BLENDED TEACHING ONLINE ACCORDING TO SUPER STAR LEARNING LEARNING PASS MODEL IN BASIC COMPUTER APPLICATION FOR SHUHE TECHNICAL VOCATIONAL COLLEGE

SUN HE

**A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE DEGREE OF MASTER OF EDUCATION
PROGRAM IN TECHNOLOGY AND LEARNING INNOVATION
FACULTY OF TECHNICAL EDUCATION
RAJAMANGALA UNIVERSITY OF TECHNOLOGY THAYANBURI
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Name-Surname	Mr .Sun He
Program	Learning Technology and Innovation
Thesis Advisor	Assistant Professor Thosporn Sangsawang, Ph.D.
Academic Year	2023

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ABSTRACT

The objectives of this study were to: 1) investigate the efficiency of blended teaching online based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical Vocational College, 2) compare students' achievement before and after learning through blended teaching online based on the Super Star Learning Pass Model on Basic Computer Application and 3) examine students' satisfaction with blended teaching online based on the Super Star Learning Pass Model on Basic Computer Application.

Purposive sampling yielded 30 students from Shunde Technical Vocational College in China. The data was collected using blended teaching online based on the Super Star Learning Pass Model on Basic Computer Application for boosting learning achievement, a student pretest and posttest, and a teacher satisfaction survey. Proportion, mean, standard deviation, and the dependent sample t-test were used to analyse the data.

The research findings revealed that Blended education online using the Super Star Learning Pass Model on Basic Computer Application improved learning achievement by E_1/E_2 (81.40/81.23). Experts rated blended teaching online content as excellent ($\bar{x}$= 4.78, SD =.58) using the Super Star Learning Pass Model on Basic Computer Application for Teaching. An evaluation of 30 students' satisfaction with blended learning online using the Super Star Learning Pass Model on Basic Computer Application revealed a strongly agree level ($\bar{x}$= 4.51, SD =.50). Blended online teaching using the Super Star Learning Pass Model ($\bar{x}$= 4.67, SD =.48) and combining teaching online with the model ($\bar{x}$= 4.60, SD =.50) yielded strongly agree levels. Teachers were satisfied with blended teaching online using the Super Star Learning Pass Model on Basic Computer Application to improve learning success, averaging 4.51.

Keywords: blended teaching online, super star learning pass model, basic computer application

Acknowledgements

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List of Abbreviations

STVC	Shunde Technical Vocational College
BT	Blended Teaching
OL	Online Learning
SSLP	Super Star Learning Pass
BCA	Basic Computer Applications
ICT	Information and Communication Technology
LMS	Learning Management System
PD	Professional Development
FAQ	Frequently Asked Questions
SCL	Student-Centered Learning
MOOC	Massive Open Online Course
SLA	Second Language Acquisition
VLE	Virtual Learning Environment
CPD	Continuous Professional Development
FE	Further Education
HE	Higher Education
PBL	Problem-Based Learning
T&L	Teaching and Learning
AR	Augmented Reality
VR	Virtual Reality
AI	Artificial Intelligence
BYOD	Bring Your Own Device
SCORM	Sharable Content Object Reference Model
CMS	Content Management System
Open	Educational Resources
SIS	Student Information System
WiFi	Wireless Fidelity
IoT	Internet of Things
PDF	Portable Document Format
URL	Uniform Resource Locator
HR	Human Resources

List of Abbreviations (Continued)

STEM	Science, Technology, Engineering, and Mathematics
KPI	Key Performance Indicator
VC	Virtual Classroom
F2F	Face-to-Face
BYOD	Bring Your Own Device
L&D	Learning and Development
M-Learning	Mobile Learning
SaaS	Software as a Service

CHAPTER 1

INTRODUCTION

1.1 Background and Statement of the Problem

        This study investigates blended learning, mixed learning, self-directed learning, and education through a thorough literature evaluation using reliable sources such as China Knowledge Network and school libraries. Furthermore, an extensive investigation was carried out in the university library's collection to locate relevant literature and resources on constructivism, fundamental learning theory, and the memory pyramid. Participating in the activities of reading, summarizing, and organizing research material on blended education helps to enhance understanding and engagement. Blended learning, mixed learning, and self-directed learning. Engaging in tasks such as reading, summarizing, and organizing research information on blended education enhances comprehension and promotes both understanding and engagement (Cronje, J., 2022). The utilization of a pedagogical platform and its implementation in real educational environments. The effective implementation of the Super Star Learning Pass program at Shunde Technical Vocational College demonstrates the institution's dedication to the field of education. By employing a unique approach that combines conventional teaching methods with state-of-the-art online resources, it is possible to develop a captivating learning experience for Basic Computer Applications. This can be achieved by integrating online resources with conventional instructional approaches. The application of this paradigm as a lens to reimagine education is an innovative approach. pedagogical platform used in real schools. Super Star Learning Pass's success at Shunde Technical Vocational College shows its commitment to education. An innovative strategy that combines traditional teaching methods with cutting-edge internet tools can make Basic Computer Applications learning exciting. Integrating internet resources with traditional training can do this. Using this framework to rethink education is novel. (Ma, G., 2020). The synchronous and asynchronous features are both incorporated into this approach. Through a combination of technology and more conventional methods of instruction, Shunde Technical Vocational College helps students get ready for the rapidly evolving digital landscape. Shunde Technical Vocational College's Basic Computer Applications

have completely revolutionized the way students learn. In our technologically advanced day, the Super Star Learning Pass is a tool that assists children in achieving academic success. When it comes to assisting students in learning, measuring their progress, and communicating with their parents remotely, the findings indicate that educators utilized both asynchronous and synchronous digital technologies and instructional approaches. Both asynchronous and synchronous modes of instruction appear to be the most effective for online student learning, according to the findings. Within the context of an organized learning sequence, the concept proposes techniques that teachers might implement to make advantage of synchronous and asynchronous digital technology and instructional methodologies (Moorhouse et al.; K., 2021). This method uses synchronous and asynchronous features. Shunde Technical Vocational College prepares students for the constantly changing digital landscape using technology and traditional ways. Basic Computer Applications at Shunde Technical Vocