร็จในการถอดความเพิ่มขึ้นอย่างต่อเนื่องจากร้อยละ 80 ในใบงานที่ 1 จนถึงร้อยละ 100 ในสี่ใบงานสุดท้าย ข้อผิดพลาดที่พบมากที่สุด คือ ไม่คงความหมายเดิมของต้นฉบับ นอกจากนี้ ยังพบว่า นักศึกษามีความคงทนในการเรียนรู้ โดยมีคะแนนเฉลี่ยหลังเรียนสูงกว่าก่อนเรียนอย่างมีนัยสำคัญทางสถิติที่ระดับ .05 และนักศึกษายังรับรู้ถึงผลเชิงบวกของกระบวนการถอดความ 7 ขั้นที่มีต่อทักษะการถอดความที่นักศึกษาได้รับการพัฒนา

Introduction

Developing research skills in students is an iterative process that needs to be conducted step by step. It starts with foundational skills like information searching and formulating research questions, and progresses to instrument construction, data collection, data analysis, and report writing. Information searching, the first step, is now significantly easier due to the vast resources available online. Students and researchers can access a wealth of domestic and international sources for compiling knowledge, concepts, and theories to be utilized in their research and report writing.

However, the ease of internet research can lead to plagiarism, the act of copying others' work without proper citation. This can be intentional or unintentional, but it infringes on intellectual property rights. Charoenwongsak (2009) found that roughly 70 theses contained uncited internet content and copied work. Similar issues arise in classrooms, where students may copy text directly from websites for reports and assignments. Accordingly, Malik et al. (2021) found that most online students had a poor awareness and understanding of plagiarism.

Several studies highlight a potential cause of plagiarism: students' lack of paraphrasing skills. McInnis (2009) and Shi (2012) found that university students often lack an understanding of paraphrasing methods, leading them to copy directly from source texts. Similarly, Liao and Tseng (2010) reported that university-level EFL students in Taiwan struggled to paraphrase effectively. Khrismawan and Widiati (2013) identified multiple factors contributing to this difficulty. Students may find it challenging to interpret the source text or maintain its original meaning while paraphrasing. Additionally, many students recognize that effective paraphrasing requires not only language skills but also knowledge of specific paraphrasing techniques and the ability to interpret the source text. Fatima et al. (2020) identified that a lack of proper education and training on plagiarism, coupled with an inadequate skillset, were significant factors contributing to students’ plagiarism. Furthermore, Malik et al. (2021) found that the main reasons for plagiarism among students included the absence of a proactive approach to

raise awareness, exclusion of citation rules from the curriculum, untrained educators, insufficiently strict penalties and their enforcement, poor time management, fear of failure, lack of confidence, laziness, and a prevailing culture of plagiarism. Besides, Muluk et al. (2021) found that the factors influencing students to plagiarize included time constraints on assignments, poor time management, the ease of using online sources, a lack of understanding of plagiarism, and a poor grasp of what constitutes plagiarism acts.

Paraphrasing is the process of expressing ideas in one’s own language (Badiozaman, 2014). It has been defined by several researchers as the act of restating information by incorporating linguistic features—both semantic and syntactic—such as synonym substitution, word form changes, and sentence structure rearrangement. According to Chin et al. (2015), paraphrasing involves rewriting a source text of no more than three sentences into our own words, and we paraphrase when we need to use all the author’s concepts; ensuring that the original meaning is retained, and the length remains comparable to that of the source text.

Additionally, Driscoll and Brizee (2011) describe paraphrasing as “your own rendition of essential information and ideas expressed by someone else, presented in a new form.” However, it is crucial that the message of the source text needs to be preserved in the paraphrased output. Moreover, proper citation must not be neglected in paraphrasing (Campbell, as cited in Hirvela & Du, 2013, p.88).

To practice paraphrasing, this study employed a 7-step paraphrasing process, adapted from Chin et al. (2015). The process begins with understanding the source text. Students carefully read to gain an understanding of the source text. The second step involves identifying shared-language words that do not belong to the author. These words or phrases are shared by most readers and can be retained in the paraphrase. Examples include proper nouns (Rajamangala University of Technology Isan), common nouns (university), numbers (80), and terminology (rabies and reinforcement). In step 3, students identify the main points. They specify the important points of the source text by highlighting or underlining them while reading. Step four involves writing a paraphrase using students’ own words. Students combine the highlighted main points with shared-language words to create a paraphrase. In step 5, students engage in self-review using four criteria: (1) preserving the original meaning of the source text, (2) adjusting by using one’s own words, (3) having a similar length to the source text, and (4) no adding of new information. If students identify any errors or missing criteria, they must revise the paraphrase. Step six involves peer review. Students can have 1-2 friends review their paraphrases based on the same criteria. If their peers identify any errors or missing criteria, the students should revise accordingly. Finally (step 7), students submit the final paraphrase to two teachers for grading. To receive the full point (1 point), both teachers must agree that the paraphrase meets the criteria.

According to the 7-step paraphrasing process, two reviews—self-review and peer review—were included in steps 5 and 6 before submitting a paraphrase to two teachers in the final step. These reviews aimed to improve students' paraphrases as much as possible before they were graded by the teachers. Theoretically, peer review serves as an effective technique for students to revise their written work and develop critical thinking skills as several studies (Ruru & Sulistyo, 2020; Kurihara, 2016; Sotoudehnama, 2016; Nguyen, 2016; Ghanbari, 2015) reported the positive effects of peer reviews in English writing classrooms. Furthermore, involving students in the peer review process fosters interaction among them as both writers and readers, leading to greater confidence and reduced anxiety when completing written assignments (Moussaoui, 2012). By participating in peer review, students gain insight into the motivation behind helping one another improve (Jahin, 2012). Additionally, receiving peer feedback on written assignments encourages students to expand their knowledge by tackling situations that promote critical thinking and autonomy (Ghanbari, 2015).

Therefore, the researchers are interested in enhancing EFL students' paraphrasing skills using the 7-step process outlined above. Effective paraphrasing will become a crucial tool for students as they integrate information obtained through their research into their writing.

Research Objective

To study the results of enhancing students' paraphrasing skills through a 7-step paraphrasing process

Research Hypothesis

The students who undergo the 7-step paraphrasing process will demonstrate a statistically significant improvement in their paraphrasing skills, as measured by a post-test compared to a pre-test.

Research Methods

Participants

Thirty fourth-year English for Communication majors from the Faculty of Sciences and Liberal Arts at Rajamangala University of Technology Isan, Nakhon Ratchasima, participated in this study. Purposive selection was used to select the students from an independent study class in the first semester of the academic year 2023 since paraphrasing skills are crucial for these students to write academic reports on their research topics. These students took an independent study course, which required them to possess paraphrasing skills for compiling knowledge retrieved from reviewing literature related to and necessary for citing in their

research projects. Most importantly, the students were in their fourth year of study and had acquired basic reading skills for comprehending academic texts related to the principles and theories of English language learning. These principles and theories were relevant to their current field of study and served as the theme for the ten worksheets in the practice kit.

Materials

1) Paraphrasing Practice Kit

The study utilized a 10-worksheet paraphrasing practice kit. Each worksheet featured a single source text about principles and theories of English language learning, which were relevant to the students' field, and which were presented in a format like excerpts. Each worksheet’s source text contained no more than three sentences. The difficulty level increased across worksheets 1-10, reflecting varying sentence complexities.

The 10 worksheets followed a sequence of activities aligned with the 7-step paraphrasing process: (1) make an understanding of a source text, (2) identify a shared language, (3) identify a main point, (4) paraphrase with one’s own words, (5) do a self-review, (6) have peers review, and (7) have two teachers review for grading.

2) Pre-test and Post-test

The study employed a subjective 5-question pre-test and post-test. Each question presented a source text (no more than 3 sentences) similar in content to the paraphrasing practice kit. Students were required to paraphrase the source text of each question. The scoring criteria used for the paraphrases were identical to those applied to the worksheets in the paraphrasing practice kit.

3) Questionnaire

A questionnaire was used to explore students’ perceptions of the implementation of the 7-step paraphrasing process in enhancing their paraphrasing skills. The questionnaire included both five-rating scale questions and open-ended questions.

Procedures

Data collection spanned twelve weeks, with two-hour weekly sessions following this schedule:

Week 1 : Pre-test administration and training on the 7-steps of paraphrasing

Weeks 2-11 : Students practiced paraphrasing using a 10-worksheet paraphrasing practice kit aligned with the 7-step paraphrasing process (see Figure 1). During their regular class time (2 hours per week), students completed one worksheet per week for 10 weeks.

Week 12 : Post-test and questionnaire administration

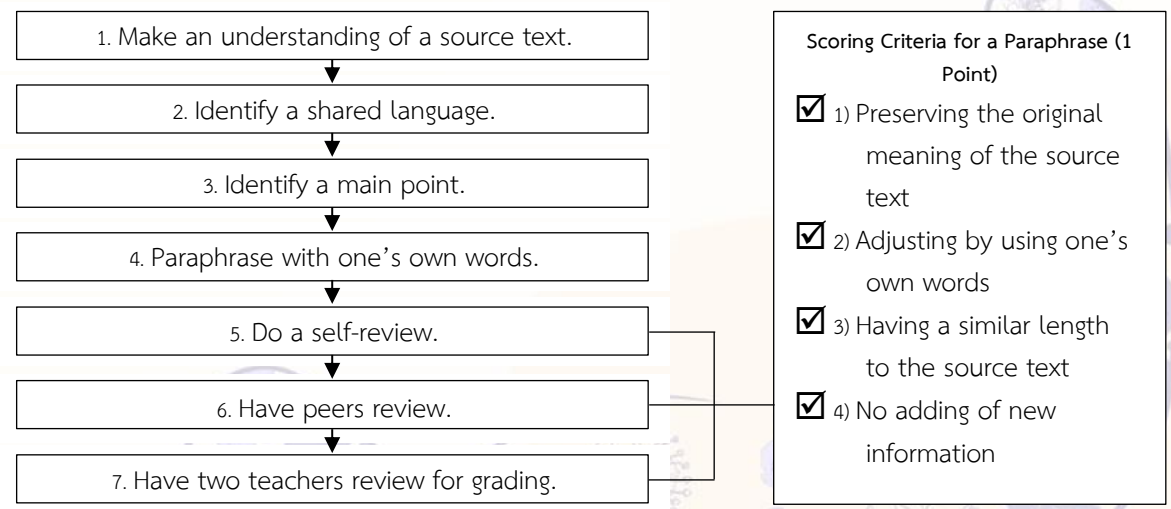

Figure 1: The 7-Step Paraphrasing Process

Analysis

To study the results of enhancing students' paraphrasing skills through a 7-step paraphrasing process, the following data analysis procedures were employed:

1) Paraphrasing Skills

The researchers analyzed the frequency and percentage of students who successfully paraphrased texts from worksheets 1-10 in the practice kit. This allowed the researchers to track the overall trend in students' paraphrasing abilities across the worksheets. A successful paraphrase was defined as receiving a full point (1 point) based on the established scoring criteria (Table 1). It's important to note that both teachers involved in scoring needed to agree on all four criteria elements for a paraphrase to receive the full point.

Table 1 Scoring Criteria for Grading a Paraphrase

Point	Criteria	Description
1	A paraphrased text meets all four elements: ☑ 1) Preserving the original meaning of the source text ☑ 2) Adjusting by using one’s own words ☑ 3) Having a similar length to the source text ☑ 4) No adding of new information	Successful paraphrase, or complete paraphrase
0	A paraphrased text lacks one of the four elements:	Partially successful paraphrase, or incomplete paraphrase

2) Learning Retention

To assess students' learning retention of paraphrasing skills, the dependent samples t-test was conducted. This statistical test compared the average scores on the pre-test and post-test. A computer program was used to facilitate the t-test analysis.

3) Perceptions

To explore students’ perceptions of the implementation of the 7-step paraphrasing process in enhancing their paraphrasing skills, researchers analyzed the frequency and percentage of students’ responses to the questionnaire questions using a spreadsheet program. Additionally, the researchers conducted a content analysis of their answers to the open-ended questions.

Research Results

1) Paraphrasing Skills

The researchers analyzed the frequency and percentage of students who successfully paraphrased texts from worksheets 1-10 in the practice kit to gauge their paraphrasing skills. Table 2 presents these results.

Table 2 Frequency and Percentage of Students Successfully Paraphrasing Texts

	Frequency (n=30)	Percentage (%)
Worksheet 1	24	80
Worksheet 2	26	87
Worksheet 3	27	90
Worksheet 4	28	93
Worksheet 5	29	97
Worksheet 6	29	97
Worksheet 7	30	100
Worksheet 8	30	100
Worksheet 9	30	100
Worksheet 10	30	100

From Table 2, it was found that there is a steady improvement in the number of students successfully paraphrasing texts throughout the worksheets in the paraphrasing practice kit. In Worksheet 1, twenty-four students (80%) could paraphrase successfully. This number increases to thirty students (100%) by Worksheet 7. In addition, all students (100%) were able to successfully paraphrase the texts in the last four worksheets (Worksheets 7-10).

It could be noticed that the students’ success rate in paraphrasing increased steadily as they progressed through worksheets 1-10 (see Figure 2).

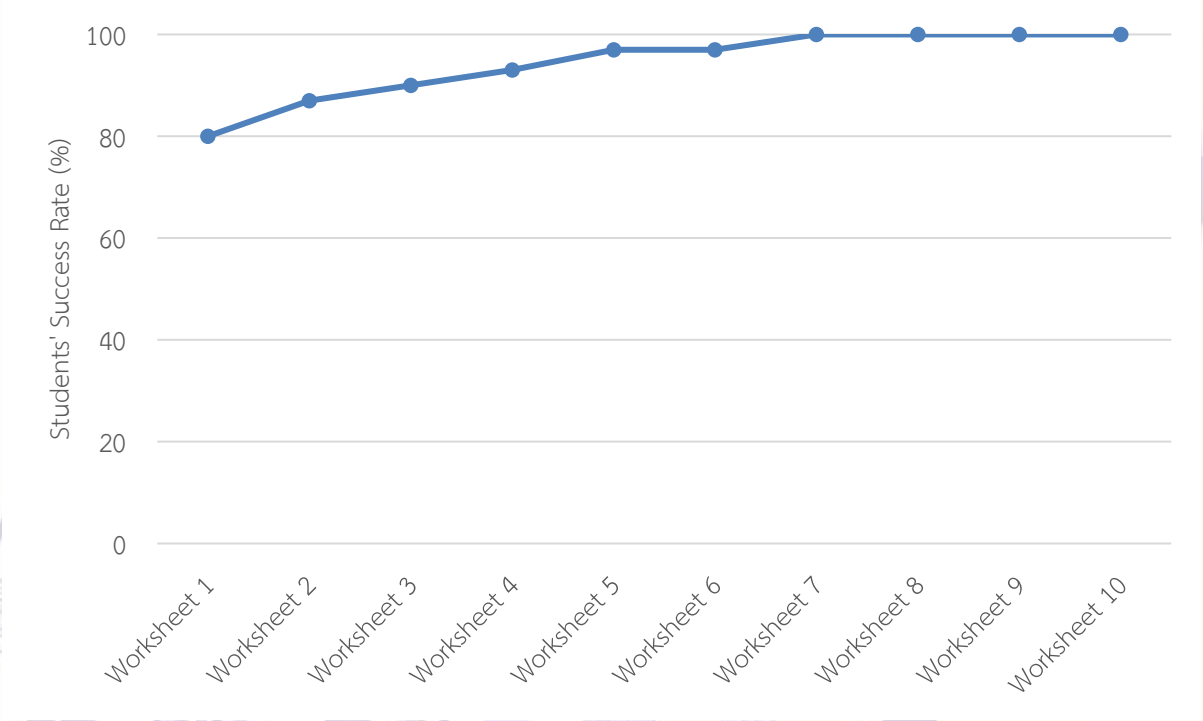

Figure 2 : Students’ Success Rate in Paraphrasing

2) Paraphrasing Errors

Figure 3 illustrates the most common errors students made in their paraphrases from worksheets 1-6. The most frequent error was failing to preserve the original meaning of the source text. This was followed by adding new information to the paraphrased text, and then by paraphrases that deviated significantly from the source text length. Notably, not using one’s own words was the least common error.

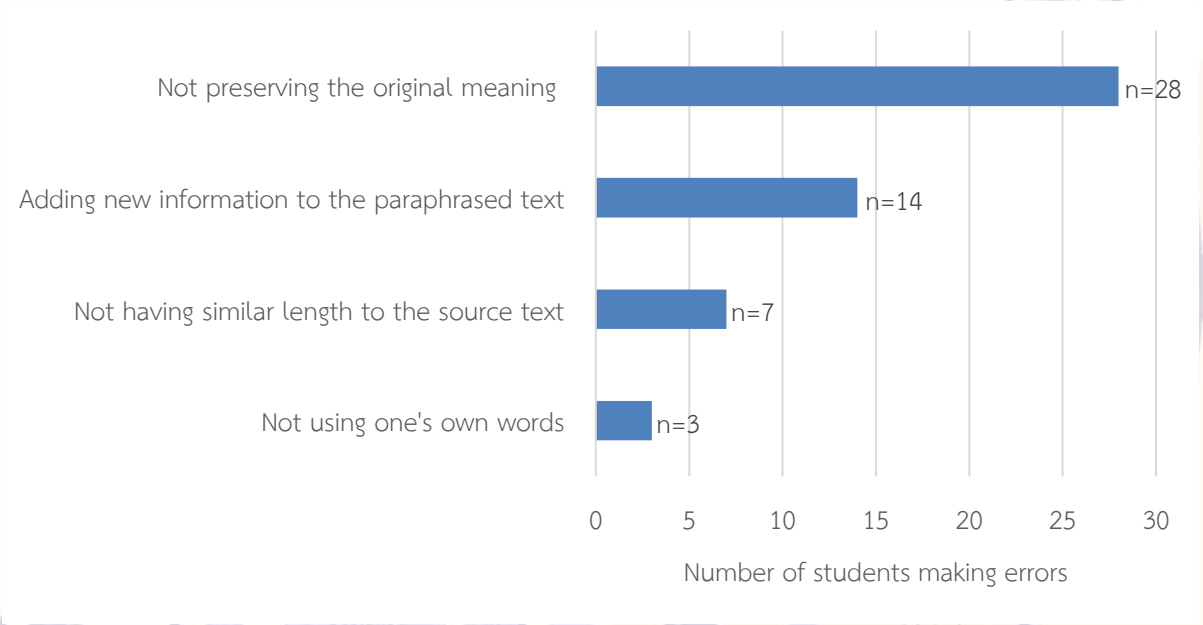

Figure 3: Errors Made by Students in Worksheets 1-6

According to Figure 3, the paraphrased text often fails to preserve the original meaning of the source text, which is the most common error made by students in the first phase of practice (Worksheets 1-6). For example, in Worksheet 1, the source text stated: "*All of us have the ability to understand language (Competence) and the ability to express ourselves in language (Performance). However, the ability to understand language must be acquired before being able to express it."* A student paraphrased it as: *"The ability to understand the language of all people, so the use of language can be expressed."* Another student paraphrased, “*Everyone has the ability to understand language (Competence) and language expression (Performance), but everyone must have an understanding of the language and expression before being able to express.*” It can be seen that the two paraphrases lose the original meaning in two main points: understanding language and expressing language. Both are important abilities that all humans can acquire, and understanding comes before expression.

3) Learning Retention

Table 3 summarizes the results of a dependent samples t-test comparing the average scores on the pre-test and post-test to assess students' learning retention of paraphrasing skills.

Table 3 Results of Comparing the Average Scores on Pre-test and Post-test

	Number of students (n)	Mean (5)	Standard deviation	Mean difference	*t*	*p*
Pre-test	30	0.50	0.63	3.77	19.837	.000
Post-test	30	4.27	0.87			

From Table 3, it was found that the average score on the pre-test (M = 0.50, SD = 0.63) indicates that students' initial performance in paraphrasing was relatively low. The average score on the post-test (M = 4.27, SD = 0.87) demonstrates a significant improvement in paraphrasing skills after completing the paraphrasing practice kit designed in accordance with the 7-step paraphrasing process. This improvement is confirmed by the result of the t-test analysis, revealing that the post-test average score is significantly higher than the pre-test average score at the .05 level. This indicates that the 7-step paraphrasing process was effective in promoting students' learning retention of paraphrasing skills. Therefore, these findings support the research hypothesis in this study.

4) Perceptions

According to the results of the questionnaire, students held a positive view regarding the implementation of a 7-step paraphrasing process to enhance their paraphrasing skills. Over 95% of the students (more than 28 out of 30 students) agreed that the 10-worksheet paraphrasing practice kit, aligned with the 7-step process, was an appropriate tool to facilitate easier paraphrasing. Additionally, most students reported a clear understanding of how to paraphrase based on the 7 steps, and their paraphrasing abilities improved across the ten worksheets. Furthermore, they acknowledged that paraphrasing was beneficial for writing their research reports and helped reduce plagiarism.

Research Discussion

The research yielded several interesting findings. First, the 7-step paraphrasing process demonstrated effectiveness in improving students' paraphrasing skills. Their performance steadily increased from 80% on Worksheet 1 to 100% on the last four worksheets (Worksheets 7-10). Additionally, students exhibited knowledge retention through improved performance on a post-test compared to a pre-test, with statistical significance at the .05 level. These findings align with the research hypothesis, possibly due to the training provided before the experiment. Students thoroughly grasped the seven steps: (1) make an understanding of a source text, (2) identify a shared language, (3) identify a main point, (4) paraphrase with one’s own words, (5) do a self-review, (6) have peers review, and (7) have two teachers review for grading. They were also familiar with the scoring criteria, which awarded one point when the

paraphrase met all four elements: (1) preserving the original meaning of the source text, (2) adjusting by using one’s own words, (3) having a similar length to the source text, and (4) no adding of new information. Incomplete paraphrases missing any element received zero points. This corresponds to the study of Akbar (2020), suggesting enhancing students’ understanding of paraphrasing by providing them with better training and guidance.

Another factor contributing to their success is the familiarity of the source texts. Because the content relates to the principles and theories of language learning, it aligns with the student's field of study in English for Communication. This allows the students to leverage their background knowledge to understand the source text before paraphrasing, along with the basic English reading and writing skills most fourth-year students possess. Understanding the content through this background knowledge and language competence, coupled with the clear paraphrasing method, facilitates an easier paraphrasing process for the students. Consequently, as supported by several studies (Shi, 2012; Khrismawan & Widiati, 2013; Akbar, 2020), a high percentage (80%) of students were able to paraphrase successfully from the very first worksheet.

Furthermore, peer review in the semi-final step likely contributes to students' success. By receiving feedback on their paraphrases from classmates, students can learn from suggested corrections and improve their work. This finding was in line with several studies (Ruru & Sulistyo, 2020; Kurihara, 2016; Nguyen, 2016). This iterative process of trial and error may be another factor that helps students become more proficient paraphrasers. As evidenced by the steady increase in success rates on worksheets 2-6 (87%, 90%, 93%, 97%, and 97%, respectively), the multiple worksheets provide ample opportunity for practice. This extended period of practice is likely sufficient and appropriate for students to develop accurate, fluent, and ultimately proficient paraphrasing skills.

Another issue was that the most common error in the first practice phase (Worksheets 1-6) was failing to preserve the original meaning. This aligns with the study of Khrismawan and Widiati (2013), and Tran and Nguyen (2022), finding that preserving the original meaning is a core difficulty in paraphrasing. Students' varying abilities to understand and interpret the source language make it challenging to maintain the original meaning while using their own words. A small percentage (3-20%) of students initially struggled with accurate and complete paraphrasing in worksheets 1-6. However, this differs from McInnis (2009), Liao and Tseng (2010), and Akbar (2020), reporting that most students failed on the first attempt. This discrepancy may be due to the different skill development process. In this research, students received training on the 7-step paraphrasing process before practicing with the 10-worksheet paraphrasing practice kit. This structured approach may have facilitated easier paraphrasing practice.

In conclusion, the 7-step paraphrasing process was related to the effective improvement of students' paraphrasing skills. 80% or more of students were able to successfully paraphrase, demonstrating a steady improvement from worksheets 1-10. This progress is further supported by students’ significant learning retention through improved performance on a post-test compared to a pre-test, with statistical significance at the .05 level.

Research Suggestions

In this research, the method to enhance students’ paraphrasing skills has been developed in accordance with the 7-step paraphrasing process. Applying this method should primarily focus training on an in-depth understanding of the 7-step paraphrasing process, utilizing diverse learning methods and media for better learning retention. Since the present study employed only paper-based materials, including those used for training about the 7-step paraphrasing process and the practice kit, exploring other materials such as technology-enhanced materials or a learning management system may be an effective alternative. In the paraphrasing process, immediate feedback should be provided with specific, positive suggestions to help students identify and correct their errors. Future research can explore the effectiveness of the 7-step paraphrasing process further. The further research may include comparing paraphrasing abilities between students working with assigned texts and those choosing their texts of interest, as well as investigating the impact of different learning media on paraphrasing skills, student achievement, and satisfaction.

References

Akbar, T. M. (2020). Students’ paraphrasing in the literature review section of research proposal. **Jambura Journal of English Teaching and Literature**, 1(1), 1 – 15. https://doi.org/10.37905/jetl.v1i1.5150

Badiozaman, I. F. A. (2014). Paraphrasing challenges faced by Malaysian ESL students. **Issues in Language Studies**, 3(1), 49-69. http://www.ils.unimas.my/media/pdf/v3n2/ilsv3n2_ida.pdf

Charoenwongsak, K. (2009). Stop plagiarism and create a knowledge-based society. **Siam Rath Weekly Commentary,** 3(9), 30.

Chin, P., Reid, S., Wray, S., & Yamazaki, Y. (2015). **Academic writing skills 2**. Cambridge : Cambridge University Press.

Driscoll, D. L., & Brizee, A. (2011). Paraphrase: Write it in your own words. **Purdue Online Writing Lab**. https://owl.english.purdue.edu/owl/resource/563/02/

Fatima, A., Sunguh, K. K., Abbas, A., Mannan, A., & Hosseini, S. (2020). Impact of pressure, self-efficacy, and self-competency on students’ plagiarism in higher education.

Accountability in Research, 27, 32–48. https://doi.org/10.1080/08989621.2019.1699070

Ghanbari. (2015). An exploration of the effect of time pressure and peer feedback on the Iranian EFL students' writing performance. **Theory and Practice in Language Studies**, 5(11), 2251–2261.

Hirvela, A., & Du, Q. (2013). "Why am I paraphrasing?": Undergraduate ESL writers' engagement with source-based academic writing and reading. **Journal of English for Academic Purposes**, 12, 87-98. http://www.vodppl.upm.edu.my/uploads/docs/Paraphrasing_Hirvela.pdf

Jahin, H. J. (2012). The effect of peer reviewing on writing apprehension and essay writing ability of prospective EFL teachers. **Australian Journal of Teacher Education**, 37(11).

Khrismawan, B., & Widiati, U. (2013). Students' perceptions about paraphrasing and their cognitive process in paraphrasing. **TEFLIN Journal**, 24, 135-157.

Kurihara, N. (2016). Do Peer Reviews Help Improve Student Writing Abilities in an EFL High School Classroom? **TESOL Journal**. https://doi.org/10.1002/tesj.282

Liao, M., & Tseng, C. (2010). Students' behaviors and views of paraphrasing and inappropriate textual borrowing in an EFL academic setting. **Pan-Pacific Association of Applied Linguistics**, 14(2), 187-211.

Malik, M. A., Mahroof, A., & Ashraf, M. A. (2021). Online university students' perceptions on the awareness of, reasons for, and solutions to plagiarism in higher education: The development of the AS&P model to combat plagiarism. **Applied Science**, 11, 12055. http://doi.org/10.3390/app112412055

McInnis, L. (2009). **Analyzing English L1 and L2 paraphrasing strategies though concurrent verbal report and stimulated recall protocols**. Master's thesis, Education, Graduate Department of Curriculum, Teaching and Learning, University of Toronto.

Muluk, S., Habiburrahim, & Safrul, S. M. (2021). EFL students' perception on plagiarism in higher education: Triggering factors and avoiding strategies. **Jurnal Ilmiah Didaktika**, 22(1), 20-36. https://jurnal.ar-raniry.ac.id/index.php/didaktika/article/download/8944/5937

Nguyen, T. L. (2016). Peer feedback practice in EFL tertiary writing classes. **English Language Teaching**, 9(6), 76–91. https://doi.org/10.5539/elt.v9n6p76

Ruru, T. A. N., & Sulistyo, T. (2020). Peer review in writing activities: outcomes and perceptions of EFL students. **Journal of Research on English and Language Learning**, 1(2), 127-132. http://dx.doi.org/10.33474/j-reall.v1i2.6845

Shi, L. (2012). Rewriting and paraphrasing source texts in second language writing. **Journal of Second Language Writing**, 21, 134-148.

Sotoudehnama. (2016). The impact of peer review on EFL learners’ writing proficiency: global and local aspects. **Porta Linguarium**, 35–47.

Tran, T. T. T., & Nguyen, H. B. (2022). The effects of paraphrasing on EFL students’ academic writing. **Journal of Language and Linguistic Studies**, 18(1), 976-987. http://doi.org/10.52462/jlls.233

THE DRAMATIC ARTS CURRICULUM ADMINISTRATION OF VOCATIONAL COLLEGES IN SICHUAN PROVINCE, PEOPLE’S REPUBLIC OF CHINA

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Abstract

This study aims to examine the The Dramatic Arts Curriculum Administration of Vocational colleges in Sichuan Province, People’s Republic of China, and to compare the perspectives of faculty members on curriculum administration, based on their educational qualifications and work experience. A sample group of 97 faculty members teaching dramatic arts was randomly selected from five vocational colleges in the province, following the sample size guidelines by Krejcie and Morgan. The research tools used included questionnaire, with data analyzed using means and standard deviations, and hypothesis testing via independent t-tests. The instrument was refined with advice from independent research advisors and experts, Index of Item Objective Congruence (IOC) between 0.60 and 1.00, exceeding all standard criteria. A trial run (Try Out) was conducted with 30 non-sample instructors from the vocational colleges in Sichuan Province, and the questionnaire demonstrated a Cronbach's Alpha Coefficient of 0.982, indicating high reliability.The findings reveal that the overall management of the dramatic arts curriculum in these vocational colleges is highly effective. The overall data of course management is as follows:(Mean = 3.91, S.D. = 0.83). Furthermore, no significant differences were noted in the opinions of faculty members when categorized by their educational background and professional experience.In this study, the researchers aimed to 1.to study the dramatic arts curriculum administration in sichuan vocational college of the people's republic of china.2.Comparing the views of teachers with different academic qualifications and working experience on the dramatic arts curriculum administration in sichuan province, the people's republic of china.curriculum administration plays a pivotal role in ensuring the education system is effective, orderly, and meaningful, not only enhancing student learning but also aiding in the development and improvement of educational institutions.

Keywords: curriculum administration, Dramatic Arts, Vocational College

Introduction

In 2023, the Ministry of Education of China announced the implementation of the "2023 Development Plan and Compulsory Education Curriculum Standards" and the "List of Key Disciplines for Graduate Education 2023," including Dramatic Arts as a core subject within the compulsory education curriculum for that year. Concurrently, Dramatic Arts has become a primary discipline in graduate education, indicating the government's increased focus on establishing dramatic arts disciplines and developing professional personnel in this field. By integrating dramatic arts into the compulsory education curriculum, the government is demonstrating a heightened interest in cultivating children's artistic skills beyond mere leisure, promoting it as a core educational subject. Currently, numerous educational institutions across the country offer dramatic arts as part of their activities, reflecting the government’s initiative to develop a distinctive Chinese dramatic arts discipline and to expedite the training of professional personnel in response to national, societal, and industrial needs. However, current challenges include the imbalance between the development of dramatic arts training and industrial development, graduates not meeting the industrial development needs, a discrepancy in the quality of professionals, students excelling in theory but lacking practical skills, and a misalignment of practical training in educational institutions with the actual curriculum needs. Consequently, the urgent task is the development of a professional dramatic arts curriculum that addresses these issues effectively.

Ren Huihui. (2019: 1-70) states that while higher education institutions still face challenges in curriculum administration, effective curriculum administration should encompass all four stages: planning, implementation, evaluation, and enhancement. However, most institutions tend to focus only on one stage, often neglecting the others, which necessitates a more comprehensive approach by administrators to promote curriculum development.

Furthermore, given the varied backgrounds in dramatic arts among vocational college students, it is essential to tailor the curriculum to meet the diverse needs of different groups, taking into account the students' foundational differences and improving the personnel development model to fulfill the cultural industry's varying demands.

Literature Review

1. Curriculum Planning

Wang Qiong (2021: 51-53) states that curriculum planning is a process that ensures the smooth operation of the education system. It involves setting clear learning objectives, defining effective instructional content, selecting diverse teaching methods, managing resources, and evaluating strategies, all aimed at developing comprehensive knowledge and skills in learners.

Ren Huihui (2019 : 1-70) notes that curriculum planning is a process where administrators and educators design, organize, and develop curricula with the objective of ensuring the quality of teaching and learning, achieving educational goals, and meeting the needs of learners. Curriculum planning encompasses several tasks, including selecting instructional content, structuring the curriculum, setting curriculum goals, choosing teaching methods, allocating resources, establishing educational policies, and evaluation.

2. Curriculum Implementation

Cong Shuaishuai (2015 : 53-57) describes curriculum implementation as the process of putting the curriculum plan into action through various teaching activities, following the plan and utilizing resources efficiently to achieve the curriculum goals. The steps in curriculum implementation include: 1) choosing teaching methods, 2) preparing instructional materials, 3) creating lesson plans, 4) managing the classroom, 5) engaging students and fostering interaction, 6) evaluating learning outcomes and providing feedback, 7) adjusting teaching to meet learners’ needs, 8) integrating technology, 9) supervising and revising the curriculum, and 10) assessing the curriculum.

Ren Huihui (2019: 1-70) elaborates that curriculum implementation is a process that brings a pre-established curriculum plan to life through educational activities, ensuring that learners acquire the knowledge and skills targeted by the teaching goals. Effective curriculum application is not merely about transferring knowledge but also involves encouraging active learner participation and providing feedback to refine teaching activities.

3. Curriculum Evaluation

Li Yue (2023: 127-129) emphasizes that curriculum evaluation is a crucial component in curriculum development. It serves as a significant method to promote curriculum enhancement and is an effective measure for improving teaching quality. Educational institutions must focus on assessing both the teaching process and learning outcomes to refine the curriculum for higher quality. Administrators play a key role in curriculum evaluation by providing guidance to educators.

Huang Jiazhu (2020: 166-170) outlines that the curriculum evaluation process consists of three steps: 1) selecting assessment tools and methods appropriate to the evaluation goals, commonly including surveys, field observations, student performance, interviews, etc.; 2) gathering data related to the curriculum using chosen tools, ensuring data accuracy and completeness; and 3) analyzing the data to identify strengths and weaknesses in the curriculum.

4. Curriculum Enhancement

Ren Huihui (2019: 1-70) describes curriculum enhancement as a process that develops the curriculum based on evaluation results with the goal of improving quality and

effectiveness, as well as meeting the learning needs of students. This enhancement covers various aspects such as curriculum design, teaching methods, instructional resources, evaluation techniques, among others. It plays a crucial role in curriculum administration and aids in creating a superior learning experience for students to achieve the curriculum's objectives, improve learning outcomes, and promote individualized learning.

Liang Jiayue (2021: 87-90) mentions that curriculum enhancement involves multiple tasks, such as updating instructional content as per the enhancement plan to ensure the content is modern and relevant to societal, gender, and adaptability needs. It also includes experimenting with new teaching methods to enhance learning outcomes and encourage student participation in curriculum development. Updating resources to include modern multimedia teaching aids and equipment is essential for applying instructional resources efficiently.

From the study of theoretical concepts on the management of the professional dramatic arts curriculum, and the opinions of Gu Mingyuan (1999), Zhong Qichuan (2004), Zhang Xiaosong (2005 : 80-83), and Ren Huihui (2019: 1-70), which form the conceptual framework for this research, as depicted in Figure 1.

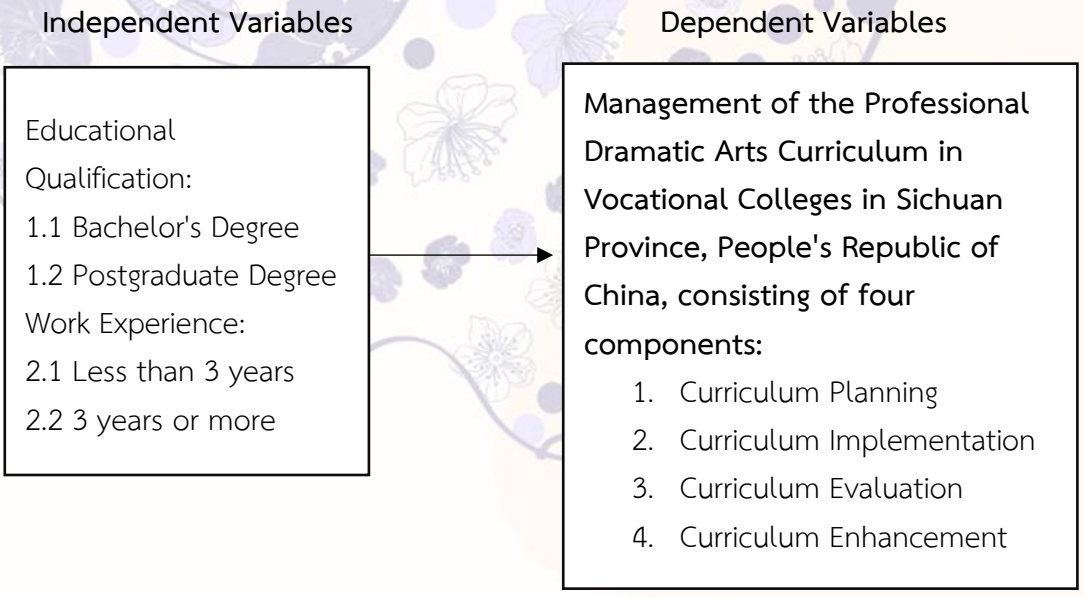

Figure 1: Conceptual Framework for the Research

Research Methodology

Population and Sample

1. The population for this research consists of dramatic arts instructors from five vocational colleges in Sichuan Province, People's Republic of China, during the academic year

2023, totaling 129 individuals.

2. The research sample includes dramatic arts instructors from these vocational colleges in Sichuan Province, selected using Krejcie and Morgan's sample size table (referenced in Prasit Suwanraksa, 2012: 148-149), resulting in 97 participants. A cluster random sampling method was utilized.

Data Collection Instruments

The primary instrument used for data collection was a questionnaire developed by the researcher concerning the management of the professional dramatic arts curriculum at the vocational colleges in Sichuan Province. The questionnaire consists of two sections: 1) Respondent demographics, formatted as a checklist, and 2) Instructors' opinions on curriculum administration, using a 5-point Likert scale. The instrument was refined with advice from independent research advisors and experts, Index of Item Objective congruence (IOC) between 0.60 to 1.00 exceeding all standard criteria and item total-correlation between 0.59-0.91. A trial run (Try Out) was conducted with 30 non-sample instructors from the vocational colleges in Sichuan Province, and the questionnaire demonstrated a Cronbach's Alpha Coefficient of 0.982, indicating high reliability.

Data Collection Process

Data was collected by distributing the questionnaire both physically and online to the administrators of the vocational colleges in Sichuan Province that were part of the sample. Questionnaires were collected both in person and via online channels. If questionnaires were not returned within the specified period, the researcher followed up personally to ensure a 100% return rate, resulting in 97 completed questionnaires.The combined use of quantitative and qualitative methods can improve the depth and breadth of the research. The reason for not using qualitative methods such as (interviews) is due to efficiency, cost and resource constraints. Surveys using quantitative methods often enable data to be collected quickly, on a large scale, and to be statistically analyzed relatively easily.

Data Analysis

The data obtained from the questionnaire responses were analyzed as follows:

1. General data from the respondents were analyzed using frequency distribution and percentages.

2. The opinions of the instructors on the management of the professional dramatic arts curriculum were analyzed using mean scores and standard deviations.

3. Comparisons of the instructors' opinions on the curriculum administration, segmented by educational qualification and work experience, were conducted using independent t-tests, with a significance level set at .05.

Research Results

From the study of the management of the professional dramatic arts curriculum in vocational colleges in Sichuan Province, People's Republic of China, the researcher has drawn conclusions based on the objectives as follows:

1. Study of Instructors' Opinions on curriculum administration: The study shows, as depicted in Table 1, that the overall management of the professional dramatic arts curriculum in vocational colleges in Sichuan Province is rated highly (Mean = 3.91, S.D. = 0.83). Upon reviewing individual aspects, all areas received high ratings, with curriculum planning having the highest mean score (Mean = 3.94, S.D. = 0.87), followed by curriculum evaluation (Mean = 3.92, S.D. = 0.86), curriculum implementation (Mean = 3.90, S.D. = 0.86), and curriculum enhancement (Mean = 3.89, S.D. = 0.87), in that order.

Table 1, that the overall management of the professional dramatic arts curriculum in vocational colleges in Sichuan Province

Aspect of curriculum administration	Opinion Level $\bar{X}$	S.D.	Interpretation of Meaning	Rank
1. Curriculum Planning	3.94	0.87	High	1
2. Curriculum Implementation	3.90	0.86	High	3
3. Curriculum Evaluation	3.92	0.86	High	2
4. Curriculum Enhancement	3.89	0.87	High	4
Overall Average	**3.91**	**0.83**	High	

2. Comparison of Instructors' Opinions on curriculum administration Based on Educational Qualification and Work Experience: The findings, as illustrated in Tables 2 and 3, indicate that there are no significant differences in the practices concerning curriculum administration among instructors based on their educational qualifications or work experience, both overall and in specific aspects.

Table 2: Comparison of Instructors' Opinions on curriculum administration Based on Educational Qualification:

- Overall and by specific aspects, the opinions are consistent across different educational levels, showing no significant statistical difference at the .05 level.

Aspect of curriculum administration	Educational Qualification				t	P
	Bachelor's Degree, n=61		Postgraduate Degree, n=36			
	$\bar{X}$	S.D.	$\bar{X}$	S.D.		
1. Curriculum Planning	4.00	0.80	3.85	0.99	0.78	0.46
2. Curriculum Implementation	3.98	0.80	3.76	0.95	1.12	0.26
3. Curriculum Evaluation	3.99	0.84	3.81	0.89	0.96	0.34
4. Curriculum Enhancement	3.95	0.80	3.79	0.98	0.80	0.42
Overall Average	3.98	0.78	3.80	0.93	0.94	0.35

Table 3: Comparison of Instructors' Opinions on curriculum administration Based on Work Experience:

- Similar to the educational qualification, the opinions regarding the management practices do not significantly differ by work experience, either overall or in specific areas, confirming uniformity in perception and practice among the instructors.

Aspect of curriculum administration	Work Experience				t	P
	Less than 3 years, n = 60		3 years and above, n = 37			
	$\bar{X}$	S.D.	$\bar{X}$	S.D.		
1. Curriculum Planning	3.87	0.95	4.07	0.71	1.21	0.23
2. Curriculum Implementation	3.86	0.93	3.96	0.73	0.57	0.57
3. Curriculum Evaluation	3.85	0.89	4.05	0.81	1.11	0.27
4. Curriculum Enhancement	3.81	0.92	4.03	0.78	1.17	0.25
Overall Average	3.85	0.89	4.02	0.72	1.07	0.29

- From Table 3, it is evident that regardless of work experience, the approach to managing the professional dramatic arts curriculum is consistently executed across all examined dimensions.

Summary and Discussion of Research Findings

From the study on the management of the professional dramatic arts curriculum in vocational colleges in Sichuan Province, People's Republic of China, the research findings can

be discussed as follows:

curriculum administration in Vocational Colleges:

The curriculum administration of the professional dramatic arts program in Sichuan Province is highly effective across all components, ordered from highest to lowest effectiveness as follows: curriculum planning, curriculum evaluation, curriculum implementation, and curriculum enhancement. This effectiveness likely stems from comprehensive curriculum administration tasks, including detailed planning, utilization, evaluation, and enhancement of the educational curriculum. Such comprehensive management aligns with the findings of Ren Huihui (2019: 1-70) and Cong Shuaishuai (2015: 53-57), highlighting the primary goal of curriculum administration is to ensure the curriculum's efficacy and quality to maximize student learning outcomes and improve their academic achievements.

Research indicates that effective curriculum planning should encompass defining learning objectives, selecting content, managing instructional processes, allocating resources, overseeing instructional execution, and evaluating and refining assessment strategies. These activities should create a culturally vibrant campus atmosphere to engage students, with curriculum designs tailored to meet learners' needs. Curriculum planning should also prepare students for future professional development and focus on enhancing practical skills that can be honed within organizational settings, corroborating Zheng Yihang's (2023: 48-50) views on curriculum operations within the educational sector.

The process of designing curriculum and implementing plans involves educational philosophy and goals, specific educational activities, and teaching strategies to ensure learners acquire knowledge, skills, and understanding as intended. Not just transmitting instructional content, but also creating a positive learning environment, fostering student engagement, providing feedback, evaluating student performance, and adjusting teaching strategies are integral to this process, aligning with Wang Jiashen's (2020: 1-109) findings on learning schedule adaptations.

Instructors' Opinions on curriculum administration:

According to the educational qualifications and work experiences of the instructors, there is a uniformity in opinions across all aspects of curriculum administration. This uniformity suggests that curriculum administration practices are clear and appropriate for modern educational developments in curriculum planning, execution, and efficacy enhancement, and do not vary among instructors of different educational backgrounds or levels of experience. This focuses on the goal of improving teaching quality and student satisfaction, as echoed by Deng Ting (2022: 80-83), who emphasized that curriculum administration is a critical component in ensuring educational quality, meeting students' needs, using resources efficiently, and adapting to the ever-changing educational environment. This helps create an orderly and effective

educational system which will enable students to learn better and achieve future success. With careful planning and organization, educational institutions can use resources like teachers, instructional media, and time more effectively, reducing costs and enhancing resource utilization. Continuous curriculum evaluation and adjustment foster educational practice innovation, ensuring educational institutions can adapt to changing student needs, educational trends, and technological advancements, thus maintaining competitiveness.

Overall, curriculum administration plays a pivotal role in ensuring the education system is effective, orderly, and meaningful, not only enhancing student learning but also aiding in the development and improvement of educational institutions, as supported by Li Yunqiu (2023: 138-140). Careful planning, organization, and evaluation of the curriculum ensure that content and teaching methods are goal-oriented, effective, and continuously improved based on feedback.

Summary and Discussion of Research Findings

Practical Implementation Recommendations:

1. **Curriculum Enhancement:** It is recommended that the results from evaluations be actively used to improve the curriculum. Additionally, the establishment of a dedicated research fund for curriculum enhancement should be considered to support ongoing refinement efforts.
2. **Curriculum Implementation:** It is advised to set appropriate class sizes to ensure effective learning environments.

Suggestions for Future Research:

1. Future studies should consider comparing additional independent variables that may influence curriculum administration.
2. There should be a focus on developing a model for the management of the professional dramatic arts curriculum in vocational colleges in Sichuan Province, People's Republic of China, to further enhance its effectiveness and applicability.

References

Bai, Y. (2018). Research on the construction of learning shared space in university libraries based on the reform of teaching model. **Nanjing: Southeast University.** 23(4): 35-37.

Cheng, M. (2019). Exploration on the Curriculum System of Dance Majors in Normal Colleges and Universities—Taking the Dance Department of Chongqing Normal University as an Example. **Beijing: Beijing Dance Academy.** 121-124.

Cong, S. (2015). The Prospects for Curriculum Development in Ethnic Folk Dance Performance Major at Bachelor Level—A Case Study of the Dance College at Minzu University of China. **Guilin: Guilin Normal University.** 53(5) : 53-57.

Deng, T. (2022). Research on the Construction of Dance Curriculum in Colleges and Universities—Taking Chinese Ethnic Folk Dance Curriculum as an Example. **Chongqing: Chongqing Normal University.** 08(15) : 80-83.

Gu, M. (1989). Educational disciplines need to improve research methods. **Hangzhou: Hangzhou University.** 19(4) : 26-27.

Ren, H. (2019). Research on curriculum setting and teaching practice of dance performance major in ordinary colleges and universities. **Shanxi:Shanxi Finance University.** 2019.DOI:10.

Li, C. (2018). New Measures for Dance Course Management. **Guangxi: Guangxi Preschool Teachers College.** 14(6): 108-109.

Li, C. (2021). Reform and Innovation of Dance Skills Courses in Vocational College Physical Education Majors. **Guangxi: Guangxi Preschool Teachers College.** 14(6) : 108-109.

Li, Y. (2023). Dance Courses and Traditional Culture—Implementation Pathways of Quality Education Dance Courses in Local Colleges and Universities under the Perspective of Cultural Confidence. **Yunnan: Chuxiong Normal University.** 26(12): 138-140.

Li, Y. (2023). Discussion on Online Dance Teaching Practice and Course Optimization in the Context of New Media. **Shanxi: Shanxi Art Vocational College.** 31(7) : 127-129.

Liu, A. (2020). Analysis on the Current Situation and Countermeasures of Curriculum Setting for Dance Majors in General Universities. **Chengdu: Southwest University for Nationalities.** 28(4): 96-98.

Wang, J. (2020). Research on the Current Situation of Dance Undergraduate Major Curriculum System in Gansu Province. **Gansu: Northwest University for Nationalities.** 19(1) : 1-109.

Wang, Q. (2021). Thoughts on the Construction of Education Curriculum System for College Students. **Jilin: Jilin Engineering Normal University.** 37(9) : 51-53.

Wu, Y. (2022). Chinese-style Modernization and Higher Education Reform, Innovation and Development. **Guangdong: Shenzhen University.** 35(11) : 18-21.

Zhang, S. (2005). Issues and Suggestions on Educational Curriculum Construction. **Zhejiang: Lishui College.** 25(1) : 80-83.

Zheng, Y. (2023). Diversified Collaborative Network Education: An Exploration of Practical Teaching Curriculum Planning for Media Majors in Higher Vocational Colleges. **Guangdong: Maoming Vocational and Technical College.** 9(32) : 74-76.

Zhong, Q. (2005). **Research and explore the basic perspectives of curriculum reform.** Beijing: Beijing University.

STATES OF INFORMATION TECHNOLOGY MANAGEMENT AT SICHUAN CULTURE AND MEDIA VOCATIONAL COLLEGE, PEOPLE’S REPUBLIC OF CHINA

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Abstract

The purposes of this study were 1) to study the states of information technology management at Sichuan Culture and Media Vocational College, People’s Republic of China and 2) to investigate the guidelines for managing information technology at Sichuan Culture and Media Vocational College, People’s Republic of China. The sample was 234 teachers under the Sichuan Culture and Media Vocational College, People’s Republic of China obtained by using Krejcie’s and Morgan’s table, then selected using stratified random sampling. The target group for interview was 9 persons selected by purposive sampling. The instruments used in the study were questionnaire and interview. The statistics used to analyze the data were percentage, mean, standard deviation and content analysis. The results of the study revealed that:

1. The teachers’ opinions on the states of information technology management at Sichuan Culture and Media Vocational College, People’s Republic of China in overall and each aspect were at a high level.

2. The guidelines for managing information technology at Sichuan Culture and Media Vocational College, People’s Republic of China were as follows:

2.1 Application of multimedia technology

The wireless network should be effectively and thoroughly increased. There should be a variety of multimedia application in the campus. Training courses on employing multimedia devices should be provided for the teachers. There should be a follow-up on the use of multimedia devices. Multimedia programs, educational videos, interactive lessons, online learning lessons, platforms and application related to the contents and activities should be employed. In each faculty, the multimedia devices should be shared for using.

2.2 Curriculum Development

All programs in faculties should be developed on curriculum in accordance with objectives and standard criteria to meet different teaching needs. In addition, experts, resources and budget should be provided to develop the curriculum.

2.3 Creating teaching platforms

Additional operating instructions or data should be added to the teaching platforms, including online testing, submitting homework, learning results management, and interactive discussion to meet various teaching needs. There should be continuous integration of new teaching tools and technology. Teaching resources both inside and outside the campus should be employed. Teachers and students should be encouraged to participate in developing teaching platforms related to teaching approaches, techniques, and tools that were practical. Training courses should be conducted, and also, teaching experience and professional knowledge should be enhanced.

2.4 Organizing educational management system

The recording system on students’ background information should be completely and correctly checked and corrected to be updated. A set of instructions or data for operating the system should be employed for convenience in selecting online curriculum. There should be cooperation in exchanging information on system and mechanism for supervising and evaluating to create the data in organizing the educational management system of the college agency.

Introduction

The universalization of higher education and the emergence of a lifelong learning society necessitate transformation of the traditional education system. The creation of a new educational system is significantly influenced by the advancement of educational information technology. Comprehensive and in-depth reforms in the information management of higher education are crucial to transforming management models and concepts, enhancing the quality and level of education management, and improving educational governance. As the Internet becomes more pervasive, it supports the sharing and co-construction of high-quality educational resources, fostering a culture among students to actively share information and develop in diverse and personalized ways. However, the majority of higher educational institutions in China lack developed educational information systems, hindering the realization of these ideal visions. Educational management, a critical component of university administration, bears a significant responsibility for institutional development.

As Mu Tong (2017:9) emphasizes, educational information management is crucial. The information management of higher education is a large-scale, long-term, and somewhat risky systems engineering project that cannot succeed without the guidance of educational management theory and systems theory, which in turn derive from and guide practice. Researching the development issues of educational information management in higher education can enrich the theoretical foundations of this field and provide practical guidance

for its development. Thus, deepening research in this area is essential not only for enhancing managerial efficiency and service quality, optimizing resource allocation, and promoting educational reform and equity but also for ensuring the development of modernized education.

The author found through reviewing recent research literature that a considerable portion of studies focus on the problems existing in the informatization construction of higher education management and the corresponding strategies for addressing these issues.Liu Su et al. (2019) summarized several constraints on the development of informatization in higher education management in their article: "the lack of overall planning, lack of unified data standards, insufficient cross-departmental collaboration, serious information silo issues, and inadequate integration of information systems."Yan Hongxiao (2023) proposed related constraints such as the lack of institutional development, outdated management mechanisms, and weak awareness of information security.In addition, many researchers also believe that university faculty and students generally lack awareness of the importance of management informatization.Especially among management personnel, who still adhere to traditional management principles, their level of digital literacy in informatization is relatively low.On the leadership level, many researchers argue that universities have not clearly defined the construction goals of educational management informatization, lack comprehensive planning for the entire informatization construction, and fail to achieve rational resource allocation.

This study focuses on the current state of educational information management at Sichuan Cultural and Media Vocational College, identifying existing issues and their underlying causes, and proposing strategies to enhance educational information management in Sichuan and other similar institutions across China.

The research objectives of this article ：

1) To study the current status of educational management informatization at Sichuan Culture and Media College.

2) In order to study the strategies for educational management informatization at Sichuan Culture and Media College.

Literature Review: Educational Information Management at Sichuan Cultural and Media Vocational College

Application of Multimedia Technology

He Kekang (2017: 74-77) emphasizes the crucial role of multimedia technology in teaching, noting its ability to enhance educational quality, enrich the learning experience, and facilitate knowledge transfer and comprehension. Multimedia technologies, utilizing images, videos, and audio, cater to diverse learning needs and offer a variety of learning resources.

Visual and auditory stimuli help students understand and retain educational content more effectively.

Mu Tong (2017: 9) further elaborates on the enriching impact of multimedia technology through its integration of images, sound, and video, which not only enhances the appeal and memorability of information but also aids in conveying complex concepts and knowledge. In the educational sector, multimedia technologies provide students with more engaging and interactive learning materials, thereby meeting diverse learning styles and needs. Thus, the application of multimedia technology in education and knowledge dissemination is vital for improving learning outcomes and educational reach.

Curriculum Resource Development

Wang Xia (2023: 60-64) identifies curriculum resource development as a critical activity in the education sector, playing a key role in ensuring educational quality, learning outcomes, and successful knowledge transfer. It encourages educational institutions to adopt new teaching methods and strategies that align with the evolving knowledge and technological landscape. Innovative educational resources enable educators to offer richer, more diverse, and engaging learning experiences, thereby enhancing educational quality and stimulating student interest.

Li Fang (2021 : 46) discusses the significance of curriculum resource development within the educational system. She explores its critical aspects academically, noting that well-designed curriculum resources are essential for enhancing educational quality by providing students with access to the latest knowledge, methodologies, and tools. By continually updating and improving curriculum resources, educational institutions can ensure their programs reflect the latest developments in their fields, thereby fostering students equipped with current knowledge and skills. Additionally, curriculum resource development facilitates personalized education, catering to individual students' learning styles, interests, and abilities.

Construction of Teaching Platforms

Diao Ying (2022: 130-135) highlights the growing importance of constructing teaching platforms in today's digital age, as they bring significant benefits to education and learning. Teaching platforms allow students to access learning resources anytime and anywhere, whether at school, home, or on mobile devices, offering more flexible learning options that accommodate different schedules and needs. Moreover, online teaching platforms enable access to courses and educational resources from around the world, providing broader learning opportunities that are crucial for deepening knowledge, developing skills, and pursuing interests.

Mu Tong (2017: 9) asserts that building teaching platforms is crucial as it fosters educational innovation and accessibility, enhances student learning experiences, and provides

educators with more tools and resources to improve educational quality. This digital education trend holds a key position in today's society and will continue to shape the future of education, spreading knowledge and educational resources to a wider audience, thus enhancing the learning experience for students and equipping educators with tools and data to improve educational quality.

Educational Management Systems

Liu Yidong (2020: 18-24) discusses the critical role of educational management systems in the education sector, profoundly affecting the management and operations of schools, universities, and other educational institutions. These systems enable efficient recording and management of student information, including academic records, attendance, course selection, grades, and enrollment status, which helps improve the accuracy and availability of student profiles and simplifies the student management process.

Zheng Qinghua (2016: 13) explains the multifaceted importance of educational management systems for educational institutions, educators, students, and parents. These systems can enhance the operational efficiency of educational institutions, improve the quality of student and academic management, foster cooperation between home and school, provide better educational experiences, and support schools in achieving their educational goals. They help educational institutions adapt to the constantly changing educational environment, thereby enhancing educational quality and providing more learning opportunities.

The literature review elucidates a conceptual framework as shown in Figure 1.

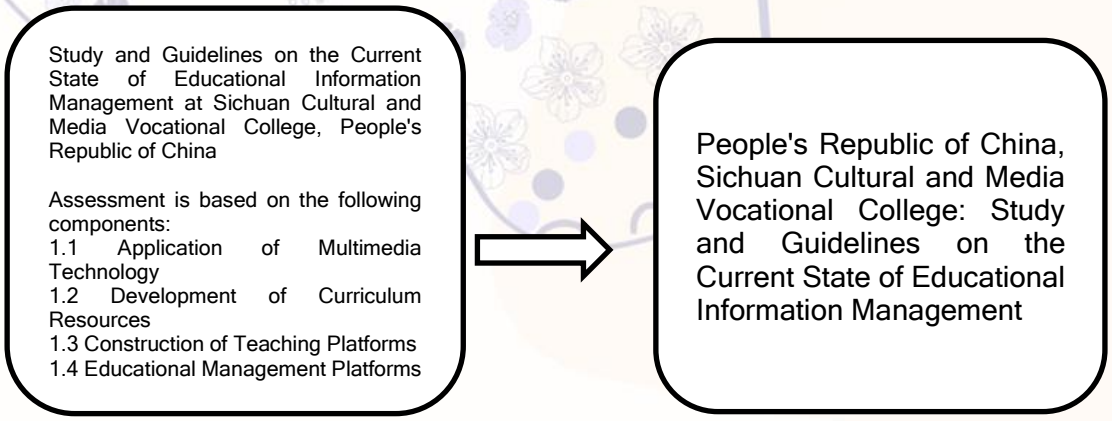

Figure 1: Conceptual Framework

Research Methods

This study employs a Mixed Methods Research approach, conducted in two main

phases:

1. Investigating the current status of educational information management across three faculties at Sichuan Cultural and Media Vocational College. The participants comprised teachers from the faculties of Media and Mathematics, Preschool Education, and Cultural Management.

A Stratified Random Sampling technique was used to select a sample of 234 individuals via questionnaires as the primary data collection tool. A 5-point Likert scale was utilized to measure responses, achieving a Cronbach's Alpha reliability score of 0.91, indicating high reliability of the questionnaire. Descriptive Statistics Analysis was applied using means and standard deviations to describe the data.

2. For the qualitative component, eight key informants including two deans, two vice deans, and three department heads were selected through purposive sampling for Semi-Structured Interviews. The interview framework was structured around content questions defined for each area of study to guide the interviews on educational information management at the vocational college.

3. The questionnaire used for the interviews comprised four sections derived from the survey research, with the lowest three averages used as the focal points for discussion. The data were analyzed and interpreted through Content Analysis.

Research Results Profile of Respondents and Study Variables

1. Level of Opinion on Educational Information Management

Overall, the level of educational information management at Sichuan Cultural and Media Vocational College is considered high (Mean = 3.67, S.D. = 0.96), with high ratings in specific areas as well. The highest average scores were in the area of Curriculum Resource Development (Mean = 3.68, S.D. = 0.97), followed by Education Management Systems (Mean = 3.67, S.D. = 0.99), and Application of Multimedia Technology (Mean = 3.66, S.D. = 0.98). The construction of Teaching Platforms had the lowest average score (Mean = 3.65, S.D. = 1.01).

Table 1: Mean and Standard Deviation of Teachers' Views on Educational Information Management

Management Criteria	Opinion Level		Significance	Ranking
	$\bar{X}$	S.D.		
1. Application of Multimedia Technology	3.66	0.98	Very	3
2. Curriculum Resource Development	3.68	0.97	Very	1
3. Construction of Teaching Platforms	3.65	1.01	Very	4
4. Education Management Systems	3.67	0.99	Very	2
Overall Average	**3.67**	**0.96**	**Very**	

2. Guidelines for Educational Information Management at Sichuan Cultural and Media Vocational College

2.1 Application of Multimedia Technology:

Replace outdated wireless devices with high-performance, broad-coverage equipment to provide faster speeds and more stable connections.

2.2 Curriculum Resource Development:

Regularly update resources to reflect the latest knowledge, technology, and trends, maintaining the timeliness and relevance of the content.

2.3 Construction of Teaching Platforms:

Enhance teaching platforms by adding more functions, such as online quizzes, homework submission, grade management, and interactive discussions to meet diverse educational needs.

2.4 Education Management Systems:

Continuously update student performance data, including routine grades, exam scores, and coursework. Provide analysis and statistical functions to assist teachers and administrators in understanding students' learning conditions and addressing issues promptly.

Discussion and Conclusion

1. Analysis of Educational Information Management Conditions at Sichuan Cultural and Media Vocational College:

The overall level of educational information management at Sichuan Cultural and Media Vocational College is high (Mean = 3.67, S.D. = 0.96). This comprehensive rating reflects the critical importance of educational information management, a substantial, long-term, and risky system engineering project reliant on the guidance of educational management and systems theory. This theory not only originates from practice but also directs it. Research in educational

information management can enrich the theoretical foundations and offer practical guidance for the development of such systems. This aligns with Mu Tong (2017 : 9), who emphasizes effective management according to university regulations. Research and team management structures are well-developed, as indicated by He Kekang (2017 : 74-77), who states that the application of multimedia technology plays a vital role in education, enhancing teaching quality and the learning experience through the use of images, videos, and audio to meet diverse learning needs. Similarly, Hu Jing (2014:57-60) supports the use of multimedia technology in professional training and vocational education.

2. Strategies for Implementing Information Management at Sichuan Cultural and Media Vocational College:

2.1 Application of Multimedia Technology:

2.1.1 Conduct on-site assessments and planning based on evaluation results to develop detailed wireless network coverage plans, determine access point locations, numbers, and coverage, and optimize equipment.

2.1.2 Implement effective channel planning to minimize interference from nearby wireless networks, enhancing coverage and performance.

2.1.3 Replace outdated wireless devices with higher performance, broader coverage equipment to provide faster speeds and more stable connections, following the research by Miao Guofang (2018), which aims to enhance the quality of higher education students.

2.2 Curriculum Resource Development:

2.2.1 Ensure high-quality, accurate, comprehensive content that aligns with educational objectives and standards. Regularly update resources to reflect the latest knowledge, technology, and trends.

2.2.2 Provide convenient access and usage methods, such as online platforms, mobile apps, and download links, with clear guidance and support for effective use.

2.2.3 Customize resources according to different subjects, grades, and educational objectives, offering flexible selection and combinations for teachers and students.

2.2.4 Secure adequate resources and funding for the development of curriculum resources, seeking support from schools, governments, or other funding bodies.

2.2.5 Hire professionals with multimedia and educational backgrounds to enhance the skill and experience of the resource development team, providing professional training and opportunities for creative and innovative thinking.

2.2.6 Establish clear policies and management systems to support and regulate the development and application of curriculum resources, promoting autonomy and

flexibility in resource development, consistent with the findings of Wang Xia (2023:60-64) on the information technology curriculum development in Henan province schools.

2.3 Teaching Platform Development:

2.3.1 Add more functions such as online quizzes, assignment submissions, grade management, and interactive discussions to meet diverse educational needs.

2.3.2 Integrate teaching tools and technologies like virtual labs and interactive whiteboards to enhance teaching efficiency and quality.

2.3.3 Pay attention to development trends and user needs of teaching platforms, continuously improving their functionality and content based on feedback from teachers and students, as emphasized by Liu Qingtang (2019 : 13-21), highlighting the significant benefits of such platforms in modern education.

2.4 Education Management Systems:

2.4.1 Ensure the system comprehensively and accurately records and updates student information such as enrollment, grades, and attendance.

2.4.2 Provide an online course selection system that allows students to choose courses based on personal interests and academic needs, and automate scheduling to optimize resource allocation and minimize conflicts.

2.4.3 Continuously update and analyze student performance data to assist teachers and administrators in monitoring student progress and addressing issues promptly, as suggested by Sui Yu (2017 : 13-15), which underlines the importance of providing teachers with the tools needed for effective education management. Different management systems may offer various features, making it crucial to choose the appropriate system based on specific needs and institutional contexts.

References:

Cai, W. (2020). Research on innovative paths for university education management in the big data era. **Journal of Liaoning Institute of Science and Technology,** 22.

Chen, F. (2023). Effective teaching strategies for primary school information technology. **Education Circle,** (34), 137-138.

Chen, Y. (2023). Analysis of innovative strategies for student education management in vocational colleges in the new era. **Shanxi Youth, 146**-148.

Cheng, Q. (2022). **Research on teaching practice of junior high school information technology courses under the maker education philosophy.** (Doctoral dissertation). Guangdong Polytechnic Normal University, Guangdong.

Diao, Y. (2022). Construction of an intelligent teaching platform for art school exhibition design courses. **Beauty and the Times (Upper),** (09), 130-135.

E, M. (2022). Application of the "people-centered" concept in ideological and political education management of university students. **Gansu Education Research,** (2).

Feng, S. (2023). New forms and challenges of labor in the era of digital intelligence—also discussing the response of school labor education. **Ideological and Theoretical Education,** (03), 134-136.

Gu, Z., Du, C., & Yin, Y. (2013). Problems and countermeasures in multimedia teaching in universities. **Contemporary Educational Theory and Practice,** 5(02), 117-120.

Guo, Z. (2023). Optimizing high school history teaching with multimedia network technology. **China New Communications,** 25(03), 212-214.

He, K. (2007). Application of multimedia courseware and online courses in teaching. **University Teaching in China,** (05), 74-77+81.

Hu, J. (2014). Intelligent management of multimedia classrooms based on network central control. **Journal of Yangtze University, (**7), 57-60.

Huang, H. (2023). A brief analysis of the legalization of university education management. **Journal of Heihe University,** 14(01), 81-83.

Huang, L. (2022). Innovative exploration of ideological and political education in universities in the big data era. **Public Relations World, (**12), 114-116.

Jia, L. (2015). Practical exploration of multimedia information technology in teaching. **Education and Teaching Forum,** (34), 143-146.

Jia, L. (2023). Application of information technology in vocational education curriculum teaching. **Electronics Technology,** 52(06), 104-105.

Jiang, Y. (2023). Path research on the reform of information technology curriculum teaching in vocational colleges in the big data era. **China New Communications,** 25(12), 140-142.

Li, F., & Liu, H. (2010). Application of campus network-based systems in multimedia teaching management. **Computer Knowledge and Technology,** (2), 434-435.

Li, F. (2021). **Education Knowledge and Skills.** Beijing: Higher Education Press.

Liu, H. (2014). Research on intelligent evaluation-based online teaching platform design and application. **Experimental Techniques and Management,** (5), 174-179.

Liu, H. (2023). **Practice and exploration of cultivating digital literacy of kindergarten teachers in the context of educational digital transformation. In Chengdu Education Association, Chengdu Institute of Education Science. Proceedings of the 66th Anniversary Academic Exchange and 2023 Academic Activities of Chengdu Institute of Education.** Chengdu No.1 Kindergarten; 2023 : 32-34.

Liu, Q. (2019). Artificial intelligence-based classroom teaching behavior analysis methods and their application. **China Educational Technology,** (09), 13-21.

Liu, S., Wang, R., Wang, L., et al. (2019). Research on the construction and teaching application of digital teaching resource platforms in vocational education—Taking the construction of an English cloud platform in vocational colleges as an example. **International Public Relations,** 95(11), 126.

Liu, Y. (2020). Modernization of graduate education governance: background, framework, and strategies. **Degree and Graduate Education,** (11), 18-24.

Mu, T. (2017). Exploration and practice of educational information management in universities. **China Educational Technology,** (9).

Qiu, J. (2023). Application of multimedia interactive technology in curriculum teaching. **Electronics Technology,** 52(04), 164-165.

Shao, J., Shen, M., & Fan, X. (2015). Research on the reform of graduate education teaching models in local universities under the backdrop of the big data era—Taking the training of management graduate students as an example. **Journal of Ludong University (Philosophy and Social Sciences),** (4), 82-85.

Si, C. (2022). Current status and countermeasures of the blended teaching model of physical chemistry. **Chemistry Education (Bilingual),** 43(06), 77-82.

Song, H. (2019). **Philosophical logic and practical pathways of "student-centered" education management in universities.** (Doctoral dissertation). Chongqing Normal University, Chongqing.

Sun, X. (2023). Analysis of curriculum resource development and cultivation of innovation skills. **Exam Weekly,** (19), 6-12.

Sui, Y. (2017). System design and implementation for university student information management. **Research in Educational Development,** (S1), 13-15.

Wang, N. (2022). Construction and exploration of a smart employment information management platform for universities in the new era. Heilongjiang Human **Resources and Social Security,** (10), 127-129.

Wang, X. (2023). The process model of curriculum development and its evaluation. **Foreign Education Research,** (4), 60-64.

Wang, Y. (2023). Teaching strategies for high school Chinese argumentative essays from a speculative perspective—Taking "The Discourses of the Six States" as an example. **New Curriculum,** (15), 129-131.

Wu, G. (2021). Basic framework for evaluation of school-based curriculum development. **Journal of Education, Jimei University,** (1), 79.

Wu, H. (2023). **Discussion on the application strategies of micro-lessons in upper primary Chinese language teaching.** In Guangdong Provincial Society for Continuing Education of Teachers. Proceedings of the 7th Teacher Development Forum of the

Guangdong Provincial Society for Continuing Education of Teachers. Central Elementary School, Huangxi Town, Yujiang District, Yingtan City, Jiangxi Province; 2023: 144-147.

Wu, M. (2021). Application of flexible management culture in university student education management. **Culture Industry,** (20).

Xia, Z. (2014). Research on countermeasures for multimedia teaching management in universities. **China Press Industry,** (10), 95-96.

Xue, F. (2019). Analysis of the application of flexible management concepts in university student education management. **Exam Weekly,** (32).

Yan, H. (2023). Research on the informatization path of education management in vocational colleges under the big data environment. **Journal of Hubei Open Vocational College,** 119-122.

Zhang, J., & Cheng, H. (2020). Acquisition and development of curriculum resources supported by modern information technology. **Digital Teaching in Primary and Secondary Schools,** (9), 52-55.

Zhang, X. (2020). Construction of university online education system based on "counselor studio" model. **Times Report,** (10), 21-23.

Zhang, Y., & Ma, Q. (2011). Creating an intelligent, information-based, human-centered multimedia teaching environment. **Modern Educational Technology,** (9), 70-74.

Zhang, Y. (2016). Construction and application of online teaching resources for high school history. **High School Teaching Reference,** (13), 106.

Zhang, Y. (2020). Effective integration of information technology and junior high school mathematics curriculum resources. **Questions and Research,** (32), 9-10.

Zhang, Y. (2023). Construction and application of an online homework and evaluation system for junior high school mathematics. **Jiangsu Education Research,** (35), 60-63.

Zhang, Y. (2023). Exploration and practice of computer-aided industrial design courses aimed at the future. **Higher Education Journal,** 9(35), 31-33.

Zheng, Q. (2016). Analysis and utilization of big data in university education. **China Educational Technology,** (13), 13.

RESEARCH ON THE CURRENT STATUS OF RURAL INDUSTRY BRANDS IN FENGXIAN DISTRICT, SHANGHAI

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ABSTRACT

This study aims to the current status of rural industry brands in Fengxian District, Shanghai, and by analysing the characteristics and development direction of the rural industry brands in Fengxian District, it is of great significance to promote the development of the rural industry and achieve rural revitalization. The research is conducted in a combination of qualitative and quantitative research, with qualitative research as the main research method, based on the information of the Ministry of Agriculture and Rural Development, such as "Shanghai's Agricultural Characteristic Producing Areas and Brand Certification Situation", etc., The number of agricultural products applying for geographical indications from 2011 to 2022, derived from the National Agricultural Products Geographical Indications Query System since the initial record of the statistical year, totaled 143 in Zhejiang Province, 112 in Jiangsu Province and 17 in Shanghai Municipality. The number of agricultural products with geographical indications in Shanghai's rural industry brand is much smaller than that of Zhejiang Province and Jiangsu Province around Shanghai. and using questionnaires and assessment forms to analyse the characteristics of the rural industry brand in Fengxian District of Shanghai and the direction of its development by means of field research, interviews, literature review, data analysis and other methods. The results of the study show that (1) the current situation of rural industrial brand development in Fengxian District is: insufficient brand influence, fewer competitive brands, lack of holistic and systematic design of the brand, low awareness of agricultural product brand promotion, and backward means of brand promotion. (2) Fengxian District to get out of their own rural industry brand design road, but also need to strengthen the role of the rule of law to ensure that the leading role of planning. From the brand design point of view to create rural industries, build a brand effect obvious characteristic of rural IP, take a green, ecological sustainable development road. (3) Rural industry branding has certain strategic significance and practical significance, and rural industry branding has become an important tool for promoting rural revitalization strategy.

Keywords: The rural industry brands, Cultural characteristics of Fengxian, Agricultural product brand promotion

Introduction

In 2020, China has achieved comprehensive poverty alleviation, upgraded the industrial structure of rural areas, and made remarkable achievements in rural construction, and the No.1 Document of the Central Government in 2023 put forward the requirement of "strengthening the construction of spiritual civilization in rural areas". The state attaches great importance to rural revitalization, which provides opportunities for rural development. Under the background of rural revitalization, the theme of "beautiful countryside" branding has been deeply explored and expanded all over the country, but at the same time, there is also the phenomenon of homogenization and low grade in the construction of the countryside. In the dictionary, the concept of "countryside" is defined with the help of "rural area", which is "the grass-roots administrative area of China's rural areas" (Chen Zhili, 2022). Some foreign scholars, represented by the American scholar R.D. Rodefeld, have pointed out that "the countryside is a sparsely populated, relatively isolated place where agricultural production is the main economic base and where people's lives are basically similar and different from those in other parts of the society, especially the cities" (Rodefeld R.D., 1983). Regarding the geographical spatial scope of the countryside, Li Hongbo in his research believes that it can be defined in terms of the industrial structure, the scope of the settlement, and the administrative division, with a variety of terminology, such as the urban fringe area, the suburban area, the recreational belt around the city, and the urban-rural intertwined belt (Li, 2018). Rural industries include: modern characteristic agriculture, agricultural productive service industry, rural living service industry, rural traditional characteristic industry, agricultural product processing industry, leisure agriculture and rural tourism, rural environmental protection industry, rural cultural industry and other rural industries.

The State attaches great importance to rural revitalization, which provides opportunities for rural development. At present, all parts of the country are actively carrying out the strategy of "rural revitalization" in line with local characteristics, and deeply exploring and expanding the brand construction of "beautiful countryside".

Fengxian District is part of Shanghai, located in the southeast end of the Yangtze River Delta, south of Shanghai, bordering Pudong New District in the east, Jinshan District and Songjiang District in the west, Hangzhou Bay in the south, bordering Huangpu District, and Minhang District in the north, separated by the Huangpu River. It has a 13.7-kilometre-long riverfront and 31.6-kilometre coastline, with a total area of 733.38 square kilometers. It is known as the hometown of yellow peaches in China. In Shanghai's "14th Five-Year Plan", Shanghai will focus on building five new cities. Fengxian New City is planned to become a node city with distinctive industrial characteristics and unique ecological endowments in the riverside coastal development corridor in the south of Shanghai.

Under the current strategic background of China's comprehensive promotion of rural revitalization, an in-depth study of the current situation of rural industrial branding in Fengxian District is of great practical significance and strategic value. The study of Fengxian's rural industry branding status can help clarify its industrial positioning and development direction

in Shanghai and the wider region. Through the comprehensive analysis of the existing industrial structure, brand building effectiveness and market feedback, the strengths and shortcomings of Fengxian District in the development of rural industries can be identified, providing a basis for the formulation of more precise development strategies. With the acceleration of urban-rural integration, the branding of rural industries in Fengxian District is not only related to the enhancement of economic benefits, but also an important way to disseminate their cultural and ecological values. Branding can better demonstrate the regional characteristics and cultural connotations of Fengxian District, and help to cope with and solve the problems of homogenization and low-grade in the process of rural revitalization. It will provide a replicable and successful experience for the rural revitalization strategy in Shanghai and the whole country. As one of the important new cities in Shanghai's 14th Five-Year Plan, Fengxian New Town's industrial branding strategy will directly affect the economic layout and social development of the entire region, and is of great significance as a model.

Research objectives

To study the current status of rural industry brands in Fengxian District, Shanghai.

Literature review

By introducing the theories and concepts related to this study, the research results of scholars at home and abroad and some classic cases in rural industry branding, and by analyzing the historical and cultural characteristics of Fengxian District and the situation of rural industry, it provides support for researching and analyzing the current situation of rural industry branding in Fengxian District.

As early as the 1950s, foreign countries began studying the brand theory of rural industry, mainly focusing on brand strategy, brand business management, and brand marketing research and exploration. Eric Chokimsele pointed out that publicizing brand positioning creates popularity, and consumer participation contributes to brand creation (Eric Joakimsele, 1997). Branded agricultural products have their own natural environmental attributes, social history, humanistic attributes, and other factors with significant regional characteristics. Branding should comprehensively consider the influence of these factors (Masahisa Fujita, 2006). China's research and development of brand design began in the mid-1990s which is a bit later than Western countries. In face of fierce competition in the agricultural market, commercialization and branding of agricultural products have become an inevitable choice (Xu Mengyao, 2021). Huang Man analyzed based on regional characteristics from phenomenon induction to theoretical summary and construction elements. They proposed specific methods and programs for regional brand image design (Huang Man, 2016).

Western countries attach great importance to the preservation and development of rural industries with national characteristics. For instance, the United States' "Pumpkin Festival" and "Strawberry Festival" are typical examples of combining rural industry with folk art (Zhang Bei, 2011). In Germany, leisure farms and community farms are the main forms of rural industry

development (Chen Fang, 2008).Germany's Kars Karls Strawberry Farm has utilized strawberries as a big IP to create its own independent brand, becoming a prominent player in the German agricultural sector (He Zerong,2019). Yukio Nishimura describes how Japan began implementing the design and construction of "charming new hometowns" in the 20th century. He proposed the concept of "one village, one product" in 1979 with the aim of creating attractive new hometowns (Yukio Nishimura, 2007).

Zhejiang, Jiangsu, Anhui, and other provinces surrounding Shanghai have developed a number of farming culture and folk-art experience projects with local characteristics by constructing creative farming culture experience parks. These regions have based the development of farming culture and folk art on traditional festivals and folklore, forming certain brands and generating certain economic and social benefits (Guo Xixi, 2023). An example is the Quzhou Citrus Culture and Art Festival in Zhejiang Province. Through the establishment and promotion of citrus culture brands, farmers' income has increased, and rural industries have been developed (Li Zhiqiang, 2019).

Fengxian District in Shanghai has a deep cultural history, a natural and simple folklore, and a variety of handicrafts and other intangible cultural heritage. Although it is rich in agricultural resources, its economic development is relatively backward. At present, Fengxian District has established the following characteristic rural industry brands: "Shangmei Bay", "Zhuangxing Honey Pear" and "Fengxian Yellow Peach", which are also two national geographical indications products of Fengxian. It is also two national geographical indication products of Fengxian. Meanwhile, the Shanghai Fengxian Yellow Peach Festival has gradually become a brand festival and cultural card of Fengxian (Wu, Lili, 2023). In addition, Fengxian is also focusing on building the regional brand of "Oriental Beauty Valley", which is the only "Capital of China's Cosmetic Industry" in the country, and has successfully gathered all kinds of resources to build the "International Health Food Industrial Park" (Sun, Yiyuan,2021).

But at the same time Fengxian District rural industry brand faces many challenges: the neighboring Zhejiang, Jiangsu rural industry brand development of its to pose a challenge, Shanghai local Chongming County rural industry brand development is good, but also its to form a certain pressure. Fengxian District, the local rural industry brand is not much, the brand influence is not enough, agricultural products brand regional characteristics.

With the further deepening of rural industry brand research, domestic scholars have gradually carried out regional rural industry brand research according to the specific characteristics of rural industry in each province. At the same time, along with the deepening of rural industry reform in Shanghai, the establishment of rural industry brand in Fengxian District has become clearer and more complete, and it is the right time to conduct a comprehensive and in-depth research on it.

Table 1 The conceptual framework of the research

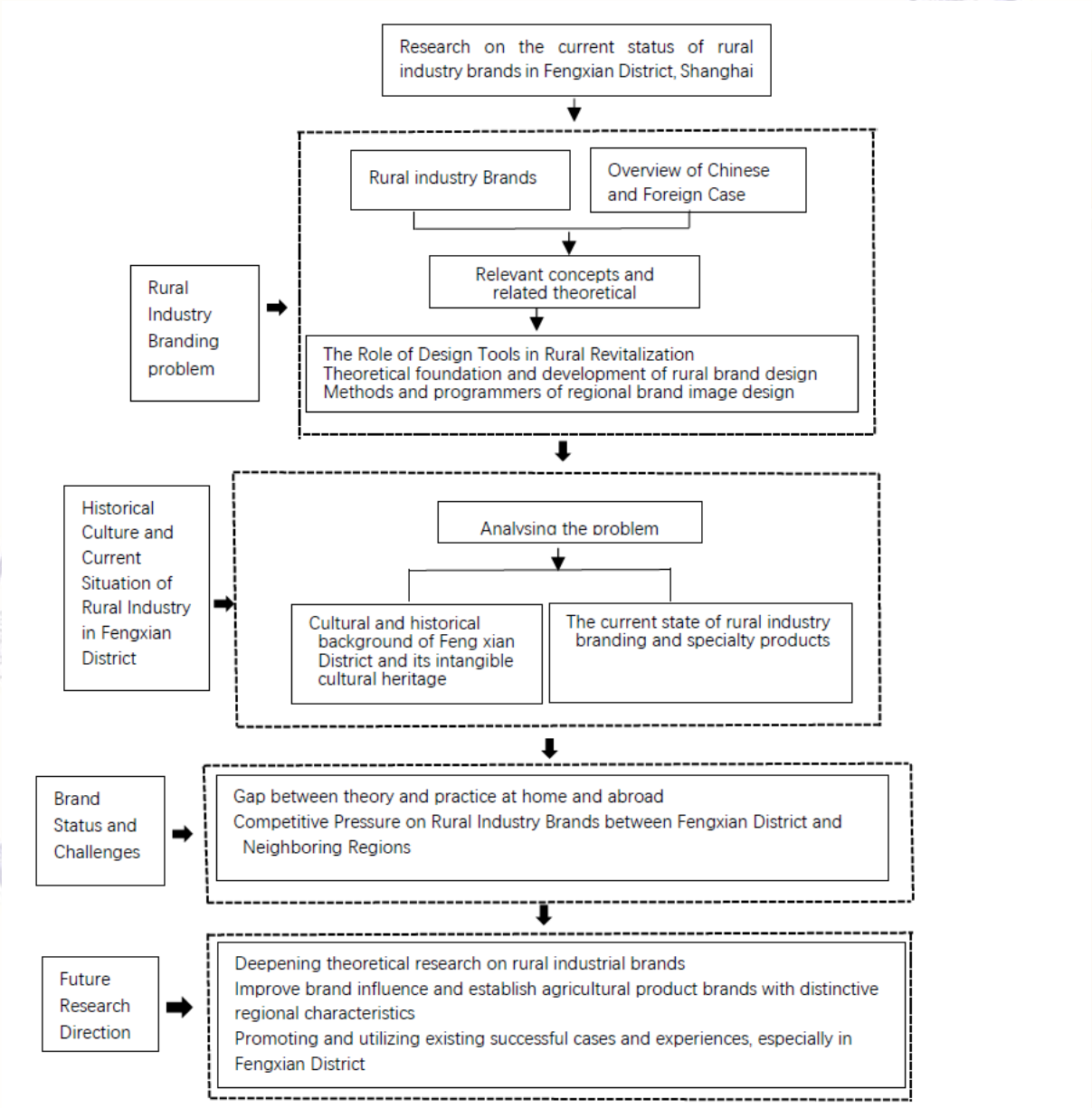

Figure 1 The conceptual framework of the research
Source: Jianan Zhou (2024)

Research Methodology

1. Qualitative research methods

For example, interviews, observations and case studies are used to gain a comprehensive understanding of local realities by going deeper into the community. In addition, through the use of focus groups and in-depth interviews, the researcher can explore consumer behavioural patterns, preferences and attitudes in greater depth, thus providing data support and strategic guidance for brand building. This integrated application of

qualitative research methods ensures the richness and practicality of the findings, providing a solid foundation for in-depth development and precise positioning of rural brands.

1.1 This study is based on the Ministry of Agriculture and Rural Development's "Shanghai's Agricultural Characteristic Producing Areas and Brand Certification" and other information. As of January 2023, a total of 3663 "National Geographical Indications of Agricultural Products" have been recognised nationwide. Among them, there are 16 in Shanghai, and the product types are mostly fruit and livestock products, with Fengxian Yellow Peach and Zhuangxing Honey Pear being the main ones in Fengxian District. The research collects information on the historical development of rural industrial brands in Fengxian District, regional aspects (political and cultural), environmental aspects, and includes product manufacturers, consumers, etc. We conduct on-site research and observation on current situation of rural industrial brands in Fengxian District to observe its appearance and analyze its causes.

1.2 Interview method. In-depth interviews were conducted on the current status, time and design elements of rural industry brands in Fengxian District to obtain information on the current status of rural industry brands. Interview subjects include practitioners, producers, tourists, experts in the field of design and consumers of rural industries from Fengxian District. Through field research in Qingcun Town, we interviewed the secretary of the neighbourhood committee, and then asked other local villagers about the different views on the yellow peach products in Qingcun Town. At the same time, through interviews with the staff of the Shanghai Agriculture and Rural Committee, we were able to understand the policy documents on the rural industry, and these researches laid a solid foundation for the collection of data and information on the brand image of the rural industry in Fengxian District.

1.3 Observation method. Conduct a three-month field survey of Fengxian District, visit Qingcun Town in depth and visit local villagers to truly understand and feel the regional cultural characteristics. Combined with the field survey and data collection in Fengxian District, it prepares for the brand design of rural industry in Fengxian District.

1.4 Analyze the Fengxian District Rural Industry brand using relevant creative design knowledge and data.

2. Quantitative research method

Based on the geographic information platform, a spatial database of rural industry brands in Fengxian District is established, covering information on the regional location, historical development, and cultural attributes of rural industries. It mainly includes

2.1 Through literature collection, interviews, questionnaires and other forms, to obtain information on the current status of the rural industry brand, to form the existing status

of the basic database.

2.2 Collect basic data on rural industry brands in Fengxian District, Shanghai, based on information such as the Ministry of Agriculture and Rural Development's "Shanghai's Agricultural Characteristic Producing Areas and Brand Certification Situation".

2.3 With the help of relevant staff of Fengxian District Agricultural Committee as well as villagers, the overall situation of rural industries in Fengxian District was collected, including closely linking the participants of agricultural activities, consumers, and staff of governmental departments for the study, in order to understand the characteristics of the development of rural industries in Fengxian District, and to provide a theoretical guide for the design of the brand image of rural industries in Fengxian District.

3. Research Instrument

The research tools include the use of questionnaires and assessment forms. The researcher will collect data by means of questionnaire research, and will select the people who are directly related to the branding of rural industry and distribute the questionnaire to them. The participants will be volunteers over 18 years old, male and female, including rural industry employees, design experts, consumers, rural culture researchers, and government staff. Their perceptions, needs and opinions on the green ecology and local characteristics of rural industry brands were obtained. This will provide a comprehensive understanding of the respondents' perceptions of the field and extract key information from them. Conduct a comprehensive evaluation of the rural industry brand in terms of green ecology and local characteristics through the evaluation form. By formulating a scientific and reasonable indicator system, quantifying and analysing the various elements, and assigning corresponding weights according to the actual situation, an objective and accurate assessment result is finally arrived at. The evaluation form is issued to practitioners related to rural industry branding in Fengxian District, relevant government departments and experts and scholars, consumers, and other stakeholders such as media organisations and social organisations, so as to form a comprehensive feedback from a diversified perspective, and to promote a more scientific and reasonable branding of rural industry in Fengxian District. Through the use of the questionnaire and evaluation form, we can obtain rich, diverse and reliable data support when digging into the green ecology and local characteristics of the rural industry brand in Fengxian District, Shanghai.

Research Results

The number of agricultural products applying for geographical indications from 2011 to 2022, derived from the National Agricultural Products Geographical Indications Query System from the initial record of the statistical year, totaled 143 in Zhejiang Province, 112 in

Jiangsu Province, and 17 in Shanghai City, which concluded that the number of agricultural products with geographical indications in the brand of the rural industry of Shanghai City is much smaller than that of Zhejiang Province and Jiangsu Province around Shanghai. By sorting out the distribution of the number of Chinese GI products in the counties under Shanghai, it is found that among the counties in Shanghai, Fengxian District and Chongming County are both agriculture-oriented districts and counties, and the number of agricultural products with GI in the rural industry brand of Fengxian District is 2, which is not only less than that of Chongming County but also lower than that of Jinshan District, and the same as that of Jiading District, Qingpu District, and Pudong New District, and is only more than that of Minhang District, whose area of agricultural cultivation is much smaller than Fengxian District.

Although Fengxian District is mainly engaged in agricultural products, has many rural industries and has characteristic tourism resources, the brand effect of rural industries is not obvious and there are numerous problems. In order to obtain more information about the brand of rural industry in Fengxian District, through the field survey of Qingcun Town, Fengxian District, and combining with the information of "Shanghai Agricultural Characteristic Producing Areas and Brand Certification Situation", the current situation of the brand of rural industry in Fengxian District is analyzed, and the results are analyzed as follows:

1. Fengxian District has great potential for the development of rural industry

As an important rural area in Shanghai, Fengxian District has rich regional resources and cultural heritage, and has great potential for development. With the in-depth promotion of the rural revitalisation strategy, Fengxian District rural industry brand is expected to usher in a broader development space.

2. Insufficient influence of rural industry brands

Fengxian District rural industrial characteristics of the brand is not much, the brand's ability to create limited, regional obvious, lack of brand awareness. More famous is Fengxian yellow peach, as the Chinese geographical indication products, but in the national influence is insufficient. Brand design homogenisation, brand features are not obvious, lack of brand characteristics, no innovation in the design of related derivatives, ignoring the importance of regional culture. And also as a geographical indication product of Yangcheng Lake hairy crabs, nationally known. At the same time to Fengxian yellow peach as the main feature, the development of yellow peach products single category, some years ago there are Fengxian yellow peach cannery, because of the lack of brand design, sales difficulties, has closed down. Fengxian Yellow Peach Festival has been held since 2010, has a history of 14 years, trying to build yellow peach industry with yellow peach cultural elements as IP, to promote Fengxian rural industry, but the influence is limited. Overall Fengxian rural industry categories, but many products have not established a brand identity system, or brand influence is insufficient,

enterprises or local governments have a weak awareness of brand building, brand design is relatively old, the brand's communication effect is not obvious.

3. Fewer competitive rural industry brands

Although Fengxian District is mainly engaged in the operation of agricultural products and has special tourism resources, there are relatively few truly competitive brands of special agricultural products. Many high-quality characteristics of agricultural products due to geographical limitations, it is difficult to achieve the additional benefits of the brand. For example, the same is rice, Fengxian produced rice is not even as good as the rice of Chongming County, Shanghai in the city more brand awareness, not to go out of Shanghai, travelling throughout China.

4. Lack of holistic and systematic design of rural industry brands

Fengxian rural industry brand design concept is backward, many products lack of systematic design, brand promotion is difficult, poor visitor experience, and the economic effect is not obvious. Fengxian rural industry is facing overall upgrading and development, and brand design can help rural industry transformation and development, enhance the visibility and reputation of rural industry, and ultimately promote the formation of a number of well-known rural industry brands with a high degree of internationalization and specialization.

5. Low awareness of brand promotion in rural industries and backward means of brand publicity

Most of the agricultural business subjects lack of brand building awareness, many high-quality characteristics of agricultural products without brand or brand but lack of brand image maintenance; at the same time, for individual operators, due to their own economic strength is limited, the brand operation ability is poor, agricultural products, brand publicity awareness is even weaker.

Overall, Fengxian rural industry is not much known and recognized by the public, the fundamental reason is the lack of brand image design, the existing brand, brand visual image of a single, lack of systematic design and effective communication methods. Part of the brand design is not accurate enough to extract culture and storytelling, and cannot represent the theme well, and the combination of rural industry and design fails to produce certain economic benefits.

Research Conclusions

By The study of the current situation of rural industrial branding in Fengxian District has certain practical significance in promoting rural industrial branding in Fengxian District: through branding, it can enhance the value of products, promote industrial upgrading, facilitate regional economic growth and increase farmers' income, and at the same time, through the

branding of rural industries, it can innovate and pass on the traditional skills so as to make them more adaptable to the needs of the modern market. Through rational agricultural production and resource management, it not only enhances the brand image, but also contributes to the sustainable and healthy development of the environment.

By analyzing the current situation of rural industry brand, formulating a realistic rural industry brand strategy, designing a rural industry brand that meets the characteristics of Fengxian District, has a clear positioning and distinctive personality, which is necessary to show the regional characteristics of the countryside and to avoid the sameness of the countryside impression. Brand building is the innovative road of rural industrial development, but also the way out of the current predicament. In the context of the market economy, as the market for traditional agricultural products is basically close to the fully competitive market, and thus the competition in the field of traditional agricultural products is intense, the agricultural product brand with overall brand design planning is relatively at an advantage.

Fengxian District rural industrial brand development should take the road of speciality and differentiation. Highlight the geographical and ecological advantages; the development of speciality agriculture, Fengxian District, as the "hometown of China's yellow peaches", can further strengthen the brand building of yellow peaches and other agricultural products; pay attention to the characteristics of the excavation combined with the protection of folklore and customs, excavation and integration of Fengxian District's historical and cultural resources, such as the traditional villages, historical buildings and local folk activities; innovation and the application of science and technology, such as through biotechnology to improve the yield and quality of the yellow peaches. science and technology application, such as improving the yield and quality of yellow peaches through biotechnology. Focus on brand marketing and promotion to establish a unified brand image and market it through multiple channels. Create the distinctive brand characteristics of Fengxian District and take a green and ecological path of sustainable development. Build the rural industry from the perspective of brand design, and construct a distinctive rural IP with obvious brand effect.

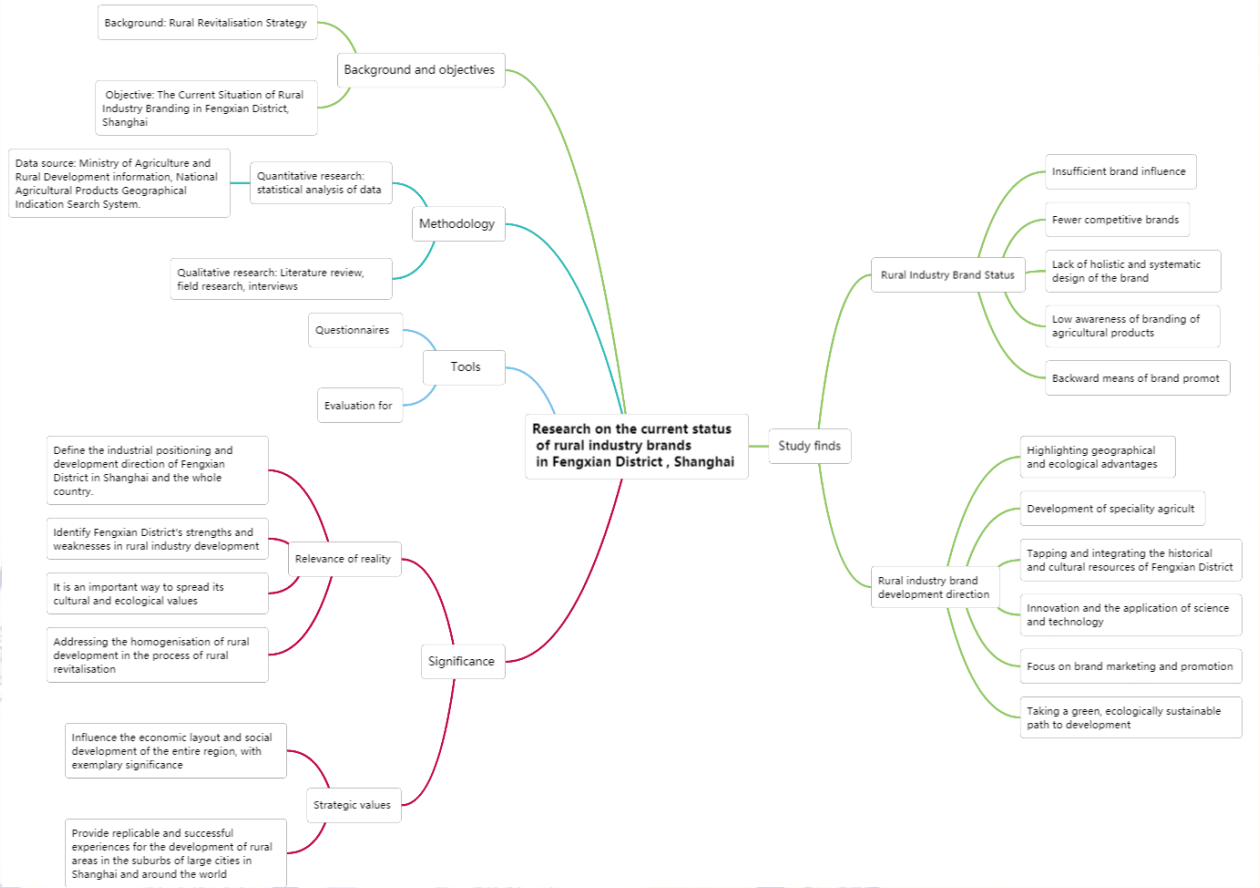

Figure 2 A mind map based on the conclusions and findings of this paper
Source: Jianan Zhou (2024)

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References

Chen, F., & Feng, G. (2008). **The Historical Development and Modern Enlightenment of German Citizen Farms**. International Urban Planning.

Chen,Zh.l. (2022). **Dictionary.** Shanghai: Shanghai Dictionary Press.

Eric, J., & David, E. (1997). **Creating a Corporate Brand without the Mass Media**. Harvard Business Review, (1).

Guo, X. X., & Wu, P., & Fu, X. P., & Li, H. Y., & Huang, S. Y. (2023). **Development status and countermeasures of sightseeing agricultural park planning under rural revitalization strategy**. Heilongjiang Agricultural Science, (08)10.

He, Z. R. (2019). **Agricultural tourism integration, the theme farm thinking operation must be broken**, (05).

Huang, M. (2016). **Research on Brand Image Design Based on Regional Characteristics** (Inner Mongolia Normal University).

Masahisa, F. J. (2006). Economic Development Capitalizing on Brand Agriculture: Turning Development Strategy on Its Head. **Institute of Developing Economies Discussion Paper,** (11) .

Rodefeld, R. D., translated by An, Z. P. (1983). **Agriculture and Rural America**. Agricultural Press.

Sun,Y.Y. (2021). **Oriental beauty valley: grasp the beautiful health industry "wind mouth", Shanghai state-owned.** (11) 20, 63 67.

Wu, L. L. (2023). Exploration of regional public brand construction of agricultural products in Fengxian District. **Shanghai Rural Economy,** (12) 20.

Yukio, N., translated by Wang, H. J (2007). **Recreating the Charming Hometown : Translated by the Stories of the Rebirth of Traditional Japanese Neighborhoods**. Tsinghua University Press.

Xu, M. Y. (2021). **Design in the context of rural revitalization Design Research on Empowering Agricultural Product Brands** (Anhui University).

Zhang, B., & Wan, J. Y., & Wen, X. W. (2011). Comparison of Foreign Agricultural Tourism Models and Experiences [J]. **Agricultural Economic Issues,** (5): 100-105.

CHEMICAL AND PHYSICAL PROPERTIES OF BAN CHIANG SOIL,UDONTHANI PROVINCE,THAILAND

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Abstract

This research examined the chemical and physical properties of Ban Chiang soil in Udon Thani Province, sourced from two soil locations within the Ban Chiang area. The study focused on analyzing the elemental composition of the soil and investigating its physical properties both before and after burning at temperatures ranging from 800 to 1250 degrees Celsius in an oxidizing atmosphere.The soil was utilized as a raw material for clay production to reduce manufacturing costs. Therefore, it was crucial to assess the local soil properties and texture to ensure quality control and achieve the desired clay properties. The prepared clay aimed to minimize product waste post-firing, such as cracks, air bubbles, iron spots, and impurities.

Chemical analysis revealed that both soil sources consisted mainly of quartz and kaolinite, as confirmed by X-ray diffraction (XRD) analysis. The physical properties of the clay were assessed before and after firing. Soil sample 1 exhibited fine texture and toughness suitable for forming products within the temperature range of 800 to 1250 degrees Celsius.After firing, soil sample 1 retained its moldability and fire resistance. However, the second soil sample exhibited undesirable characteristics when subjected to temperatures of 1100 to 1250 degrees Celsius, resulting in a brown-black appearance, swelling, and cracking, indicating poor fire resistance."

Keywords: Chemical, Physical Properties Ban Chiang Soil, ,UdonThani Province

Introduction

Local pottery is a form of local wisdom that was created to meet the needs of the community in daily life. Over time, the focus shifted from merely creating products for practical use to developing works of art that showcase the uniqueness of each locality and its social status. However, as technology advanced, it played a greater role in daily life, transforming local wisdom through various technologies and pottery-making processes. These rely on diverse raw materials for shaping and firing, making the products durable, beautiful,

and unique. Each source of soil, deriving from nature, has different compositions of raw materials depending on its origin, which is crucial to the production process. If the clay is tough and moldable, the resulting product will be strong and durable. The soil from each area varies; sometimes, it must be refined to remove iron, leaves, and other impurities to make it suitable for use (Boonchaeng Somsak, 2022).

Regarding the Ban Chiang soil source in Udon Thani Province, the excavated soil is coarse-textured and quite porous, originating from rice fields near the village. Once extracted, it must be dried and thoroughly crushed to remove leaf litter and other impurities. It contains various contaminants such as rubble, gravel, sand, tree roots, grass, and organic substances, which must be cleaned out to avoid interference in shaping and to prevent the clay from cracking or distorting during firing. Soil preparation aims to enhance and develop the properties of the clay to meet the specific needs of each stage of pottery production. Generally, the products are quite thick and have an orange, red, or yellow color before firing, and are sticky. After firing at temperatures of about 700–800 degrees Celsius, the pottery, which has no glaze, turns a burnt red color, becomes prone to cracking and railings, and has the ability to absorb water. The fired pottery, whether yellow or red, is of an uncoated type that emits a firm sound when tapped (Chatri Tachoprarang, interview, president of the community enterprise of the Painted Pottery Group, 2023).

This underscores the importance of studying the chemical and physical properties of Ban Chiang soil from Udon Thani Province. The research aims to explore how local natural resources, such as soil, can be utilized to create a variety of new products for consumers, enhancing the use of local raw materials in pottery production.

Research objectives

1. To study the physical and chemical properties of Ban Chiang soil in Udon Thani Province Thailand.
2. To determine the optimal mixture ratio of Ban Chiang refractory clay for pottery production using Ban Chiang clay in Udon Thani Province Thailand.

Lierature Review

His research has gathered data on innovations in fire-resistant clay to design creative products in Ban Chiang, Udon Thani Province. The researcher has explored various principles, concepts, theories, and academic sources, including articles and documents related to the history of Ban Chiang pottery. Ban Chiang is a community located in the Ban Chiang Subdistrict of Nong Han District, Udon Thani Province. It stands as one of the oldest and most significant archaeological sites in Southeast Asia. Scientific evidence from excavations of various ancient

objects has demonstrated that this region has been a site of continuous human settlement from the Stone Age through the Bronze Age, notably red painted earthenware, and the region is particularly renowned for its bronze production dating back 4,000 years (Punnotak, 1999). The Ban Chiang culture extends across several areas in northeastern Thailand, including the provinces of Udon Thani, Sakon Nakhon, Nakhon Phanom, and Khon Kaen

Figure 1: Ban Chiang community plan Udon Thani Provinc
Source: https://www.naewna.com/lady/698798 (Retrieved March 31, 2023)

In the past, clay sculptures were crafted from natural clay selected for its toughness, which allowed molding into various types of products. This practice stemmed from early human needs and desires, particularly for making containers for food, water, and building materials. The earliest known clay product used in construction was terra cotta, characterized by its rough and strong texture. Terra cotta comes in both glazed and unglazed varieties (Thawee Phromphruek, 1980 : 9). Over time, as human capabilities developed, we also improved the quality of the soil texture to achieve better quality in the resulting products.

Research Methodology

This study employs mixed methods, integrating qualitative research (Qualitative Method), descriptive analysis (Descriptive Analysis), and quasi-experimental designs (Quasi-Experimental Designs), followed by quantitative research methods (Quantitative Method) to evaluate the design of creative products. The research methodology is structured as follows:

Documentary Research: Information has been compiled from a variety of sources including books, academic documents, journal articles, and internet resources. This involves studying theories and related research to build a foundational understanding.

Soil Source Selection for Creative Product Design in Ban Chiang, Udon Thani Province: The selected soil sources are from Ban Chiang and nearby villages within the Ban Chiang District. Soil samples were collected from both sites and tested for their toughness properties

through a bending test, which involves rolling the soil into a line and then bending it into a circle to check for cracks. Further testing and analysis of the raw materials were conducted, including chemical composition analysis using XRD mineralogy techniques, and element types and concentrations in the samples using XRF techniques.

Study of Physical Properties of Refractory Clay from Ban Chiang, Udon Thani Province: This includes examining the clay after firing for color changes, shrinkage, fire resistance, water absorption, and chemical properties. The study involves firing the soil at various temperatures—800, 900, 1,000, 1,100, 1,200, 1,230, and 1,250 degrees Celsius—in an oxidizing atmosphere to study its properties.

Research Results

In the course of studying and collecting information from related documents and research, the researcher examined the chemical and physical properties of the soil in the Ban Chiang area, Udon Thani Province. This involved visiting the area to gather data, conducting interviews, taking notes, and photographing the following: Results from the Analysis of Soil Chemical and Physical Properties:

The researcher conducted extensive fieldwork in various parts of the Ban Chiang community area in Udon Thani Province. Through interviews with local experts in traditional knowledge and direct sample collection, the study focused on analyzing the chemical and physical properties of the soil. The findings are pivotal for understanding the unique characteristics of the soil in this culturally and archaeologically significant region.

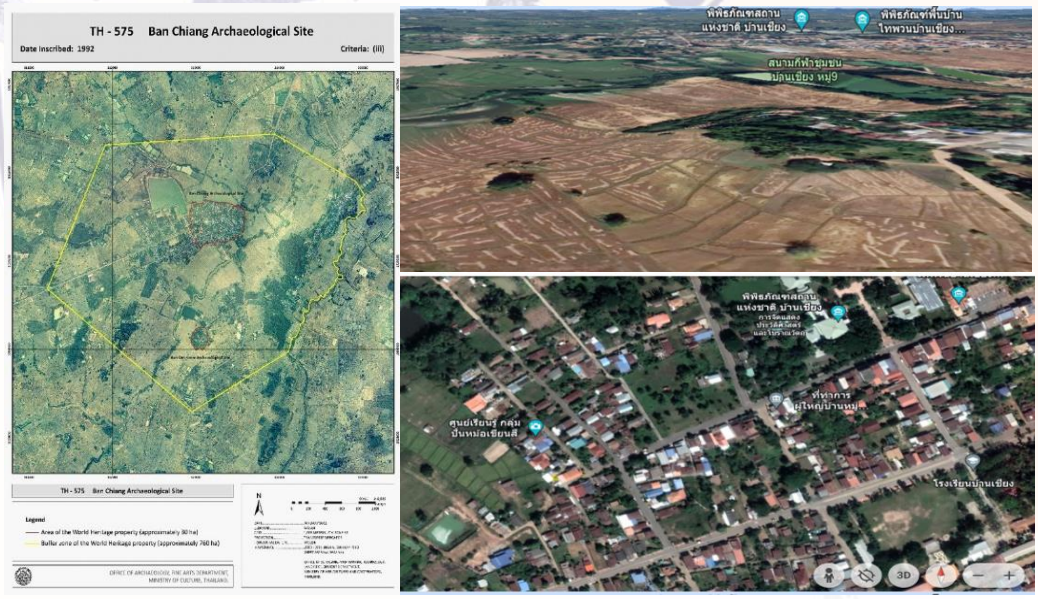


Figure 2: Map of the physical characteristics of the Ban Chiang soil source. Udon Thani Province Thailand.

Source: ttps://earth.google.com/web/ (2566)

Figure 2 illustrates that the Ban Chiang soil source in Udon Thani Province is characterized by an oval-shaped mound. It stretches approximately 300 meters along the east-west axis and covers a total area of about half a square kilometer. The mound has an average elevation of about 175 meters above mean sea level and rises approximately 8 meters above the surrounding rice fields, measured from the highest point in the middle of the hill. The area represents a central terraced plain, long and oval in shape, extending about 1,350 meters in length along the east-west axis and about 500 meters across. It is located near two converging water sources, Huai Na Kham and Huai Ban, and is about 60 kilometers east of the provincial center. The site spans approximately 400 rai, with the middle of the hill standing around 8 meters taller than the adjacent land, offering a suitable and fertile topography for various uses.

Figure 3. depicts a field visit to survey the Ban Chiang soil source in Udon Thani Province Thailand.
Source: Learning Center Ban Chiang pottery and painting group Udon Thani Province (2024).

Figure 3 depicts a field visit to survey the Ban Chiang soil source in Udon Thani Province Thailand. A specific sampling method was employed, focusing on the geography and historical significance of the area, primarily known for Ban Chiang pottery production. The soil, sourced from rice fields and the Ban Chiang village area—a public space within the village—required excavation of approximately 60–200 centimeters from the soil's cross-section. This process involved cutting deeply from the vertical surface of the soil, which allowed the observation of soil color, adhesion, various impurities, and the size and quantity of plant roots within the soil layers.

Figure 4 Example of Ban Chiang Soil Source: Udon Thani Province, from two sources.
Source: Chutima Ngampipat (2023)

Figure 4 provides an example from two soil sources in the Ban Chiang area of Udon Thani Province. When selecting soil samples, it is typical to dig from various locations, often in rice fields. The soil is characterized by its fine clay texture. The predominant color of the soil is black, a result of organic substances and fossil deposits that have accumulated over a long period.

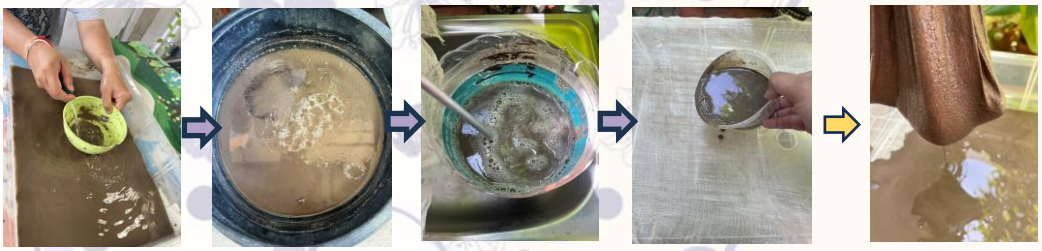


Figure 5: Soil Composting and Preparation Steps
Source: Chutima Ngampipat (2023)

From Figure 5: Soil Composting and Preparation Steps It was observed that soil samples from the Ban Chiang source in Udon Thani Province were obtained from two mining locations. These samples were then hung to dry, thoroughly ground, and sieved to remove stones and sand fragments. Subsequently, the soil was mixed with water and allowed to ferment in a container for about 1–3 days. After extraction from the source, the soil was combined with clay in a specified ratio, with wood and stone fragments removed. This prepared soil was then readied for kneading and further testing.

Figure 6: The clay from sample 1 and sample 2 was ground into a fine powder.
Source: Chutima Ngampipat (2023)

From Figure 6: The clay from samples 1 and 2 was processed until it became a fine powder. It was noted that the soil contained wood chips and stone fragments. Initially, these samples were sun-dried, then pounded and ground into smaller pieces with a hammer. During this process, a sieve was employed to filter the soil into a fine powder, effectively separating larger impurities from the ground soil. Subsequently, the powdered forms of soil samples 1 and 2 were prepared for chemical property analysis. They were also subjected to various physical property tests, including measuring shrinkage before and after firing, water absorption after burning, and the color and fire resistance of the clay before and after firing.

Figure 7. Steps for preparing soil samples for chemical properties analysis.
Source: Chutima Ngampipat (2023)

From Figure 7 Steps in Preparing Soil Samples Chemical properties were analyzed using X-ray fluorescence (XRF) and the mineralogical composition was determined using X-ray diffraction (XRD). Two types of soil samples were collected, each weighing approximately 100 grams. The soil samples were dried, then finely ground into powder for analysis. This process was conducted to determine the chemical composition of Ban Chiang soil.

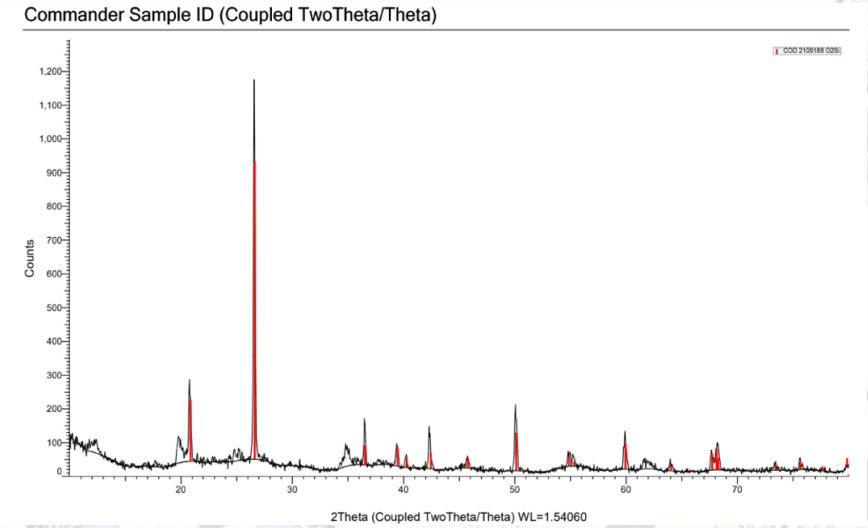


Figure 8. Results of the Mineral Composition Analysis Using X-Ray Diffraction (XRD) The soil sample from site 1

Source: Scientific Equipment and Service Center Rajamangala University of Technology Phra Nakhon (North Bangkok Center)

From Figure 8 Results of the Mineral Composition Analysis Using X-Ray Diffraction (XRD) The soil sample from site 1 underwent X-ray diffraction (XRD) to observe its diffraction behavior. The mineral composition was analyzed by comparing the diffraction peaks to the standard diffraction data set from the International Center for Diffraction Data (ICDD). The analysis revealed that the X-ray diffraction pattern of the soil sample is consistent with the data set for quartz (SiO2) and Ban Chiang clay, which comprises quartz and kaolinite. The significant peaks were identified at approximately 12.5, 20, 25, 35, and 62

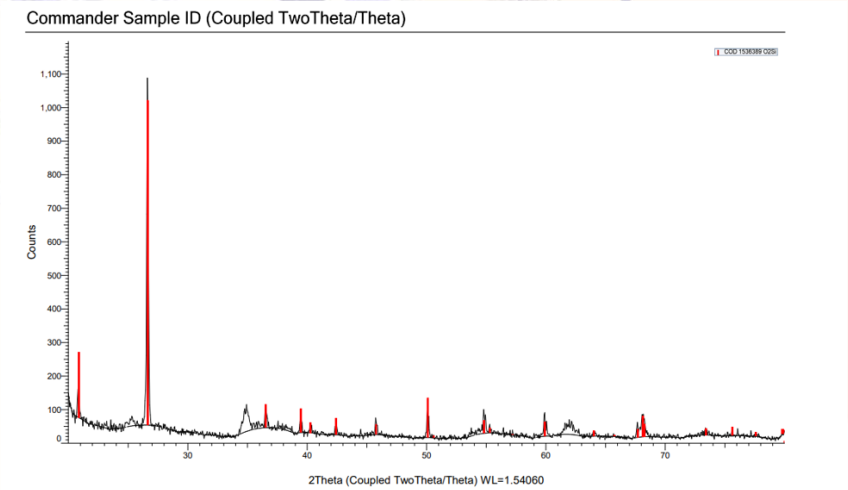
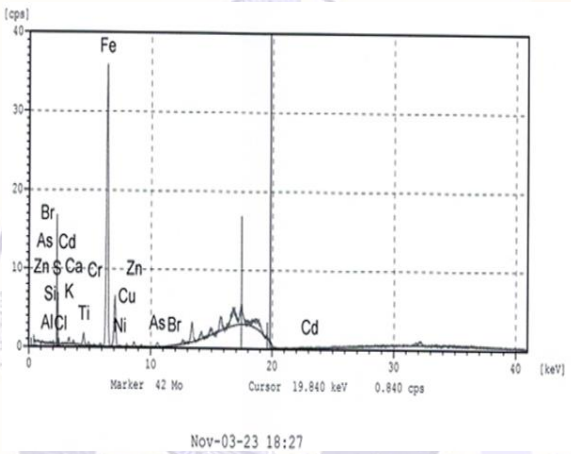


Figure 9 Results of mineral composition analysis using X-ray diffraction (XRD) of soil sample from site 2

Source: Scientific Equipment and Service Center Rajamangala University of Technology Phra Nakhon (North Bangkok Center)

From Figure 9 Mineral Composition Analysis Using X-Ray Diffraction (XRD) The soil sample from site 2 was subjected to X-ray diffraction (XRD) to observe its diffraction behavior and analyze its mineral composition. The diffraction peaks were compared to the standard diffraction data set from the International Center for Diffraction Data (ICDD). The analysis revealed that the X-ray diffraction patterns of the soil sample correspond with the data set for quartz (SiO2) and Ban Chiang clay, which includes minerals such as quartz and kaolinite. Notable peaks were identified in the ranges of approximately 11–20, 20–25, 25–35, and 60.



Collimator : 1.2 mm Live time : 100 s
X-ray tube vol. : 50 kV Current : 200 µA
Processing Time : P2
X-ray Filter : 5 Elements Cell : Nonexistence

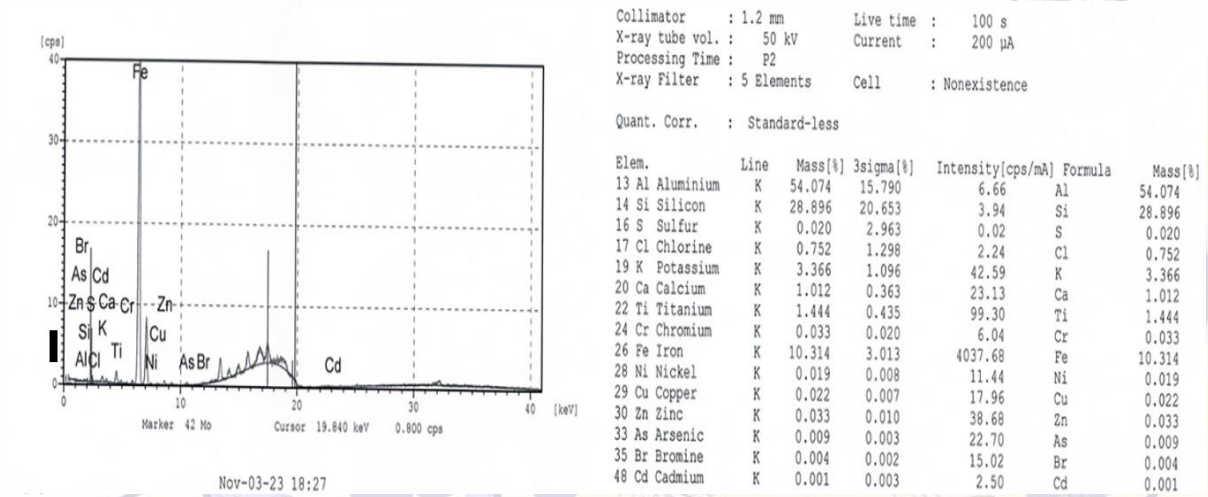
Quant. Corr. : Standard-less

Elem.	Line	Mass[%]	3sigma[%]	Intensity[cps/mA]	Formula	Mass[%]
13 Al Aluminium	K	40.961	14.138	3.45	Al	40.961
14 Si Silicon	K	38.679	21.061	4.65	Si	38.679
16 S Sulfur	K	0.118	4.319	0.10	S	0.118
17 Cl Chlorine	K	0.000	0.000	0.00	Cl	0.000
19 K Potassium	K	5.336	1.961	50.12	K	5.336
20 Ca Calcium	K	1.547	0.617	25.09	Ca	1.547
22 Ti Titanium	K	2.184	0.769	105.01	Ti	2.184
24 Cr Chromium	K	0.031	0.027	3.92	Cr	0.031
26 Fe Iron	K	11.014	3.803	2947.59	Fe	11.014
28 Ni Nickel	K	0.023	0.011	9.18	Ni	0.023
29 Cu Copper	K	0.031	0.012	17.61	Cu	0.031
30 Zn Zinc	K	0.050	0.018	39.82	Zn	0.050
33 As Arsenic	K	0.022	0.008	39.43	As	0.022
35 Br Bromine	K	0.002	0.002	5.36	Br	0.002
48 Cd Cadmium	K	0.002	0.004	1.93	Cd	0.002

Figure 10 Chemical Composition Analysis Using XRF for Soil Source 1 The XRF analysis of soil source 1

Source: Scientific Equipment and Service Center Rajamangala University of Technology Phra Nakhon (North Bangkok Center)

From Figure 10: Chemical Composition Analysis Using XRF for Soil Source 1 The XRF analysis of soil source 1 revealed the chemical composition in the following oxide percentages:Alumina (Al_2O_3): 40.961% Silica Oxides (SiO_2): 38.679% Iron Oxide (Fe_2O_3): 11.014% Potassium Oxide (K_2O): 5.336% Titanium Oxide (TiO_2): 2.184% Calcium Oxide (CaO): 1.547% This analysis provides a detailed breakdown of the main chemical constituents of the soil from Ban Chiang, highlighting the predominance of alumina and silica oxides.



Collimator : 1.2 mm Live time : 100 s
X-ray tube vol. : 50 kV Current : 200 µA
Processing Time : P2
X-ray Filter : 5 Elements Cell : Nonexistence

Quant. Corr. : Standard-less

Elem.	Line	Mass[%]	3sigma[%]	Intensity[cps/mA]	Formula	Mass[%]
13 Al Aluminium	K	54.074	15.790	6.66	Al	54.074
14 Si Silicon	K	28.896	20.653	3.94	Si	28.896
16 S Sulfur	K	0.020	2.963	0.02	S	0.020
17 Cl Chlorine	K	0.752	1.298	2.24	Cl	0.752
19 K Potassium	K	3.366	1.096	42.59	K	3.366
20 Ca Calcium	K	1.012	0.363	23.13	Ca	1.012
22 Ti Titanium	K	1.444	0.435	99.30	Ti	1.444
24 Cr Chromium	K	0.033	0.020	6.04	Cr	0.033
26 Fe Iron	K	10.314	3.013	4037.68	Fe	10.314
28 Ni Nickel	K	0.019	0.008	11.44	Ni	0.019
29 Cu Copper	K	0.022	0.007	17.96	Cu	0.022
30 Zn Zinc	K	0.033	0.010	38.68	Zn	0.033
33 As Arsenic	K	0.009	0.003	22.70	As	0.009
35 Br Bromine	K	0.004	0.002	15.02	Br	0.004
48 Cd Cadmium	K	0.001	0.003	2.50	Cd	0.001

Figure 11 Results of chemical composition analysis using X-ray fluorescence (XRF) of soil samples from site 2.

Source: Scientific Equipment and Service Center Rajamangala University of Technology Phra Nakhon (North Bangkok Center)

From Figure 11 Chemical Composition Analysis Using XRF for Soil Source 2 The XRF analysis of soil source 2 revealed the chemical composition in the following oxide percentages: Alumina (Al_2O_3): 54.074% Silicon Dioxide (SiO_2): 28.896% Iron Oxide (Fe_2O_3): 10.314% Potassium Oxide (K_2O): 3.366% Titanium Oxide (TiO_2): 1.444% Calcium Oxide (CaO): 1.012% This analysis provides a detailed breakdown of the main chemical constituents of the soil from Ban Chiang, highlighting a high percentage of alumina and silicon dioxide.

Table 1 Analysis of the Physical Properties of Clay Before and After Firing For soil sample 1

temperature	The color of the clay before firing		Toughness	Forming suitability		Average shrinkage before firing (%)
800		Fine-grained black		The Soil is tough	Can be molded into products	7.3
900		Fine-grained black		The Soil is tough	Can be molded into products	7.3
1000		Fine-grained black		The Soil is tough	Can be molded into products	7.3
1100		Fine-grained black		The Soil is tough	Can be molded into products	7.3
1150		Fine-grained black		The Soil is tough	Can be molded into products	7.2
1200		Fine-grained black		The Soil is tough	Can be molded into products	7.2
1230		Fine-grained black		The Soil is tough	Can be molded into products	7.2
1250		Fine-grained black		The Soil is tough	Can be molded into products	7.2

Source: Chutima Ngampipat (2023)

From Table 1: Analysis of the Physical Properties of Clay Before and After Firing For soil sample 1, the analysis covered a range of temperatures from 800 degrees Celsius to 1,250 degrees Celsius. Before firing, the soil exhibited a fine texture and notable toughness, making it suitable for molding products. At temperatures ranging from 800 to 1,100 degrees Celsius, the average pre-firing shrinkage was 7.3 percent. For higher temperatures, specifically between 1,150 and 1,250 degrees Celsius, the average pre-firing shrinkage slightly decreased to 7.2 percent. The color and texture of the clay were consistently tough across the tested temperature range.

Table 2 Analysis of the Physical Properties of Clay Before and After Firing The analysis of Soil Sample 2

temperature	The color of the clay before firing		Toughness	Forming suitability		Average shrinkage before firing (%)
800		Fine-grained black		The Soil is tough	Can be molded into products	7.0
900		Fine-grained black		The Soil is tough	Can be molded into products	7.0
1000		Fine-grained black		The Soil is tough	Can be molded into products	7.0
1100		Fine-grained black		The Soil is tough	Can be molded into products	7.0
1150		Fine-grained black		The Soil is tough	Can be molded into products	7.2
1200		Fine-grained black		The Soil is tough	Can be molded into products	7.2
1230		Fine-grained black		The Soil is tough	Can be molded into products	7.0
1250		Fine-grained black		The Soil is tough	Can be molded into products	7.0

Source: Chutima Ngampipat (2023)

From Table 2: Analysis of the Physical Properties of Clay Before and After Firing The analysis of Soil Sample 2 was conducted across a temperature range of 800 to 1,250 degrees Celsius. Before firing, the soil displayed a fine texture and significant toughness, making it well-suited for molding products. The pre-firing shrinkage percentage varied with temperature:800 to 1,100 degrees Celsius: Average shrinkage before firing was 7.0 percent.1,150 to 1,200 degrees Celsius: Average shrinkage before firing was 7.2 percent.1,230 to 1,250 degrees Celsius: Average shrinkage before firing remained at 7.0 percent.The color and texture of the clay, which is described as tough across these temperatures, indicates its suitability for product molding.

Table 3 Results of analysis of physical properties of clay after firing. Soil sample 1

temperature	The color of the clay after firing		shrinkage of the clay after firing (percentage)	water absorption (percentage)	Fireproof	
800		Pepper orange	3.50	0.44		The workpiece is complete and can withstand fire
900		Pepper orange	3.50	0.43		The workpiece is complete and can withstand fire
1000		Pepper orange	3.50	0.45		The workpiece is complete and can withstand fire
1100		Pepper orange	3.50	0.34		The workpiece is complete and can withstand fire
1150		Brown	5.43	0.33		The workpiece is complete and can withstand fire
1200		Brown	5.43	0.34		The workpiece is complete and can withstand fire
1230		Brown	5.43	0.35		The workpiece is complete and can withstand fire
1250		Nut-brown	5.43	0.33		The workpiece is complete and can withstand fire

Source: Chutima Ngampipat (2023).

From Table 3: Analysis of Physical Properties of Clay After Firing (Soil Sample 1) 800 degrees Celsius:Color: Brick orangeShrinkage after firing: 3.50% Water absorption: 0.44%Fire resistance: Yes, no floating or cracking observed900 degrees Celsius:Color: Brick orangeShrinkage afterfiring: 3.50%Water absorption: 0.43%Fire resistance: Yes, no floating or breakage1,000 degrees Celsius:Color: Brick orangeShrinkage after firing: 3.50%Water absorption: 0.45%Fire resistance: Yes, no floating or breaking1,100 degrees Celsius:Color: Brick orangeShrinkage after firing: 3.50%Water absorption: 0.34% Fire resistance: Yes, no floating or breaking1,150 degrees Celsius:Color: Brick orangeShrinkage after firing: 5.43%Water absorption: 0.33%Fire resistance: Yes, does not float or break1,200 degrees Celsius:Color: BrownShrinkage after firing: 5.43%Water absorption: 0.34%Fire resistance: Yes, no floating or breaking1,230 degrees Celsius:Color: BrownShrinkage after firing: 5.43%Water absorption: 0.35%Fire resistance: Yes, no floating or breaking1,250 degrees Celsius:Color: BrownShrinkage after firing: 5.43%Water absorption: 0.33%Fire resistance: Yes, no floating or breakingOverall fire resistance (800 degrees Celsius to 1250 degrees Celsius):Consistent performance with no floating or breaking noted across all temperatures tested.

Table 4 Results of analysis of physical properties of clay after firing. Soil sample 2

temperature	The color of the clay after firing		shrinkage of the clay after firing (percentage)	water absorption (percentage)	Fireproof	
800		Pepper orange	2.25	0.32		The workpiece is complete and can withstand fire
900		Pepper orange	2.30	0.32		The workpiece is complete and can withstand fire
1000		Pepper orange	2.40	0.34		The workpiece is complete and can withstand fire
1100		Pepper orange	5.70	0.35		Unable to withstand fire, the test piece appears swollen and cracked.
1150		Brown	5.70	0.34		Unable to withstand fire, the test piece appears swollen and cracked.
1200		Brown	5.70	0.34		Unable to withstand fire, the test piece appears swollen and cracked.
1230		Brown	5.75	0.34		Unable to withstand fire, the test piece appears swollen and cracked.
1250		Nut-brown	5.75	0.34		Unable to withstand fire, the test piece appears swollen and cracked.

Source: Chutima Ngampipat (2023).

From Table 4, for the physical analysis of the fired clay, Soil Sample 2 shows a temperature of 800 degrees Celsius and soil color. After firing, the shrinkage rate is 2.25%, the water absorption rate is 0.32%, and the temperature is 900°C. At 1000°C, the water absorption rate is 2.30%, and the clay color is brick orange. At 800°C to 1000°C, the refractory shows no float fracture. At 1100°C, the clay color is brick orange, with a shrinkage rate after firing of 5.70%, and a water absorption rate of 0.35%. At 1150°C, the clay color is brown, with a shrinkage rate after firing of 5.70%, and a water absorption rate of 0.34%. At 1200°C, the soil color is brown, with a shrinkage rate after combustion of 5.70%, and a water absorption rate of 0.34%. At 1230°C, the soil color is brown, with a shrinkage of 5.75% after combustion, and a water absorption rate of 0.34%. At 1250°C, the shrinkage rate after firing is 5.75%, the water absorption rate is 0.34%, and the temperature range is from 1100°C to 1250°C.

Conclusion

The chemical and physical properties of Ban Chiang soil in Udon Thani Province, derived from two soil sources within the Ban Chiang area, were examined before and after burning at temperatures ranging from 800 to 1,250 degrees Celsius. Therefore, it is crucial to evaluate the properties and texture of local soils to ensure controlled quality and achieve the desired clay properties. The prepared clay aims to minimize product waste after firing, such as cracks, bubbles, and iron impurities. Clay Sample 1 exhibits a fine texture and suitable toughness for molding products within the temperature range of 800 to 1,250°C. After being

fired, Clay Sample 1 can be easily molded and is resistant to heat. Conversely, the second soil sample, when subjected to temperatures of 1,100 to 1,250 degrees Celsius, displays a brown-black appearance, swelling, and cracking. The essential initial tests include soil shrinkage, water absorption, and toughness assessments, which assist manufacturers in determining the appropriate temperature for product fabrication. Soil types can be categorized based on various characteristics, such as texture, temperature used for firing, intended use, production method, and source. Following the examination of chemical and physical properties, a study was conducted to determine the optimal soil mixture ratio aimed at enhancing soil quality for improved suitability in pottery production.

Acknowledgement

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References

Phromphruek, T. (1980). **Introduction to ceramics**. Bangkok: Odeon Store.

Punnotak, T. (1999). **Dan Kwian, House: Pottery**. In The Encyclopedia of Thai Culture, Isaan Volume 4 (pp. 1298-1307). Bangkok: Thai Encyclopedia Foundation, Siam Commercial Bank.

Somsak, B. (2021). **Complete research report: Surveying and developing soil resources for use in producing seraMik in the Inthakhin community, Mae Taeng District, Chiang Mai Province.** This research project received funding from Chiang Mai Rajabhat University Fiscal year 2020 with support from the Office of the Science, Research and Innovation (NRCT). Retrieved on October 19, 2023, from http://www.cmruir.cmru.ac.th

THE ANALYSIS OF BUDDHIST SOFT POWER IN FRAMEWORK OF SUSTAINABLE SOCIAL DEVELOPMENT

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Abstract

This objectives of the article aiming to show of 1) what is the Buddhist soft power in terms of social context 2) how does the Buddhist soft power practice to support sustainable social development 3) to analyze of the Buddhist soft power in framework of social concept. The Buddhist ethics is a part of core value of the soft power to urge social trend moving to sustainable social development, because this concept will enhance escape from social chaos, and additionally, the Buddhist ethics will become a scaffolding of social cohesion and social inclusion for gathering prosperity in the society. The approaches are catalysts to make social empowerment, and social sustainable development through the greatest concept of Buddhist soft power in use.

Keywords: Buddhist Soft Power; Ethics; Sustainable Social Development

Introduction

During the world is facing the problems coming from various factors, the Buddhist soft power is the most important mechanism to contribute of shaping a good society in accordance with the Buddha’s teaching, before discussing into more in-depth on the concepts, so it should be understood on the Buddhist soft power in first and what is going on and the meaning of this term.

The term of “Buddhist soft power” refers to any mean to influence on controlling the state or society without coercive force or any violence manner, but the process of this ruled by peacefully meaner and social inclusion as well. But some scholars suggested that this Buddhist soft power term refers to the Buddhist ethics that can apply to the state or

mindset of human being in any society for inclusion approach to any specific purpose of leadership, The term “***Ethics***” derive from the Greek ***ethikos***, that which pertains to *ethos*, character. (H. Saddhatissa, M.A., Ph.D., 1948, 1965, 1968-69). In this regards, it seems to be a considerable meaning and covering the social cohesion, because Buddhist ethics processes smoothly by joining of social stakeholders or inclusion process.

On the other hand, in the broad of the meaning, in order to reach the practice of Buddhist soft power, globalization has led to a focus on peaceful cooperation, mutual sustainable development, and avoiding conflict. Cultural strength, particularly Buddhism, is used to enhance national image and power in international relations. Buddhism, originating from India, has spread to Eastern and Western cultures, enriching India's soft power. It creates a cultural link between India and the world, expanding its influence through culture and religious faith. The article analyzes the widespread pervasiveness of Indian Buddhism in Japan, South Korea, and China as an example of this. (Team StratNews, 2024)

According to Bhikkhu P.A. PAYUTTO, Samdet Phra Buddhaghosacariya (2017) gives the broad meaning related to the Buddhist soft power is the Teaching of Buddha often give more emphasis to the social factor of having virtue companionship than to the internal factor of wise reflection. But other scholar such as Pataraporn Sirikanchana (2019) gives in differently way that cover the bondage of the duty and compassion are two distinguished virtues of “a good person” in Buddhist perspectives which essentially support harmonious families, health care and sustainable societies.

How to Practice in Society

The main concept of Buddhism is to get rid of suffering (problems), happening in the human being or the world, meanwhile the world today facing the geopolitical challenges among of two super powers referring to the liberal and communist blocs, so the practices of Buddhist soft power is the central concept of challenging to the super powers, because the world is possible to peace through conduct the Buddhist ethics or other religious approaches.

To effective this method, Buddhist counseling is a process of reducing suffering in individuals using wisdom and interventions from Buddhism, which aims to train the human mind to attain a state of equanimity, joy, and liberation. (Sumedha Viraj Sripathi Ukwatta, 2019), and Buddhism is generally seen as associated with non-violence and peace. (Peter Harvey, 2000)

In doing so, Indian thought shown that the ideal of *ahingsa, (*non-*violence)* has been absorbed into mainstream Hinduism, more notably in the twentieth century by Mahanda Gandhi. (Kevin Burns, 2019). In practical way in society, the Buddhist ethical teachings provide a simple and noble code of conduct, irrespective of cast, creed or race, which teaches us how

to live in an ideal society with a follow-up of “Right conduct” which is a pre-requisite for a sustainable society. (Kanchan Saxena, 2019)

Additionally, related to the Buddhist soft power, some Buddhist scholars have still regarded the patience and tolerance are vital to the development and use of soft power. Communications and impressions need time to percolate and ferment in its audiences to build emotional identity with the images and symbols so imparted. “The successful use of soft power requires patience and tolerance. This is because positive emotions require repeated long-term stimulation.” (Sepala Weliwitigoda, 2015)

In Buddhist perspectives, in order for enhancing of social development, starting from internal factor, and this point refers to train the mind of human being because the mind is preceding of all everything in this world, what we think, we become.

In order for purifying of mind, so the technique of Vipassana offers equal benefits to all who practices it, without any discrimination on the basis of race, class, or sex. (Shri S. N. Goenka, William Hart, 1982, 1987-88, 2019), and relevant to this factor, mental well-being is the most important factor to make the society peaceful, to cause the family happiness, and oneself comfortable. (Bhikkhuni Dr. Hue Lien, 2010)

Therefore, Buddhism offers numerous benefits to national society, including prosperity for those who practice it physically, mentally, and emotionally. It is considered a great temple, born of good morals and traditions that should be practiced. Buddhism has many benefits, including the progress of most human beings, including medicine and science. Looking at historical aspect found that India's deep-rooted cultural and historical connections with Buddhism strengthen its soft power diplomacy with Buddhist countries like Sri Lanka, Myanmar, Thailand, Cambodia, and Vietnam. (Sepala Weliwitigoda, 2015)

On the other hand, Buddhist teachings can strengthen regional cohesion by promoting peace and compassion through collaboration between Buddhist and political leaders. Buddhist diplomacy (Meng-Tat Chia, 2022) can foster intercultural understanding and dialogue, but further research is needed. Buddhism views human behavior as selfish and discordant, leading to insecurity and fear. It offers a shift from Western political realism, focusing on self-transformation and self-transformation. Buddhist social and political designs support individuals' progress towards wisdom and transcendence of suffering. (Shantanu Kishwar, 2018)

The Applied Buddhist Soft Power moving forward to Sustainable Social Development

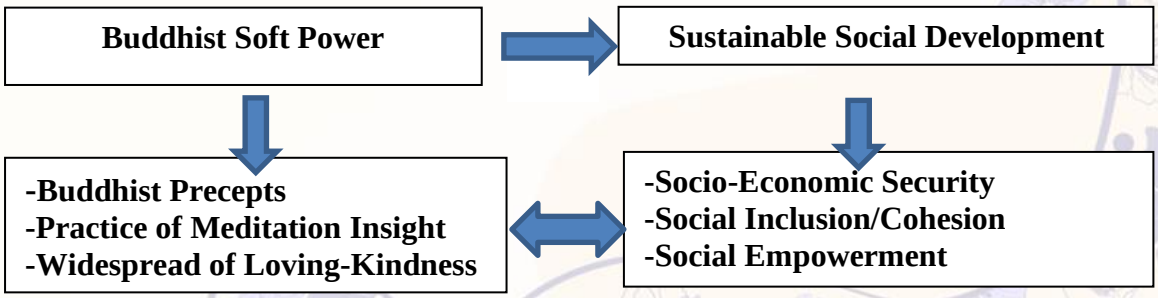

Figure 1: The Applied Buddhist Soft Power moving forward to Sustainable Social Development

By practicing according to Buddhist morality will become a soft power in society where those people could live in harmony without using force, so the society can be able to develop by sustainable or for long time. This benefit will enlarge to other societies and for the world for all.

In accordance with the practice of Buddhist moral concept in society, those benefit from the practice will be able to advocate for democratic and representative government, promoting principles like citizen participation, deliberation, and transparency for whole social process or social function by smoothly and famously on one world.

Conclusion

To sum up this point, the Buddhist social theory promotes interdependence, duty of care, and universal compassion, balancing individualism with societal values. It can be integrated into Western social theory, aligning with Enlightenment principles and modern welfare state democracies, offering an ancient yet innovative approach to international challenges.

In addition, the practice of the Buddhist morality in daily life will lead to help both mentally and physically, starting from individual until whole society that why this concept will help create a soft power through moral practice moving forward to sustainable social development, but if lack of moral practice in society, so unwholesome actions will be risen on society and the world.

References

Bhikkhu P.A. PAYUTTO, S. P. (2017). Introduction to the Middle Way. In S. P. Bhikkhu P.A. PAYUTTO, **Buddhadhamma The Laws of Nature and Their Benefits to Life** (pp. 972-73). Bangkok: Buddhadhamma Foundation.

Burns, K. (2019). **Eastern Philosophy: The greatest thinkers and sages from ancient to modern times.** London: Arturus Publishing Limited.

H. Saddhatissa, M. P. (1948, 1965, 1968-69). **Buddhist Ethics Essence of Buddhism.** London: George Allen & Unwin LtD.

Harvey, P. (2000). **An Introduction to Buddhist Ethics.** New York: Cambridge University Press.

Lien, B. D. (2010). Right Concentration and Mental Well-Being. In T. 7. Celebrations, **Global Recovery: The Buddhist Perspective UNDV Conference Volume** (pp. 610-15). Bangkok: Mahachulalongkornrajavidiyalaya University.

Saxena, K. (2019). Buddhist Ethical Approach to Sustainable Societies. In M. V. Thien, **Buddhist Approach to Globle Education in Ethics** (pp. 125-27). Ho Chi Minh City: Hong Duc Publishing House.

Shri S. N. Goenka, W. H. (1982,1987-88, 2019). **The Art of Living: Vipassana Meditation.** Mumbai: East West Journal.

Sirikanchana, P. (2019). Duty and Compassion: Theravada Buddhist Approach to Harmonious families, Healthcare and Sustainable Societies. In M. V. Most Ven. Thich Nhat Tu, **Buddhist Approach to Harmonious Families, Healthcare and Sustainable Societies** (p. 211). Ho Chi Minh City: Vietnam Buddhist University Press.

Ukwatta, S. V. (2019). Application of Buddhist Teaching in Doing Councilling for Children. In D. M. Most Ven. Thich Nhat Tu, **Buddhist Approach to Harmonious Families, Healthcare and Sustainable Societies** (p. 22). Ho Chi Minh City: Vietnam Buddhist University Press.

Website Sources

Sepala Weliwitigoda, (2015) **India's Buddhist Soft Power Diplomacy**. (Online), retrieved on April 14, 2024, from at https://www.linkedin.com/pulse/indias-buddhist-soft-power-diplomacy-sepala-weliwitigoda

Jack Meng-Tat Chia, (2022) **Buddhist Diplomacy: Potential for Regional Cohesion**. (Online), retrieved April 13, 2024, from at https://www.rsis.edu.sg/rsis-publication/rsis/towards-iccs-2022-buddhist-diplomacy-potential-for-regional-cohesion/

Shantanu Kishwar, (2018) **the rising role of Buddhism in India’s soft power strategy**. (Online), retrieved on April 18, 2024 from at https://www.orfonline.org/research/the-rising-role-of-buddhism-in-india-s-soft-power-strategy

INTEGRATION OF KNOWLEDGE AND APPLICATION OF BUDDHAWAJANA TO SOLVE PROBLEMS AND DEVELOP INDIVIDUALS AND COMMUNITIES IN CHAIYAPHUM PROVINCE, THAILAND

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Abstract

This study focused on integrating knowledge and applying Buddhawajana to solve problems and develop individuals and communities in Thai society, specifically in Chaiyaphum Province. The objectives were: 1) to examine the issues faced by individuals, collecting ideas and philosophy from Buddhawajana regarding individuals and communities in Thai society through participatory processes; 2) to analyze, synthesize, and derive insights from the integration of Buddhawajana to establish a guideline for solving problems and developing individuals and communities in Thai society; and 3) to disseminate the guideline derived from integrating Buddhawajana to individuals and communities in Thai society. Data collection involved both participant observation and non-participant observation, combined with in-depth individual interviews and participatory action research to gather public opinions on sustainable ways to create happiness.

The results indicated that the majority of people in Chaiyaphum Province are Buddhists, and their beliefs align with traditional customs and daily practices. Buddhism serves as a central point for the community, fostering unity, empathy, and reducing social conflicts. Applying Buddhawajana in integrating life practices offers a pathway for problem-solving and development, reinforcing the importance of traditional cultural activities. These activities should be supported and passed down to future generations through storytelling to ensure an authentic understanding of their origins and reasons. This transmission of beliefs and culture from generation to generation sustains these practices over time.

Keywords: Integration, Buddhawajana, Individuals

Introduction

In the past, temples served as community centers, providing education and a place for religious practices. Today, various organizations and entities have emerged to support these roles, covering not only meditation practices but also spreading Buddhist teachings in practical ways. However, many of these organizations focus heavily on rituals, emphasizing ceremonial

aspects. This focus on rituals and formalities has led to misunderstandings, where people prioritize procedures over the core moral and ethical principles of true Buddhist teachings. Even the Buddhist teachings of monks, which once emphasized moral cultivation and the five precepts, have diminished over time. The focus has shifted towards ritualistic aspects rather than instilling ethical values. As a result, the true benefits and core essence of the teachings have become harder to find, with greater attention given to ceremonial practices. Therefore, change is necessary. The approach to spreading Buddhist teachings must evolve to keep pace with modern times. This can be achieved by focusing on personnel who can serve as effective intermediaries in spreading Buddhism. The aim is to foster deeper understanding and accessibility to the teachings while addressing the issues and obstacles arising from the rapidly changing Thai society. The core ethical principles of Buddhism need to be promoted more effectively. The lack of moral grounding leads people to prioritize material desires, resulting in direct and indirect harm to others. This is evidenced by incidents such as robberies, murders for valuables, and other crimes frequently reported in newspapers, which ultimately stem from the lack of moral values. Looking at the global society, it becomes apparent that the world today is caught in a state of greed and competition for benefits, often resorting to violence and armed conflict. We see theft, fraud, and corruption in various forms through media such as radio, television, and newspapers. These issues have always existed, yet the principles and methods for addressing them have not been effectively expanded. The dissemination of moral teachings has not kept up with modern times, lacking the application of ethics and adaptable language for communication. As a result, the core moral values and teachings of the Buddha are not receiving the attention as they should be.

Chaiyaphum province is located on the edge of the northeastern region of Thailand. About 50% of the province's terrain consists of forests and mountains, while the rest is highlands. The central part of the province is a plain, with forests and mountain ranges extending from east to west. The predominant language group is Tai-Kadai, with Standard Thai as the official language. However, there are other local dialects used for communication in different areas, such as the Vientiane Lao dialect, the Luang Prabang Lao dialect, the Korat Thai dialect, and the Nyah Kur language, etc. Additionally, some people can still speak Chinese, primarily in urban areas across all districts, with higher concentrations in the following order: Mueang Chaiyaphum, Kaeng Khro, Chaturat, Phu Khiao, and Kaset Sombun. Buddhist teachings, particularly Buddhawajana, play an important role in the community, emphasizing concepts like detachment, managing life's suffering, following the middle path, karma, and merit-making. Promoting Buddhawajana in everyday life serves as a guide and compass, providing clear direction for people. Therefore, studying and integrating language to disseminate knowledge in each area is crucial for ensuring that the people throughout Chaiyaphum province have a

common understanding. The religious teachings, known as "Buddhawajana," are the medium through which these teachings are conveyed to the broader community, serving as a moral anchor for all Thais. This integration of cultural differences through a shared understanding of religious teachings helps foster good relationships among people in the region. The way of life of human beings has evolved to keep pace with modern technology, "causing the society, the environment, and the human mind to change until new words such as globalization, for example, have emerged.". This overall social situation causes a lot of problems in politics, governance, society, environment and lifestyle of Thai people. Thai people used to live a simple way of life living in villages and were strongly related when Western culture came to dominate Thai society today. Until it becomes a cultural assimilation. The culture adopted is not moderated or adapted to the living conditions of Thai society first, as a result, the values of the people of the past and the present are completely different, and the people are less interested in the principles of Buddhism.(Brahma Khunaphon, 2007).

With changes in livelihoods that are more hectic and chaotic. As a result, the number of people attending temples for merit has decreased, and today's youth have reduced belief and respect for doctrines in their lives. Thus, the researcher is interested in studying the integration of knowledge with the application of Buddhawajana to address issues and develop individuals and communities within Thai society in the Chaiyaphum province. It is hoped that the language differences among people in Chaiyaphum can be a distinctive feature to create an analysis that reflects individual problems and suggests solutions for solving issues and developing individuals and communities within Thai society. Plus, this could potentially be applied to other areas in Thailand in the future.

Research Objectives

1. To study analyze, synthesize, and utilize the knowledge from the integration of "Buddhawajana" to formulate a strategy for solving problems and developing individuals and communities within Thai society.

2. To use communicate the strategies for problem-solving and development derived from the integrated knowledge of "Buddhawajana" to individuals and communities within Thai society.

Research Objectives

1. Population and sample

The researcher collected samples from residents in Chaiyaphum province using a convenient or volunteer sampling method to recruit participants for field research. This field research involved participant observation, non-participant observation, in-depth individual

interviews, focus group discussions, and participatory action research to gather public opinion on sustainable happiness. The total population of Chaiyaphum is 1,118,750 people (as reported by the Central Civil Registration Office, Ministry of Interior, as of September 30, 2022). To determine the sample size, the research used the Taro Yamane formula (1973, p.155), with a 95% confidence level and a 5% margin of error. For this research, a sample size of 400 people was collected from the residents of Chaiyaphum province.

2. Research method

Step 1: Literature Review

The researcher reviewed related literature and documents, including research studies, theses, dissertations, articles, maps, photographs, and data from electronic media.

Step 2: Field Research

Field research was divided into four methods:

1) Participant Observation: The researcher observed the study area, gathered details about the area, and inquired about individual issues through oral history from ethnic groups and people involved in the phenomenon during the research period.

2) Non-participant Observation: This involved 10 participants. The researcher observed the study area in Ban Siow Yai, taking photographs to record the lifestyle of the community’s residents and noting essential information related to this research.

3) Key-information Interview: This involved 7 key informants. The researcher created a semi-structured interview format to collect primary evidence from key informants, recording audio and noting details to use for analysis and synthesizing individual issues and approaches to solving them.

4) Informal Interview: This method involved 10 participants. The researcher visited field sites to gather information from key informants without using formal interview guides or research tools. Instead, it was a simple conversation about individual matters related to “Buddhawajana” and problem-solving approaches. The data collected consisted of oral history from ethnic groups and individuals involved in the events taking place during the research period.

Step 3: Case Study

The researcher applied problem-solving and development approaches derived from the integrated knowledge of "Buddhawajana" for individuals and communities within Thai society. These approaches, which were studied in Step 2, were then implemented in the sample group, consisting of the Ban Siow Yai community.

Step 4: Knowledge Development with Participatory Action Research

The researcher took the results from Step 3 and refined them based on the suggestions from the sample group. This involved referencing related concepts, theories, and

research documents to adapt and improve the learning processes for developing individuals and communities within Thai society. The process was fine-tuned to be suitable for the study area, integrating the knowledge from "Buddhawajana."

Step 5: Evaluation

The evaluation was conducted using quantitative research methods, incorporating self-assessment tools and satisfaction surveys to evaluate the problem-solving and development approaches derived from the integration of “Buddhawajana” for individuals and communities in Thai society.

3. Research Instruments

1) Observation Forms: These tools were used for field research to observe the study area, gather information about the area's conditions, and identify issues through observation and inquiries.

2) Interview Forms: These forms were used to collect primary data from key informants. Audio recordings were made, and detailed notes were taken to analyze and synthesize individual problems related to "Buddhawajana" and approaches to problem-solving. The data collected mainly consisted of oral history from ethnic groups and people involved in the events during the research period.

3) Self-assessment Forms: These forms collected data on problem-solving and development approaches derived from the integrated knowledge of "Buddhawajana." The information was gathered from the trial sample group, which consisted of the Ban Siow Yai community.

4) Questionnaires: Questionnaires were used to measure satisfaction with the problem-solving and development approaches derived from the integrated knowledge of "Buddhawajana." The feedback helped guide the research and development of Thai society, allowing the sample group to evaluate the proposed solutions and development strategies derived from "Buddhawajana."

4. Data Collection

1) Primary Data Collection

This study gathered data related to the problem-solving and development approaches derived from integrating "Buddhawajana" for individuals and communities in Thai society. Data collection was divided into two parts:

1. The first part involved gathering data from those involved in the problem-solving and development approaches derived from integrating "Buddhawajana." The methods used included participant observation, non-participant observation, and key-information interviews to hear public opinions and promote the project to ensure public access to information about creating a happy society.

2. Surveys were also distributed to 400 people in Chaiyaphum Province to measure their satisfaction with these approaches. This data was then analyzed to conclude the study.

2) Secondary Data Collection

Secondary data was gathered through research and studying information related to problem-solving and development approaches derived from integrating "Buddhawajana." This additional data served as supporting information for analyzing and synthesizing the results of the study.

5. Data Analysis

1) Quantitative Data Analysis

The researcher used statistical analysis to interpret the data, incorporating percentages, mean values, standard deviation, and other statistical theories to achieve the study's objectives. The data used for analysis included:

- Frequency and percentage, to explain general information.
- Mean ($\bar{x}$) and Standard Deviation (S.D.), to describe the average values of the data.

2) Qualitative Data Analysis

Qualitative data analysis was conducted through interviews with community leaders. The information was recorded in interview forms and then checked for completeness. After collecting the data from the interviews, the researcher analyzed, synthesized, and interpreted the data to create conclusions. In qualitative data analysis, conclusions are drawn from a collected set of data, with checks for reliability before analysis and interpretation. Reliability in qualitative research was ensured through Data Triangulation, where data sources from different origins—such as different people, locations, or times—were compared. Additionally, Investigator Triangulation was used, which involves using more than one person to collect data on the same topic, and Theoretical Triangulation, which employs various theoretical methods to collect data. After these checks, the data was analyzed to generate insights and conclusions.

Research conceptual framework

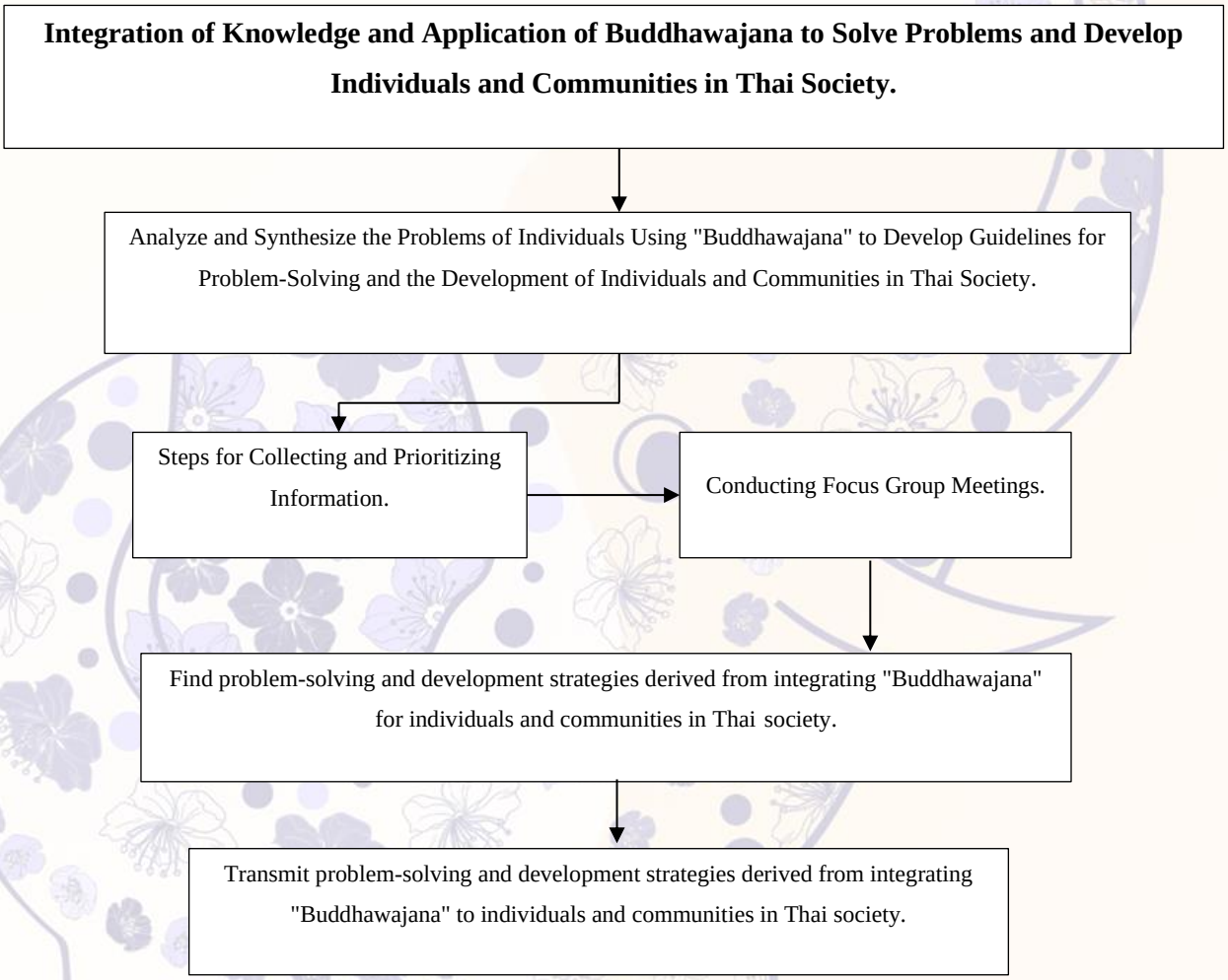

Figure 1: Conceptual Framework for the Research Process

Results

1. Analysis of Problems and Development of Individuals and Communities in Chaiyaphum Province.

The study on the daily life patterns of people in Chaiyaphum Province revealed that the problems they face often stem from their occupations, which are their source of income and livelihood. Despite these challenges, the people in this area have long held beliefs in the teachings of Buddhism. These beliefs date back to when Chaiyaphum was under the rule of the Lan Xang Kingdom, during the reign of King Chaiyasetthathirat. He sent Chao Por Phaya Lae from Vientiane to govern Chaiyaphum, bringing Buddhism along with him to protect the

soldiers and people of Chaiyaphum. The belief in spirits is also prevalent in this region, seen as a form of the sixth sense (the mind). This belief can be explained from three perspectives: 1) The Buddhist Philosophy perspective: Buddhism acknowledges the existence of Indra in a conceptual form. 2) The Isan perspective: Isan people believe in spirits as supreme deities with ultimate power and as creators. 3) The Brahmanic perspective: Brahmins believe that Brahma is the god of creation, who created humans, the universe, and everything within it. Thus, the people in all areas of Chaiyaphum Province have always believed in both spirits and Buddhism. The differences in language have led to variations in cultural names and traditions. However, the underlying practices and the reasons for holding these traditions are rooted in Buddhist beliefs.

2. Synthesizing and Applying Knowledge from the Integration of “Buddhawajana” to Create Guidelines for Solving Problems and Developing Individuals and Communities in Thai Society

2.1 Synthesizing Knowledge from Integrating “Buddhawajana”

The study on integrating Buddhist teachings, focusing on daily life and honest livelihoods passed down to the next generations, includes the Four Right Efforts (Sammappadhāna), the Five Precepts, and the Noble Eightfold Path. These principles were established for harmonious coexistence, arising from the basic understanding that when we love ourselves and seek happiness and safety, others likely share the same desires.

2.2 Applying Development Guidelines from the Integration of “Buddhawajana”

The study applied the developmental and integration guidelines of "Buddhawajana" to individuals and communities in Thai society through teachings to the residents of Ban Sieow Yai community. The key elements of these teachings include:

1) Distinguishing between personal and collective interests.
2) Promoting a sense of shame and intolerance toward corruption.
3) "STRONG": A mindset that counters corruption through sufficiency.
4) Civic responsibility and social accountability.

2.3 Evaluation of Problem-Solving and Development Guidelines through the Integration of "Buddhawajana"

1) Self-Assessment

After providing developmental and integrative knowledge from "Buddhawajana" to individuals and communities in Thai society, the researchers conducted a satisfaction survey among 30 residents of Ban Sieow Yai who participated in the Buddhist practice program. The survey results showed that the majority of participants were satisfied with the teaching of Buddhist principles, finding it necessary given the increasing number of immoral people in society ($\bar{x}$ = 3.10). The second most common response was that residents

often shared the Eightfold Path and the Middle Way teachings with their guardians and encouraged them to follow the Middle Way ($\bar{x}$ = 3.03). Third, the residents frequently adhered to the Five Precepts ($\bar{x}$ = 3.00).

2) Evaluation of Satisfaction with Problem-Solving and Development Guidelines.

From the study and survey of satisfaction with problem-solving and development approaches through promoting Buddhist knowledge and integrating Buddhist teachings into daily life, involving 400 participants, the results showed that the majority held high opinions on three levels: First is “You follow Buddhist teachings in their practices ($\bar{x}$ = 2.74).” Second is “You believe that Buddhist teachings are essential for everyone to know and practice for a peaceful society ($\bar{x}$ = 2.71).” Third is “You believe that teaching Buddhist principles contributes to a more livable society ($\bar{x}$ = 2.61).”

2. Guidelines for Problem-Solving and Development Derived from Integrating "Buddhawajana" for Individuals and Communities in Thai Society

The guidelines for problem-solving and development derived from integrating "Buddhawajana" for individuals and communities in Thai society require an understanding of the Buddhist teachings, as there are many teachings to consider. It is crucial to start by understanding the nature of the problems in each area, identifying the root causes of conflicts resulting from social disparities and incompatible livelihoods, which lead to misunderstandings and conflict. Analyzing and synthesizing common cultural and belief systems among the people is necessary to find common ground for solving conflicts and promoting harmonious practices.

In this study, the people in Chaiyaphum Province differ in language, beliefs, customs, and cultural expressions, with each area's uniqueness rooted in Buddhist principles. Hence, Buddhist teachings or "Buddhawajana" can be used to resolve conflicts related to daily life and occupation. It is also important to educate children and young people about the "Heet Sibsong Khong Sibsee" tradition, which is a set of customs and practices that people in Isan have observed over time. This tradition, inherited from ancestors, is closely linked to Buddhist teachings about gratitude and sincere repayment to those who have shown kindness, fostering goodwill among people and reducing conflict in the area sustainably.

Discussions

The teachings of Buddhism serve as a unifying source for the people of Chaiyaphum Province. Despite the use of different languages across regions, the people in this area have always valued the teachings of Buddha, known as "Buddha's words." These teachings have been a source of emotional and spiritual support, fostering unity, compassion, and empathy

among the people of Chaiyaphum, which helps to reduce societal conflicts and promote a better society.This aligns with a study by Suchart Butchayanan (2020), which explored the application of Buddhist principles to address the economic issues of the consumerist era. The study's results showed that Buddhist principles help people appreciate the values of conservation, preservation, and accumulation, leading to greater opportunities for building a stable future. The stability of life is achieved through following the principles of Titthadhammikattha, a practice aimed at achieving immediate benefits by understanding how to manage and use resources effectively, which leads to the establishment of a stable and prosperous life.

Local administrative organizations and Buddhist agencies in Chaiyaphum Province recognize the significance and uniqueness of each area's traditions and support them through various means. This support includes providing knowledge, personnel, venues, and facilities to make it easier for people to organize activities. They also disseminate information about these traditional events across different districts, raising awareness among the local people and beyond, promoting tourism, and boosting the province's cultural tourism economy. Educational institutions and schools also collaborate by participating in community-organized events, fostering a sense of community love and preserving good traditions for future generations. This aligns with a study by Ketsada Phathong (2018), which examined Buddhism and politics in Thai society. The study found that the government's current policy incorporates religious dimensions to address social crises by promoting the "B.W.R." framework (home, temple, school), positioning temples as central units with a crucial role in development across various aspects.

The guidelines for problem-solving and development derived from integrating "Buddha's Teachings" for individuals and communities in Thai society should support the importance of cultural activities, traditional customs, and age-old practices. These should be passed down to future generations through storytelling that explains their history and reasons for being, ensuring that the younger generations understand them authentically. The transmission of beliefs and culture to the younger generation fosters continuous adherence to these traditions from one generation to the next. This aligns with a study by Phra Phothipong Thitasopano (Bodhiruk) (2021), which examined the application of Buddhist wisdom in daily life. The study found that the teachings of Buddha can effectively guide daily living, promoting generosity among people in the same society, fostering empathy for others, and encouraging sincerity in society. By applying Buddhist wisdom to daily life, individuals not only improve their quality of life but also cultivate mindfulness and intelligence simultaneously.

Suggestions

1. Cultural changes must be passed down from generation to generation, from ancestors to their descendants. Thus, as times change, these cultural expressions may vary across different generations. However, the core objective of these traditional activities remains consistent. This study explores the behavioral responses to cultural customs and traditions from the parent generation, who play a significant role in transmitting culture and imparting Buddhist teachings to their children during the year 2023.

2. Economic growth and changing lifestyles can alter traditional practices. For example, a shift from agricultural-based livelihoods to commerce or local industries may impact the customs and beliefs of the people. This study focuses on a period when most people in Chaiyaphum Province were still engaged in agriculture, such as rice farming, crop cultivation, and livestock raising.

References:

Ketsada Phathong. (2018). Buddhism and Politics in Thai Society. **Walailak Journal of Humanities and Social Sciences,** 8(1), January-April 2018.

Phra Phothipong Thitasopano (Bodhirukkha). (2021). Applying Buddhist Wisdom in Daily Life. **Journal of Philosophy and Religion,** 6(2), July - December 2021.

Suchart Butchayanan. (2017). **The Belief of Holy Water for Buddhist,** 5(1), January –June. 2017.

Suchart Butchayanan. (2020). Applying Buddhist Principles to Address Economic Problems in the Consumerist Era. **Journal of Buddhist Studies Vanam Dongrak.,** 7(2), July – December 2020.

THE DEVELOPMENT OF LEARNING ACTIVITIES SERIES BASED ON KWL PLUS CONCEPT IN ORDER TO ENHANCE ANALYTICAL READING ABILITY FOR SECONDARY SCHOOL GRADE 8 STUDENTS AT SANAMXAI SECONDARY SCHOOL PAKSE, LAO PDR

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Abstract

This research aims to 1)develop learning activities series based on the KWL Plus concept to enhance analytical reading ability for secondary school grade 8 students at Sanamxai Secondary School Pakse, Champasak Province, Lao People's Democratic Republic (E1/E2) based on 80/80 criterion 2) compare the analytical reading abilities of students before and after receiving the KWL Plus learning management technique and 3) study satisfaction of secondary school grade 8 students towards learning management with KWL Plus concept.

The sample group obtained by cluster sampling consisted of 30 secondary school grade 8 students in the first semester of 2566 of Pakse Teachers College. The research tools were 6 learning sets, an achievement test, student’s satisfaction questionnaire. The statistics used in the data analysis were mean, percentage, standard deviation, and t-test. The results showed that 1) The efficiency of developing a series of learning activities based on the KWL Plus concept was 83.77/88.44, which was higher than the specified criteria. 2) The students' academic achievement after using the learning kit was significantly higher than before using the learning kit at .01 level 3) The students had a high level of satisfaction with analytical reading

Keywords: Learning Activity, Pack KWL Plus, Analytical Reading Ability

Introduction

Language is a communication tool to build understanding and good relationships. This makes it possible to conduct business and activities in society smoothly and efficiently as a tool for acquiring knowledge. Experience from various information sources to develop knowledge and analytical thinking, criticism, and creativity to keep up with social changes and advances in science and technology, as well as to be used in career development for economic stability. It is also a tool to demonstrate the ancestral wisdom of culture. Tradition and aesthetics, which are treasures worthy of learning, preservation, and perpetuation (Office of Academic and Standards, 2009, p.1).

The 10-year Lao People's Democratic Republic (Lao PDR) Education and Sports Development Strategy (2016-2023) is a strategic plan for economic progress. Social, Cultural and Educational It is important to develop quality human resources that can meet the needs of the labor market. In addition, the Ministry of Education and Sports has formulated a five-year education and sports development strategy (2016-2020) to connect with neighboring countries and internationally.

Reading is essential to people's lives today because of the rapid changes in materiality, science, and thought. Enhance experience, knowledge, thinking and judgment. People have more maturity, maturity, wisdom and abilities. Reading encourages the process of improving the quality of life and spirit of readers in a positive way on their own. (Boonphamee, 1999, p.3). Analytical reading is important. That is to say, it is the skill of reading books thoroughly and then analyzing them separately. What cannot be ignored is the development of the phrasing of the language to see if it is appropriate for the level and type of writing. Therefore, the more time it takes, the more likely it is to analyze it well. (Department of Academic Affairs, 2002, p.208)

Analytical reading is a reading skill that requires advanced thinking as an important component and is an essential skill because it brings many benefits to daily life. Therefore, before trusting any information, you should consider analyzing the substance thoroughly first. According to (Buranasingh and Satawut, 2004, 46), the reader must use their judgment when reading and decide how trustworthy the story is. Readers should practice their reading skills because they can benefit from analytical reading in several ways.

Lao language instruction of secondary school at Sanamxai Secondary School grade 8 has provided instruction that focuses on reading skills, but found that the ability of learners involved in reading is not satisfactory. Students are unable to read analytically to distinguish details and relate the relationship of the subject. The main causes of the problem can be summarized as the main issues. These are problems with teachers and problems with learners. The problem with teachers is that they lack reading skills. The teaching method is also traditional. Use lecture-based teaching and have students read. Lack of teaching materials Learning activities cannot stimulate the interests and needs of learners. The reading used for teaching and learning is not suitable for the learner, which may be too difficult or too easy. The problem with learners in general is also lack of ability to read, which is caused by students lacking appropriate reading methods or techniques. This causes students can lose interest in studying.

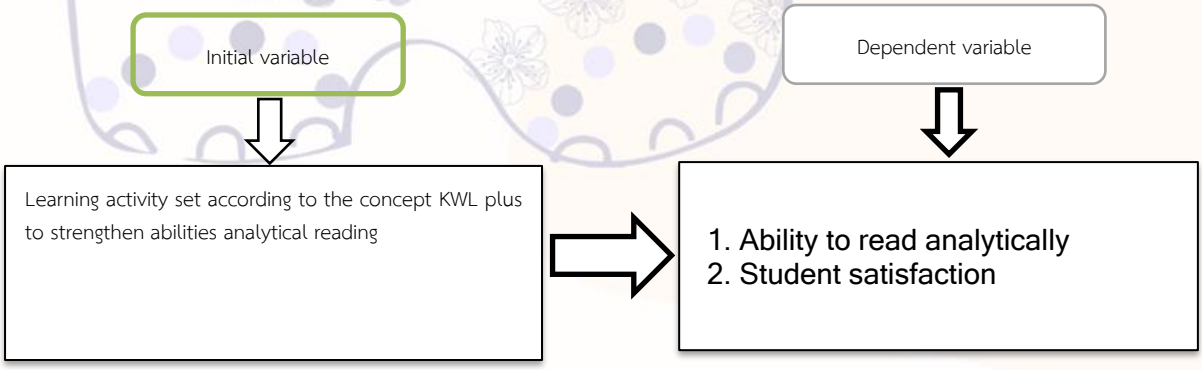
Studies on learning arrangements that help improve learners' analytical reading abilities have shown that this can be done in a variety of ways. The researcher studied the KWL Plus learning activity method and found that the KWL Plus learning activity method can

improve students' analytical reading ability. The KWL Plus method was developed by Carr and Ogle in 1987. 1987 is a learning management aimed at development. Systematic analytical reading skills because there is a framework and guidelines for practicing step-by-step thinking: K (What we know) What do students learn about the subject they read? W (What we want to know) What do students want to learn about the subject they read? L (What we have learned) What do you learn about what you read, and the important step is that Plus is a step that encourages the learning process is enriched by mind mapping. Therefore, the KWL Plus technique aims to encourage students to actively participate in reading, as reading that trains self-questioning and the use of thinking and thinking in the subject being read, improving the effectiveness of setting reading goals or objectives, which encourages and develops critical thinking skills. KWL Plus' synthesis to learners and brainstorming exercises at all stages can be used to improve analytical reading (Laoriandee, 2004,p.p. 92-94).

Objective

1. To develop a set of learning activities based on the KWL plus concept that strengthen the analytical reading ability for Grade 8 students to be effective (E1/E2) according to the 80/80 criteria.
2. To compare the analytical reading ability of Grade 8 students before and after receiving learning management with KWL Plus technique.
3. To study the satisfaction of Grade 8 students with the KWL Plus learning arrangement.

Framework



How to conduct research

1. Population and sample group

The population used in this research is Grade 8 students at Sanamxai Secondary School, Semester 1, Education 2023. Pakse Champasak Province, Lao People's Democratic Republic, 60 people, sample group used in this research. Including students in 2 classes of

grade 8 students. 30 people were selected using simple random sampling.

2. Research tools

Research tools About analytical reading with a learning activity set based on the KWL Plus concept for students, the researcher has determined the research tools as follows.

1) Reading activity set Analytically using the KWL plus technique, 6 sets

2) Analytical Reading Ability Test Before class and after class, 1 set is a multiple choice test, 30 questions, 4 options, using a test duration of 1 hour, difficulty (p) between 0.27-0.68, discriminatory power (r) from 0.32 - 0.82 and reliability equal to. 0.85

3) Measurement of student satisfaction with learning with the analytical reading activity set using the KWL plus technique.

3. Data collection

3.1 Create research tools, namely learning activity sets. Lao reading achievement test To strengthen the ability to read analytically and learning satisfaction assessment form.

3.2 Check the quality of research tools Through the advisor who provides advice and 5 experts, along with creating complete research tools.

3.3 The researcher explained details about the learning activity set according to the KWL Plus concept to the sample students.

3.4 Test to measure achievement in reading Lao to strengthen analytical reading ability before studying (Pretest) by using a test to measure learning achievement in reading Lao to strengthen analytical reading ability according to 30 KWL Plus concepts to test students' prior knowledge. Use the scores obtained as pre-test scores.

3.5 Conduct an experiment on a set of learning activities according to the KWL Plus concept to strengthen analytical reading abilities created by the researcher, 6 sets of experiments, 6 weeks, 2 hours each, total time 12 hours. Experiment with organizing learning in Semester 1, academic year 2023, in which the researcher has determined the period for data collection.

4. Data analysis

Part 1 analyzes the effectiveness of the learning activity set according to the KWL Plus concept to enhance analytical reading ability. For grade 8 students whose performance meets the 80/80 criterion by finding scores during study of the learning activity set based on the KWL Plus concept and results of the Lao reading achievement test. Multiple choice test with 4 options using percentage, mean, standard deviation. and find the efficiency value to compare with the criteria set according to the suggested method.

Part 2 analyzes and compares the academic achievement of students who study with the KWL Plus learning activity set to enhance analytical reading ability. For grade 8 students before studying and after studying, using t-test (Dependent Sample) statistics to test

differences in reading achievement.

5. Summary of results

From research on the development of a learning activity set based on the KWL plus concept to enhance analytical reading ability for grade 8 students, it can be summarized as follows:

Table 4.1 Mean, standard deviation, and mean percentage of students' activity scores during class using the learning activity set according to the KWL Plus concept to enhance analytical reading ability of grade 8 students.

Learning activity set	Score for doing activities during class E_1				
	Base Score	Total	$\bar{X}$	S.D	Average
Set 1 Tales	5	124	4.13	0.68	86.46
Set 2 Short story	5	124	4.13	0.68	86.46
Set 3 Poetry	5	126	4.20	0,84	77.30
Set 4 Documentary	5	127	4.23	0,81	91.53
Set 5 News	5	124	4.13	0,68	85.69
Set 6, Article	5	128	4.26	0.69	87.19
Total	30	754	25.13	0.73	83.77
Process efficiency (E_1) is equal to 83.77.					

From Table 4.1, it is found that students obtained average values during learning from doing a set of learning activities based on the KWL Plus concept to strengthen analytical reading abilities of grade 8 level is equal to 25.13 from a full score of 754, the standard deviation is equal to 0.73, and the process efficiency value (E_1) is equal to 83.77.

Table 4.2 Mean Standard Deviation and the average percentage of scores obtained from taking the academic achievement test after studying with the learning activity set according to the KWL Plus concept to strengthen analytical reading ability. Grade 8 students

Students	Base Score	Total	$\bar{X}$	S.D.	Average
30	30	793	26.43	1.10	88.44

From Table 4.2, it is found that the students obtained the average from taking the academic achievement test after studying with the learning activity set according to the KWL Plus concept to strengthen analytical reading ability of grade 8 level is equal to 26.43 out of 30 points, standard deviation is equal to 1.10 and the result efficiency value (E_2) is equal to 88.44.

Table 4.3 Effectiveness of the learning activity set based on the KWL Plus concept to enhance analytical reading ability of grade 8 students.

Efficiency full score	Total	$\bar{X}$	S. D.	Average
Process efficiency (E_1)	30	7.93	26.43	83.77
Results efficiency (E_2)	30	7.54	25.13	88.44
The efficiency of the learning activity set (E_1/E_2) was equal to 83.77/88.44.				

From Table 4.3, it was found that the efficiency of the process (E_1) was equal to 83.77 and the efficiency of the results (E_2) was equal to 88.44. Therefore, the efficiency of the learning activity set according to the KWL Plus concept to strengthen the ability to read analyze grade 8 has values equal to 83.77/88.44, which is higher than the required 80/80 criterion.

Table 4.4 Compares the academic achievement scores of students before and after studying. With a set of learning activities based on the KWL Plus concept to strengthen analytical reading ability of grade 8.

Experiment group	N	Total	$\bar{X}$	S. D.	$\sum D$	$\sum D^2$	t
Before study	30	30	25.13	0.73	42	74	10.59**
After study	30	30	26.53	0.77			

Statistically significant at the .01 level.

From Table 4.4, it is found that the academic achievement of students who studied with the learning activity set according to the KWL Plus concept to strengthen analytical reading ability of grade 8 students had higher academic achievement after studying than before. Statistically significant at the .01 level.

Research Results

1. Effectiveness of the learning activity set based on the KWL Plus concept to enhance analytical reading ability of grade 8 level that the researcher created Efficiency (E_1/E_2) is equal to 83.77/88.44, which is higher than the specified 80/80 criteria.

2. Academic achievement of students who study with the learning activity set according to the KWL Plus concept that enhances analytical reading ability of grade 8 students are better after studying than before studying. Statistically significant at the .01 level.

3. Students who study with the KWL Plus learning activity set to strengthen analytical reading abilities. Grade 8 students as a whole have a high level of satisfaction.

Suggestions

1. A set of learning activities should be developed according to the KWL Plus concept to strengthen analytical reading ability. and other content To know which learning activities are appropriate for which grade level and what content

2. Research should be conducted on the development of learning activity sets based on the KWL Plus concept to strengthen analytical reading abilities in Lao language subjects, social studies subjects, and other subjects in order to develop students' reading comprehension skills.

References

Boonphamee, P. (1999). **Basic Reading Techniques for Librarians**. Nakhon Ratchasima: Nakhon Ratchasima Rajabhat Institute

Buranasing, W. & Satawut, N. (2004). **Analytical Reading and Critique of Curriculum and Teaching**. Ramkhamhaeng University.

Carr, E. and Ogle, D. (1987). KWL Plus: A Strategy for Comprehension and Summarization. **Journal of Reading**, 30, 636-631.

Chalermthamwong, N. (2014). **Developing Reading Comprehension Abilities of Students in Grade 6 by Learning Management Techniques KWL Plus.”** Thesis of Education. Master of Arts Department of Curriculum and Teaching Methods , Silpakorn University

Department of Academic Affairs. (2002). **Basic Education Program, B.E. 2545.** Bangkok: Transport Organization Goods and parcels (RorPorPorPor.Por.)

Dewi, Sudiana, Darmayanti. (2014). Penerapan strategi KWL (know, want to know, leaned) untuk meningkatkan kemampuan membaca intensif siswadikelas, SMP negeri1Sawan.**e-Jurnal Pendidikan Bahasadan Sasstra Indonesia**, Undiksha.

Laoriandee, W.(2004). **Techniques and Methods of Learning Management for Professional Teachers**. Nakhon Pathom: Silpakorn University.

Meekaew, C.and & Chonlawit, D. (2020). Comparison of Students' Analytical Reading Ability. Secondary School, Preengwisutthibodi School Between Collaborative Learning Management Using KWL Plus Technique and Normal Learning Management. Graduate Studies **Online Journal.** Faculty of Education. Ramkhamhaeng University. 1-13.

Ministry of Education and Sports. (2015) Vision to 2030, **Strategy to 2025 and Education Sector Development Planand the 5th Annual Sports VIII (2016-2020). Vientiane Capital: Ministry of Education and Sports**,

Naif and Rdam .(2012). **Studied the Results of Learning Management Model K.W.L. Lessons of students of the 2nd grade Al Muttawassit, Islamic history subject**.

Pian, N. ,Yenthua,S. ,Charondon, P., Barnee, R. (2021). **Development of Activity Packages to Promote Reading and Analysis of Thai Literature Using SQ4R Technique and KWL PLUS Technique for Mathayomsuksa 1 Students**. Research Journal, 15 (2) May - August

Pakse Teachers College. (2018). **5-Year Struggle Plan for Pakse Teachers College (2021-2025),** Pakse City, Champasak Province, Ministry of Education and Sports,

Sanmakhom. K. (2021). **The Development of Learning Achievement in the Ability of Reading Comprehension Thematic and Critical Thinking Abilities of Mathayom 4 Students Using Developing Learning Activities for KWL Plus Techniques**. the Secondary School Educational Service Area Office. Mahasarakham.

Sitthiwet. M. (2018). **Developing the Achievement of Reading Summary Using Learning Management with KWL Plus Technique for Students in Mathayom 3.** Master of Education Thesis. Department of Teaching Thai Language Graduate School. Silpakorn University.

Suksabai, M. (2019). **Developing Analytical Thai Reading Competence Using KWL Technique Plus Secondary School, Year 6**, Thesis, Master of Education, Curriculum and Instruction. MahaSarakham Rajabhat University.

Suthiwet, M. (2018). **The Development of the Reading Comprehension Achievement Using Learning Management with KWL Techniques Plus for Grade 3 Students.** Thesis, Master of Curriculum and Instruction. Silpakorn University.

Wiwatananon, S. (2011). **Reading, Analytical thinking and Writing Skills** (4th edition) Nonthaburi : Chee. Links

THE CHARACTERISTICS OF LANDSCAPE, NATURAL ECOLOGY AND HUMAN ENVIRONMENT OF MINING WASTELANDS IN XUZHOU

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ABSTRACT

With the continuous urban expansion and rapid economic growth, people have realized the importance of natural ecological environment protection, especially the blind mining industry, which has seriously damaged the topography and geomorphology, and there have been cases of ground collapse and landslides, which make it difficult for these lands to be constructed in other ways. Therefore, the environmental restoration and management of mining wasteland has been highly valued by the Chinese government and experts and scholars, and mining wastelands also have unique ornamental artistic value due to their relatively superior geographical environment and prominent geomorphological features. For the sake of this question. This study aim to study the characteristics of landscape, ecological and social environment of mining wastelands in Xuzhou., Jiangsu Province, as research object. This study adopts a mixed research methodology: a combination of qualitative and quantitative methods to provide a comprehensive understanding of the research topic, combining tools such as questionnaires, interview transcripts, assessment forms, field research, literature, and data analysis. The characteristics of mining abandoned are explored from the dimensions of geographic location, natural environment, human environment, and landscape special evidence. The results of the study show that: (1) within Xuzhou City, mining wastelands shows scattered distribution, and these "points" are mainly concentrated in the vicinity of mining sites that have been closed or suspended production. The basic pattern of "point-like" distribution of mining wastelands in Xuzhou is determined by the mineral resources and social and historical development of Xuzhou; (2) According to the classification of landscape composition, the mining wastelands in Xuzhou should be summarized from three aspects: ecological features, humanistic features and landscape features. Based on these three characteristics, the mining wastelands in Xuzhou region has formed a landscape spatial pattern of mining wastelands of site park construction type, cultural relics development type, geopark construction type and

wetland park construction type. This paper comprehensively analyzes the landscape and environmental characteristics of the mining wasteland in Xuzhou, and proposes the relationship between restoration techniques and cultural balance. It injects new vitality into the sustainable development of Xuzhou and provides a reference for other cities.

Keywords: Xuzhou mining wasteland, The characteristics of landscape, Natural ecology, Human environment

Introduction

Due to the relatively fast speed of industrial development and urbanization in western countries, it makes the mining wastelands and urban economy, social development, ecological environment contradictions aggravated earlier, after more than a century of exploration and development, the ecological protection and restoration of mining wastelands has become the main content to be carried out at present (Song, 2014). For the ecological protection of mining wastelands, many western countries have introduced relevant laws as a basis from the 1920s to the 1990s, e.g., in 1939, West Virginia in the United States first enacted the first mining law, the Restoration Act. In order to ensure the protection while mining and reduce the environmental pollution and ecological damage brought about by the exploitation of mineral resources (Chen & Bao, 2003). Into the 21st century, with the continuous progress of science and technology and the ecology of landscape design, many developed countries have begun to use ecological technology for the transformation of mining wastelands, such as the be-MINE amusement park in Belgium, established in 2015, and the Seonwudo Park in South Korea, established in 2002, which has created new economic benefits and cultural values through ecological restoration or transformation, which indicates that the developed countries' The practice of waste land transformation has matured, and with the continuous improvement of ecological restoration technology, landscape regeneration of mining wastelands will become an indispensable part of wastelands management (Zhang, 2020).

The ecological design of landscapes and cities reflects a new dream of mankind, which is becoming increasingly clear with the process of industrialization and the arrival of the post-industrial era. This dream is the truly comprehensive integration of nature and culture, the designed environment and the living environment, the form of beauty and ecological function (Yu, 2006). According to the Pilot Management Measures for Reclamation and Utilization of Historical Industrial Mining Wastelands issued by China's Ministry of Land and Resources in 2015, mining wastelands are Mining wastelands are a typical type of brownfield land, which is land that has been damaged and occupied by mining activities, and which is unusable without remediation (Zhang, 2020). Mining wasteland is a product of mineral resources development, due to the unique geographic environment that mining wastelands

possesses. If the mining wastelands is transformed into a mining park, its ecosystem can be effectively regenerated, which can not only alleviate the pressure of urban land use, but also enable the improvement of the local landscape environment; forming a unique eco-tourism viewing place and promoting the development of local economy (Li, 2022). In recent years, the environmental restoration and management of mining wastelands has been highly valued by the Chinese government and experts and scholars, all of whom have taken the improvement of the human environment as an important aspect of social development.

The reconstruction and restoration of mining wastelands landscapes in Xuzhou City, Jiangsu Province, has received great attention from all sectors of society. Xuzhou City, Jiangsu Province, has actively made policy guidance to point out the direction for the ecological restoration of mining wastelands in Xuzhou City, as well as to provide innovative space for exploring the characteristics of mining wastelands landscapes and promoting the characteristic natural and humanistic environments. Xuzhou is located in the northwestern part of Jiangsu Province, China, at the junction of four provinces: Anhui, Shandong, Henan and Jiangsu. With Weishan Lake in the north, Shangqiu in the west, Suqian in the east, and Suzhou in the south, the Beijing-Hangzhou Grand Canal passes through Xuzhou, and the two main railroad lines of Longhai and Beijing-Shanghai intersect in Xuzhou, which is known as the "thoroughfare of five provinces" as China's second-largest railroad hub (Xu Min, 2019). Xuzhou has a warm temperate semi-humid monsoon climate with four distinct seasons. It is rich in mining resources, water resources, plant resources and coal resources, and has been a place of war since ancient times, the center of commerce and trade in the north and south, and is currently the political, cultural and commercial center of the Huaihai Economic Zone, which makes it an extremely important regional location (Xiao, 2001). 2007, Xuzhou City, Jiangsu Province, carried out ecological reconstruction, marking the entry of the construction of Xuzhou's landscaping into a rapid development of a new period. With the goal of "Eco-Xuzhou, City of Landscape", Xuzhou has deepened the connotation of eco-garden city; through the implementation of ecological restoration projects such as "Wetland Restoration" and "Ore Management", the ecological governance and landscape resources of Xuzhou have been continuously improved and improved. Through the implementation of ecological restoration projects such as "Wetland Restoration" and "Ore Management", Xuzhou's landscape resources are continuously subjected to ecological management and landscape restoration, and the city's historical and cultural relics are actively excavated to create a mining waste land park, and efforts are made to pass on the city's cultural characteristics (Li, 2016).

In summary, with the rapid development of industrialization and urbanization, the ecological protection and restoration of mining wasteland has become a global concern. Western countries faced the conflict between mining wasteland and urban development

earlier, and realized the effective management of wasteland through legislation and ecological technology. China also attaches great importance to the environmental restoration of mining wasteland, especially Xuzhou City in Jiangsu Province, which, as an important mining city, actively implements ecological reconstruction, endeavors to build an ecological garden city through wetland restoration, ore treatment, and other projects, and explores the landscape regeneration and cultural inheritance of mining wasteland. Studying the landscape and environmental characteristics of mining abandoned land in Xuzhou area is of great significance for exploring its essential characteristics and doing a good job in the restoration, protection and development of mining abandoned land in the city. It is conducive to the continuation and development of the landscape of mining abandonment, and provides theoretical basis and technical support for the protection of natural resources and landscape regeneration of mining abandonment in Xuzhou area.

Research Objective

To study the characteristics of landscape, ecological and social environment of mining wastelands in Xuzhou.

Literature review

1. The concept of wasteland

Wasteland refers to land that has been abandoned and lost its primary value due to various man-made or natural reasons. These lands may have been industrial areas, mines, landfills, etc., but have been abandoned due to resource depletion, environmental damage, or changes in urban planning. Abandoned lands often have problems of environmental pollution and ecological damage, but they can also be transformed into valuable land resources through ecological restoration and reuse.

2. Mining wastelands concept

Mining wastelands are typical degraded ecosystems, also known as abandoned mining areas, mining land, and so on, which are destroyed or polluted by mining and mineral processing. Mining wastelands have received widespread attention from Chinese and foreign scholars because of the damage they cause to the surrounding landscape and ecological environment, which seriously affects the ecological balance and the life of mining residents. The U.S. Bureau of Mines (USBM) defines mining wastelands as unimproved areas of mining or exploration activities, including abandoned mines and damaged lands left over from history (Huang, 2011). According to Chinese scholar Gao Huaijun, mining wastelands are areas where human beings have artificially transformed the land and underground resources in the process of obtaining mineral resources, and they are lands that have been destroyed and

cannot be utilized after high-intensity mining activities (Gao, 2015). According to the research objectives, the study of mining wastelands in this paper includes the type of rock-cutting and quarrying and the type of coal mining subsidence, which can only be utilized again after a certain amount of restoration and treatment. They mainly include: mining depression land, waste stone slag, industrial facilities, abandoned factory buildings and processing platforms.

3. Correlation theory

In order to study the restoration management and landscape regeneration of Xuzhou mining wastelands, this paper adopts restoration ecology and sustainable development theory. It provides a theoretical basis for creating a harmonious natural ecological and humanistic environmental landscape. With the emergence of environmental problems such as ecological degradation, resource depletion, and loss of biodiversity, the sustainable development of human society has been seriously threatened, and in this context, restoration ecology came into being (Ren & Liu, 2008). The theory of restoration ecology focuses on the causes of ecosystem degradation, the techniques and methods of restoration and reconstruction, and mainly studies the process of ecosystem degradation and restoration (Zhang & Dai, 2015). Restoration ecology includes self-design theory and human design theory. In recent years, the theory of restoration ecology has been widely applied in the process of mining wastelands renovation and reconstruction, which restores natural ecosystem of site by adopting maneuver of combining ecological restoration and anthropogenic measures (Liu, 2012). Sustainable development is defined as "development that meets the needs of the present without jeopardizing the ability of future generations to meet their needs" (Hu & Chen, 1995). Under the guidance of the concept of sustainable development, people gradually integrate the design behavior into the "human-environment" system to realize sustainable landscape design. This new concept is conducive to the realization of the continuous cycle of the natural system, reducing its interference in the natural cycle process, and restoring the landscape with self-regenerative capacity, thus realizing harmonious development of man and nature. Respecting these two theories, meeting public demand with minimal inputs, and maximizing benefits of landscape point to a feasible path for future development of landscape design (Jiao, 2017).

4. Chinese and foreign related research

From the current research on the landscape of mining wastelands, there is a lack of nature-based, holistic design and protection concepts. Using China Knowledge and Web of Science ^{TM} databases as the basis of literature research, with "mining wastelands" as the keyword, a total of 1,545 pieces of related literature were captured from 1980 to 2023, By analyzing the keyword co-occurrence relationship through Cite Space software and outputting the co-occurrence density map, so as to obtain the research hotspots and keyword distribution in the field of mining wastelands research, it can be seen that most of the related literature studies

individual mining wastelands, individual technical problems and individual design concepts in a certain objective context. The most popular research hotspots on mining wasteland are related to ecological and humanistic environmental protection and landscape restoration. (Song, Xiaoke & Wang, 2018). Overall, there are relatively few studies on the organic combination of the theory and promotion practice of the characteristic landscape of mining wastelands.

The United States, Germany, Britain, France, Australia, and other developed countries have relatively perfect research systems for the regeneration of mining wastelands landscape. In the reconstruction of mining wastelands, a two-pronged design strategy has been adopted: on the one hand, the landscape regeneration design of mining wastelands, and on the other hand, the publication of the Review of Industrial Archaeology by the Society for Industrial Archaeology of the U.K. in 1976, which focuses on the issues of the generation of mining wastelands and the value of their preservation. Alan Berg in his book "Abandoned Landscapes: Abandoned Land in Urbanized America" advocates a comprehensive review of the subsequent development of industrial wasteland from the perspectives of social and cultural factors (Song, 2012). The attention paid by European countries to the environmental problems of abandoned industrial and mining lands has resulted in excellent practices such as Eden Garden in the UK and Butchard Gardens in Canada. On the other hand, it is the research of mining cultural landscape development: in 1925, the American geographer Saul began to mention the characteristics of cultural landscape and pointed out that cultural landscape is influenced by politics, socio-economics, history, science and technology, and mass psychology in his book "The Form of Landscape". Combined with Jacobsen's 1961 book "The Life and Death of America's Great Cities", which put forward urban planning countermeasures, influenced by Jacobsen, the landscape of Cornwall and West Devon mines in United Kingdom constructed in 2006 was recognized as a World Heritage Cultural Landscape. In the landscape regeneration design of mining wasteland, developed countries have implemented a series of policies and laws and regulations. In general, system, theoretical research and design practice of foreign mining waste land is relatively mature, and a more complete system has been formed.

With the further deepening of research on ecological environments, people are paying increasing attention to the social benefits brought about by natural ecology. At present, China's landscape renewal design for mining wastelands focuses on the construction of mining parks, the development and evaluation of mining tourism resources, the study of mining environment restoration techniques, and the management of disasters (Fu & Zeng, 2009). In the research of mine parks, in 2010, Li Xianfu published "Characteristics of Geological and Mineral Remains in Daye Mines, National Mine Park", which focused on the landscape planning and design concepts and ecological restoration and management methods of typical mine ruins

(Li, 2011). The master's thesis "Research on Cultural Landscape Design of Mining Abandoned Land" systematically researches the extraction of cultural elements, landscape expression and its theory and practice of mining wastelands, and discusses the importance and feasibility of cultural landscape design of mining wastelands (Jia, 2021). As for the research on mining wasteland, Liu Fuying's "Research on Coordinated Regeneration Countermeasures for China's Mining Wastelands", published in 2009, analyzed the problems of reusing mining wastelands, constructed the target system and operation mechanism of coordinated regeneration, the framework and procedure of land renewal, as well as the design method of regeneration of facilities in mining wastelands, etc., and provided good design ideas for subsequent research on reuse of mining wastelands.

To study the historical background of mining resources and the development of mining wastelands in Xuzhou City. Xuzhou is an important coal and ore mining base in Jiangsu Province, with a long history of mining development. According to the Xuzhou Ancient Records, Xuzhou in the Han Dynasty, has begun the open-air mining of rocks and coal smelting, and there is an "Iron Officer", in addition to smelting, there are also used in Xuzhou Han Dynasty portrait stone carving and urban construction materials. During the Tang and Song dynasties, the mining industry gradually flourished. During the period when Su Shi was the governor of Xuzhou, he sent people around Xuzhou to explore the coal, metal ore and limestone used for building materials processing for the sake of the development of people's life in Xuzhou. In the late Qing Dynasty, Zuo Zongtang, the governor of the Two Rivers, believed that the Xuzhou area was rich in mining resources, and suggested that the Qing court immediately begin to open the Xuzhou Regional Mineral Bureau (Zhao, 2014). Thus, Xuzhou began the prelude to modern mining scale exploitation. 1882, the establishment of "Xuzhou Liguo Mining Bureau", mining stone and coal began to sell to the outside world, the establishment of Liguo Mining marked the birth of a new type of enterprise in China, which has been emphasized both at home and abroad. The mining industry in Xuzhou developed in twists and turns until 1958, when the mining company was renamed Xuzhou Mining Bureau. With the continuous updating of mining technology, Xuzhou ranked among the top 40 prefecture-level cities in China in terms of the amount of mining resources extracted as of 2012 (Jiang, 2010).

With the rapid development of the city, the excessive exploitation of coal mines and mines, the ecological environment of the city and townships has been seriously damaged, and the historical legacy of mining wastelands is more, resulting in the original abandoned outside the city of the open quarry and coal mining subsidence land and other mining wastelands more and more affecting the impact on the lives of the citizens, and constraints on the economic development of the city. Since the city planning in 2007, Xuzhou's position as a

regional center city has been more prominent, and the traditional energy industry, together with the manufacturing industry, tourism, service industry, and new energy industry, has been the main force (Gao & Han, 2011). Taking "Green Xuzhou" as the goal, further optimize the structure and layout of urban green space, so that the parks can meet the recreational needs of the residents; strengthen the construction of waterfront, road and mountain landscape green space, and improve the overall level of landscaping and urban taste. Adhere to the strategy of coordinated and sustainable development of the environment and resources, so that land resources are fully utilized (Li, 2019).

5. Study of relevant document

Policies and regulations enacted by the Chinese government have had a profound impact on the development of mining wastelands landscapes. For the remediation of mining wastelands, the State has issued corresponding laws and policies to guide the diversified and comprehensive management of mining wastelands since the 1980s. In order to solve the leftover problems of mining ecological environment restoration, the state actively makes policy guidance, encourages various units and departments to participate in mine management through policy incentives (Figure 1), and accelerates the restoration of mining wastelands in a scientific way (Wang, 2020).

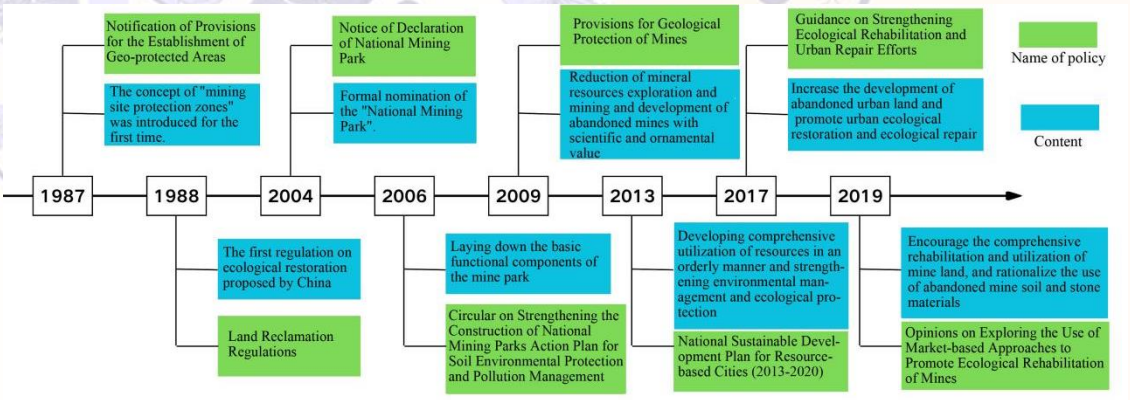

Figure 1: The development process of Chinese government's policy on management of mining wastelands
Source: Author

Documents published by foreign governments on the study of landscape regeneration of mining wasteland. Most countries develop mining wastelands landscape regeneration as a public good, putting social benefits above economic benefits. Initially, it started from the field of ecological restoration, and gradually changed to the stage of combining with landscape planning (Table 1). Many countries have implemented a series of policies and laws and regulations to support the development of landscape regeneration of mining wastelands (Muhaoke, 2016).

Table 1 Landscape modification of mining wasteland by documents issued by foreign governments

Country	Time	Name of document /law	Element	Affect	Retrofit method
German	1950	Prussian Mining Act, Mine Protection Act, Ordinance on the Utilization of Waste Land and the Federal Environmental Protection Act	The law requires the management of mining wastelands at the level of ecological restoration.	Detailed provisions have been made on mining wastelands in terms of responsibility and ownership, ecological and environmental restoration requirements, and archiving of basic information data.	Regional revival
	20th Centur 1960's	Mining Law, Mining Fields Law	Rational mining	Conservation of mining heritage resources	
England	1971	Town and Country Planning Act	Require mining companies to rationalize the exploitation of mines in accordance with requirements of Eco environmental protection	Avoidance of excessive ecological damage and rehabilitation of 20 mining pits	Heritage Network
USA	1977	Surface Mining Management and Ecological Restoration Act, Surface Coal Mine Management and Renewal Act	Restore damaged agricultural land and forests to their original state; prioritize the restoration and treatment of high-risk mining wastelands	U.S. leads the world in ecological restoration of mining wastelands; inspires many earth artists to engage in the practice	Brownfield Governanc

Country Time	Name of document /law	Element	Affect	Retrofit method
2001	Brownfields Renaissance and Environmental Protection Act	Combating land pollution and protecting the ecosystem	Marking an era of science and regulation for brownfield governance in the United States	

Source: Author

According to the above development history of mining wastelands landscape regeneration in China and western countries, both China and western countries have experienced three distinctive development processes, namely, "repair of damaged environment - reuse - diversified development" and "development of mining wasteland landscape regeneration". "The development process of landscape regeneration is characterized by three distinctive features. The specific significance of landscape regeneration in this process is mainly embodied in the transformation from the single re-greening of mining wastelands to the development goal of integrating social, ecological, economic and other diversified benefits (Muhaoke, 2016). It can be said that the historical mission of the landscape transformation of the current mining wastelands is no longer limited to the enhancement of the landscape appearance of the abandoned ecological environment, but to seek a better path for the sustainable development of the region through the rational design of the landscape and environmental characteristics of the mining wasteland.

Xuzhou Municipal Government of Jiangsu Province, China, on landscape restoration of mining wastelands documents mainly include: document "Xuzhou City Land and Resources System Service to Support the Construction of Ecological Civilization Chronicle" issued in 2017, "Xuzhou City "Waste-Free City" Pilot Implementation Plan" issued in 2019, "Xuzhou City Mining Rehabilitation Project Management Regulations" issued in 2021, "Xuzhou City 2020 Ecological Rehabilitation Work Plan" and so on. Xuzhou Mining Rehabilitation Work Plan in 2020, etc. In addition, the main works and journals published are: "Park and Greenland Construction in Xuzhou City" (Li, 2016), "Introduction to Xupai Garden" published by Mr. Qin Fei, "Xuzhou Mining Abandoned Land Governance Mode under the Process of Urbanization" (Jiang & An, 2019), "Summary and Effectiveness Assessment of Xuzhou Quarrying Abandoned Land Ecological Rehabilitation Model" (Jiang & An, 2019), "Summary and Effectiveness Assessment of Xuzhou Quarry Abandoned Land Ecological Rehabilitation Mode Summarization and Effect Evaluation" (Xiong & Bai, 2021) and etc. have been covered, and there are a lot of discussions on the ecological restoration of Xuzhou abandoned land, mine governance, and reclamation of coal subsidence land. There are fewer studies on the landscape and environmental characteristics of mining wastelands.

Research Methodology

This study adopts a mixed research method: a combination of qualitative and quantitative research methods to obtain information on the current status and sites of mining wastelands through data collection, fieldwork, ecological research, cultural heritage research, literature collection, etc., to gain a comprehensive understanding of the historical background of the studied mining wastelands, the situation of the mining activities, the area, the location, the soils, the plants, and the quality of the water bodies. This approach allows for a more in-depth exploration of the landscape characteristics, ecological features, and humanistic environment of the mining wastelands in Xuzhou.

Research Instrument: The research instrument for the study of landscape and environmental characteristics of mining wastelands in Xuzhou mainly include: interview transcripts, value assessment forms, questionnaires, and so on. It was mainly distributed to non-mining social personnel, mining resources related enterprise departments, scholars related to the mining industry in Xuzhou and residents around the mining wastelands, with a total of 99 copies distributed and 77 copies collected. To understand the species of flora and fauna present in the abandoned land and their number distribution, their cognition and attitudes towards the landscape change of the abandoned land and related environmental problems, etc. Geographic Information System (GIS) and remote sensing techniques were also used to obtain topographic maps of the current situation of the mining wastelands and the spatial distribution of the water bodies and plants in the wastelands, to get the first-hand research data, and to apply landscape analysis methods to explain the landscape types and characteristics of the mining wastelands.

Research Results

1. Compositional characteristics of mining wastelands in Xuzhou

As a mining resource-based city of Xuzhou, with the construction of ecological civilization, the mineral resources have been gradually closed one after another, and the mining waste land left behind is used as the object of reuse and transformation by the government, and its natural ecology, humanistic environment, and landscape characteristics should be clarified and summarized before its reuse and restoration, so as to better understand the specifics of the study and to provide ideas for the subsequent research and planning and design.

1.1 Ecological characteristic

Mining wastelands carry the culture of mining and bear witness to the struggles of a generation of hard workers. Mining wastelands has different human environment characteristics from other landscape sites. Xuzhou's mining abandoned land mining humanistic environment contains material culture and spiritual culture (Huang & Jiang, 2018), emphasizing the characteristics of mining culture construction, inheritance and development of cultural connotation. For example, the material culture has: conveyors, scaffolding, transportation belts, bulletin boards, industrial buildings, etc., in the coal mining and quarrying areas, which

provide intuitive information for descendants to understand the characteristics of the era in which the forefathers lived, the way of survival, and other aspects. Spiritual culture includes the beliefs of the miners in Xuzhou, who mainly made offerings to Buddha to keep them safe, and the miners' spirit of unity, cooperation and selfless dedication. Mining wastelands is the best medium for science and technology to show the current ecological civilization while displaying the past history and culture (Wang, 2017). From this, our future landscape design of mining wastelands cannot be a simple direct all renovation, in order to improve the utilization rate and sustainable development of the site, in order to promote the ecological virtuous cycle of its site at the same time, we should take into account the special characteristics of the site, respect the spirit of the place, the integration of new technologies, new methods, new ideas, pay attention to the continuation of the site's historical and cultural values, transformed to form the ornamental value of cultural landscapes.

1.2 Landscape character

The landscape in this paper mainly refers to the natural scenery and structures that can be viewed in the mining wastelands, in terms of landscape characteristics, mining activities have caused the destruction of the natural landscape of regional characteristics, negatively affecting the natural landscape appearance, leaving behind pits or piles of debris. The open pit (quarry) in Xuzhou leaves behind huge deep pits, bare slopes, long slopes, and waste ore fragments and topsoil piled up like small mountains; while the ground collapse triggered by underground mining, the messy and interspersed road network, the abandoned industrial and mining buildings, and the facilities scattered in the abandoned land present a scattered and fragmented character (Deng, 2010). Unreasonable mining methods have greatly reduced the viewability of the natural landscape of the site, and even lost its original ecological characteristics, becoming a desolate lot. However, when viewed from the perspective of development, as a site for park construction, this kind of chaotic substrate language has coincidentally become a characteristic element of the design process (Chang & Feng, 2008), and has shown a very high reuse value due to its extremely distinct personality. Whether it is the dilapidated mining facilities or the topographic landscape formed by excessive intervention of man-made production, it is a kind of artistic and ecological landscape that can reflect the process of the historical era, and if it can be reasonably reused, it can create a regional characteristic.

1.3 Cultural characteristic

Mining wastelands carries mining culture and witnesses the struggle of a generation of hard work. The mining culture of Xuzhou's mining wastelands contains both material and spiritual cultures (Huang & Jiang, 2018), such as material culture: conveyors, scaffolds, transportation belts, bulletin boards, industrial buildings, and so on, which provide intuitive information for the descendants to understand the characteristics of the era and the

way of survival of the forefathers and so on in many aspects. Spiritual culture includes the beliefs of the miners in Xuzhou, who mainly made offerings to Buddha to keep them safe, and the miners' spirit of unity, cooperation and selfless dedication. Mining wastelands is the best medium for science and technology to show the current ecological civilization while displaying the past history and culture (Wang, 2017). As a result, when we design the landscape of mining wastelands, it can't be a simple direct all renovation, we should consider the special characteristics of the site, respect the spirit of the place, pay attention to the continuation of the cultural lineage of the site, and transform it to form a cultural landscape with ornamental value.

2. Landscape Development of Mining Wastelands in Xuzhou

Xuzhou's mining wastelands landscape began in earnest after entering the 21st century. Especially in 2005, the United Nations Environment Programme launched the "Urban Environmental Agreement - Green City Declaration" and in 2007, China will be ecological civilization construction written into the government report, as a comprehensive construction of a moderately prosperous society of the new requirements, in the same year, Xuzhou City, to carry out ecological reconstruction work, marking the construction of Xuzhou landscape into a rapid development of the new period; due to the long-term mining coal building materials processing, iron, copper and other industrial long-term development, to the peri-urban ecological environment. A new period; due to the long-term development of Xuzhou long-term mining coal, cement building materials processing, iron ore, copper and other industries, to the outskirts of the city caused serious damage to the ecological environment. Xuzhou city in order to completely improve the ecological environment; strengthen all kinds of brownfield ecological restoration, through the implementation of "show the mountain", "wetland restoration (coal mining subsidence land)", "(open pit) quarry management ", "Wetland restoration (coal mining subsidence land)", "(open pit quarry) quarry treatment", "greening of barren mountains" and a large number of other ecological restoration projects, Xuzhou's landscape resources continue to carry out ecological management and landscape restoration, and actively excavate the city's historical and cultural relics, focusing on the creation of the mining wastelands parks, and strive to inherit the city's cultural characteristics (Li, 2016).

2.1 In area of mountain ecological restoration and Mountain View parks

It has successively demolished and relocated the buildings around Yunlong Mountain and Zhushan Mountain in Xuzhou City, and implemented the project of showing the mountain; completed the ecological restoration of 37 places in the urban areas of Zhushan Mountain, Wolnushan Mountain, JiuLi Mountain, JiaWang and other long-term quarrying and quarrying-type wastelands; ecologically mulched the 1,650hm² barren

mountains of the urban areas, built the natural ecological barriers of the city, and constructed the mountain parks in accordance with the standard of parks' green space, which saved a large amount of urban landscaped greening construction land (Huang, 2006). Some of the more famous ones are Zhushan Quarry Park, Snail Mountain Park, Jiawang Stacked Stone Geopark, Xuzhou Two Mountain Pass Side Slope Park, and Yunlong Mountain Han Dynasty Large Quarry Site Landscape, which is the only Han Dynasty quarrying site found so far (Table 2), and also the only quarrying site of China in ancient times (prior to the Han and Tang dynasties), etc. (Huang & Chen, 2018).

Table 2 The finding show that In terms of mountain ecological restoration and Mountain View parks

Type	Park name	Time	Area	Theoretical	Technical measures
Ruins park construction type	Zhu Shan Quarry Park	2011	0.44km²	Restoration ecology	Artificial slopes restored to green;
	Woliu Mountain Park	2020	0.53km²		
Cultural heritage development type	Yunlongshan Han Dynasty Quarrying Site Park	2004	0.03km²	Landscape architecture	Establishment of protected areas for cultural monuments; for example, scenic sculptures and reliefs
	Ryosankou Mountain View Park of Xuzhou	2012	0.27km²	Landscape architecture	Humanistic landscape performance; for example, rock wall painting of "Han Dynasty Car and Horse Traveling Map" and "Song of the Great Wind" landscape map
Geopark construction type	Jiawang Stromatolite Geopark	2013	2.20km²	Restoration ecology	Establishment of geo-protected areas, for example,, preservation of the paleontological landscape of stromatolites and geological formations in various forms, and restoration of greening of mountain slopes with artificial slopes

Source: Author

2.2 In coal mining subsidence land water management and wetland park construction

The ecological restoration of 6432hm² of coal mining subsidence land, such as Jiuli Lake, Pan'an Lake, Dahuang Mountain, etc., and the construction of wetland parks, have successfully taken an effective path for the management of coal mine subsidence land (Liu, 2015), such as: Jiuli Lake Wetland Park, Pan'an Lake Wetland Park, etc. (Table 3). Jiu Li Lake is the first "ecological wetland park" in Xuzhou, and the master plan is based on the natural ecological characteristics of wetlands and regional landscape features, to protect or repair wetland ecosystems, maintain wetland ecological processes, retain the ecological characteristics and natural features of native wetlands to the maximum extent possible, and to excavate, display and utilize wetland humanities resources. Pan'an Lake Wetland Park is a four-in-one mining wastelands management project integrating basic farmland reclamation, coal mine subsidence reclamation, ecological environment restoration and wetland landscape development.

Table 3 The finding show that Coal mining subsidence water management and construction of wetland parks

Type	Park name	Time	Area	Theoretical	Technical measures
Wetland park construction type	Jiuli Lake Ecological Wetland Park	2006	2.51km²	Restoration ecology	Reuse of fly ash and coal gangue, selection of alkaline-resistant native plants, planting of aquatic plants in surrounding waters to improve land quality
Wetland park construction type	Pan'an Lake Wetland Park	2010	11.6km²	Restoration ecology	Adopting the method of digging low, stripping the soil tillage layer in the low-lying area, backfilling with gangue, fly ash, sand and other fillers, and then paving the stripped layer to form a high-quality land.

Source: Author

In summary, through the investigation and research of Xuzhou city area profile, mining resources development profile, distribution of mining wastelands in Xuzhou, Xuzhou mining waste composition characteristics, etc., It is understood that there are more that reflect the characteristics of the regional environment, but fewer that reflect the naturalistic style in the

ecological infrastructure. The reclamation of land is more widespread in the city of Xuzhou, the researchers visited Pan'an Lake Park and Jiu Li Lake Wetland Park, which are mainly based on the restoration of coal mine subsidence land; Zhushan Quarry Park and Woliu Mountain Park, which are mainly based on the regeneration of quarry landscapes. Summarize the advantages of landscape design and reflect on the shortcomings. Propose that the process of redevelopment should not unilaterally pursue greening, and the original site should be preserved, which is conducive to the inheritance of place culture. Explore the green value of mining wastelands and regenerate landscape through the mode of low impact development.

3. Balanced relationship between landscape restoration technology and culture in Xuzhou mining waste land

3.1 Integration of regional historical and cultural elements

In the process of landscape restoration, the regional historical and cultural elements of Xuzhou can be skillfully integrated into it. For example, by setting up cultural sculptures, historical murals, cultural galleries and other forms, Xuzhou mining history and mining culture are displayed. This not only enriches the cultural connotation of the landscape, but also allows tourists to understand the history and culture of Xuzhou while visiting the scenic area.

3.2 Pay attention to the synergistic development of ecology and culture

In the process of landscape restoration, the synergistic development of ecology and culture should be emphasized. Through afforestation, soil and water conservation and other ecological measures, improve the ecological environment of the mining waste land; at the same time, combined with Xuzhou's regional history and culture and mining culture, create a unique ecological and cultural landscape. This will not only enhance the ornamental value of the scenic spot, but also promote the harmonious symbiosis of ecology and culture.

3.3 Preserve mining cultural relics

For some representative mining relics, such as mine pits and abandoned rock piles, they can be preserved and remodeled to become part of the landscape. By displaying these mining cultural relics, it can make people more intuitively understand the hardships and splendor of the mining industry, and enhance the sense of identification with the mining culture.

3.4 Use of modern technology

In the process of landscape restoration, modern technology can be used, such as virtual reality technology, to reproduce mining production scenes, so that tourists feel the charm of mining culture. At the same time, these technical means can also be used to carry out popular science education to improve public awareness of mining culture and ecological environmental protection.

In summary, balancing the relationship between the landscape restoration technology of Xuzhou mining wasteland and the regional history and culture of Xuzhou and mining culture requires multiple considerations and planning. By integrating regional historical and cultural elements, preserving mining cultural relics, utilizing modern technology and focusing on the synergistic development of ecology and culture, it is possible to create mining wasteland landscapes with both ecological value and cultural connotations.

Research Discussion and Recommendations

The realization of ultimate goal of mining wastelands landscape design, the preliminary need for the current situation of mining wastelands, type, composition characteristics and landscape construction development and many other factors for research and analysis, only to understand the specific characteristics of the natural environment and the human environment characteristics, in order to carry out the specific wasteland transformation in the future to create more landscape patterns, (1) Academics: Strengthen theoretical research on landscape design for mining wasteland, combining aesthetics, biology and regeneration technology to realize the sustainable development of mining wasteland ecology. Encourage interdisciplinary cooperation among scholars from multiple disciplines to jointly study the transformation and reuse of mining wasteland. (2) Policies: formulate and improve laws and regulations on the transformation of mining wasteland, and encourage social organizations and individuals to participate in the transformation and reuse of mining wasteland through policy guidance and financial incentives, so as to form a diversified transformation body.(3) Practical aspects: Before the transformation of mining wasteland, scientific planning and design are carried out, advanced ecological restoration techniques are introduced, and the scientific and technological content and ecological benefits of transformation projects are improved. Enhance public participation to ensure that the renovation projects are in line with public interests and social needs.(4) Further research: establish a long-term dynamic management mechanism and assessment, and carry out long-term detailed monitoring of the biodiversity, vegetation stability, and landscape pattern of the transformed ecosystem, which is conducive to the better realization of the sustainable development of abandoned land transformation (Zhu Hanyu,2019), and the assessment of its ecological restoration effect and socio-economic benefits. An in-depth study of the key factors affecting the effect of mining waste land transformation provides a scientific basis for the development of more targeted transformation strategies.

Research Conclusions

At present, the Chinese government strongly supports the restoration and management of mining wasteland, which provides a good opportunity for the landscape restoration of mining wasteland, and brings new development and opportunities for solving urban environmental pollution problems and socio-economic development, which fully testifies to the value orientation of the construction of ecological civilized cities at present, and is also a correct choice of history (Mu, 2020)

In this paper, through a comprehensive exploration and analysis of the landscape, natural environment and humanistic environment of Xuzhou mining wasteland, combined with relevant theories and practical experience at home and abroad, as well as the current situation of Xuzhou mining wasteland and the development of the landscape are summarized, and the relationship between landscape restoration and cultural balance of Xuzhou mining wasteland is proposed.Finally, the following conclusion is drawn: Xuzhou mining abandoned land as a whole presents natural geographic boundary effect and is distributed in a "point-like" manner.The landscape of mining wasteland in Xuzhou is mainly distributed in hilly areas and waterfront areas. The landscape pattern of mining wasteland in Xuzhou can be summarized into 2 forms: coal mining subsidence type and mountain quarrying type. On the basis of these two forms, the landscape of mining wasteland has formed the landscape patterns of site park construction, cultural relic development, geopark construction, and wetland park construction.Landscape restoration and cultural balance of Xuzhou mining wasteland is a systematic project, which needs to comprehensively consider ecological, cultural, social and other factors. In the process of landscape restoration, it should make full use of the unique geographic environment and rich historical and cultural resources of the mining waste land, and realize the organic integration of ecology and culture by means of ecological restoration, cultural demonstration, and application of science and technology. Inject new vitality into the sustainable development of Xuzhou(Figure 2). At the same time, it also provides a useful

reference for the landscape restoration of mining wasteland in other cities.

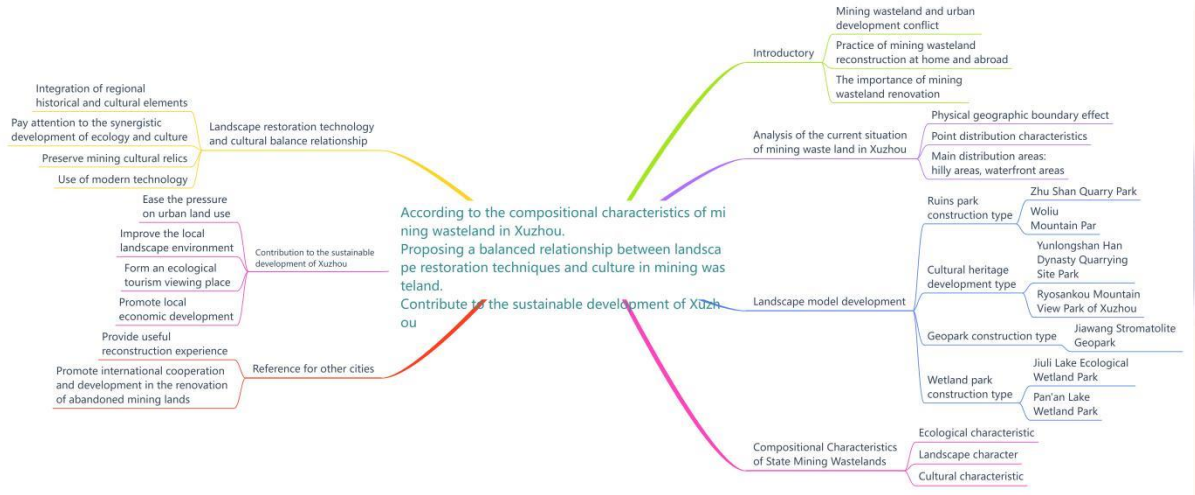

Figure 2: A mind map based on the conclusions and findings of this paper
Source: Author

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References

Chang, C. Q., & Zhou, Y. F. (2017). **Research on Tourism Landscape Reconstruction of Mining Mining wastelands**. Beijing: People's Publishing House.

Chang, J., & Feng, S. S. (2008). **Redevelopment Strategy of Industrial wastelands in Mining Cities**. Urban Development Research, (02): 54-57.

Chen, J. (2007). Research on Legal Countermeasures for the Development and Utilization of Mineral Resources in Yunnan Province under Circular Economy (Master's thesis, Kunming University of Science and Technology).

Deng, X. L. (2010). **Some problems in the management process of coal mining subsidence land in Xuzhou**. Coal Economy Research, (07): 25-28, 63.

Fu, M. C., & Zeng, Q, (2009). **Land Reclamation and Ecological Reconstruction Technology in Resource Depleted Mining Areas**. Science and Technology Herald (27), 38-43.

Gao, L. H., & Han, K. Q. (2011). Countermeasures for Industrial Transformation of Xuzhou Coal Resource-based City. **Journal of Huainan Normal Colle**ge, (04): 4-6.

Huang, J. J. (2002). Current situation of ecological and geological environmental problems of mines in Jiangsu Province and countermeasures for prevention and control. **Journal of Geology**, (04): 216-220.

Huang, J. J. (2006). Discussion on greening technology of rocky slopes in abandoned quarries and their wastelands development and utilization. **Chinese Journal of Geological Hazards and Prevention**, (03): 69-72.

Huang, J. J., & Chen, Z. Y. (2011). **Application of landscape design in geo-environmental management of abandoned open pit mines**. China Mining Industry, (07): 55-58.

Huang, J. J., & Jiang, S. (2018). Application of Xuzhou urban geological survey in the delineation of urban "three lines". **Journal of Geology** (01), 145-150.

Jia, L. Z. (2021). **Research on Cultural Landscape Design of Mining wastelands** (Master's Thesis, Inner Mongolia University).

Jiang, B., & An, S. L. (2019). Mode of mining wastelands management in Xuzhou under urbanization process, **Journal of Geology**, (01): 155-160.

Jiang, X. (2010). An overview of modern coal mine development in Xuzhou (1882-1949). **Journal of China University of Mining and Technology** (Social Science Edition), (02): 108-115.

Jiang, Z. J., & Liu, J. P. (2013). Measurement and grading of ecological and environmental impacts of quarrying wastelands--The case of Tongshan District, Xuzhou City. Yangtze River Basin Resources and Environment (12), 1581-1585.

Li, C. (2022). Research on landscape planning and design of mining wasteland based on ecological restoration (Master's thesis, Jilin Agricultural University).

Li, X. F. (2011). **Characteristics of Geological and Mineral Remains of Daye Mine in National Mining Park**. Wuhan: China University of Geosciences Press.

Li, Y. (2016). **Park green space construction in Xuzhou**. Beijing: China Forestry Press.

Li, Y. (2019). Research on Environmental Restoration and Regeneration of Coal Mine wastelands--Taking Xuzhou as an Example (Master's Degree Thesis, Suzhou University).

Li, Y. (2020). **Research on mountainous urban design based on landscape elements**, Shanxi Architecture (03), 23-24.

Liu, B. X. (2015). **Countermeasures for the construction of Pan'an Lake Wetland Park in Jiawang, Xuzhou City, Jiangsu Province, China**. China Horticultural Digest, (07): 145-146.

Mai, S. Z. & Xu, S. J. (2005). **Characteristics of mining wasteland and its environmental impacts**. Yunnan Geo-Environmental Research, (03): 23-27.

Mu, H. K. (2020). **Research on Landscape Reconstruction Planning and Design of Mining wastelands**. (Master's thesis, Beijing Forestry University).

Song, D. D. (2012). **Research on Ecological Restoration and Landscape Construction of Limestone Mine wastelands** (Master's Thesis, Hebei Agricultural University).

Song, X. K., & Wang, J. G. (2018). **Research on effective selenium leaching agent and leaching conditions in selenium-rich soil**. Chinese Agronomy Bulletin, (03): 152-157

Wang, H. (2017). **Practice and Exploration of Urban Construction and Management in Xuzhou City-Gardening**. Beijing: China Construction Industry Press.

Wang, S. C. (2020). **Research on Landscape Growth Design of Mining wastelands** (Master's Thesis, Sichuan Fine Arts Institute).

Xiao, A.L. (2001). **A Brief Introduction to the Historical Geography of Xuzhou City** (Master's thesis, Shaanxi Normal University).

Xu, M. (2019). **Research on Eco-city Construction of Xuzhou City**. Nanjing: Hohai University Press.

Yu, K. J. (2006). **Green landscape: Ecological design of landscape**. Construction Science and Technology (07), 28-31.

Zhang, S. W. (2020). **Theory and Practice of Reclamation and Ecological Restoration of Mining wastelands**, Beijing: Science Press.

Zhao, M. Q. (2014). **Xuzhou Ancient Fangzhi Series**. Beijing: China Book Publishing House.

Zhu, H. Y. (2019). **Research on Landscape Ecological Restoration and Optimization Design of Abandoned Mining Area**. (Master's thesis, Xi'an University of Architecture and Technology).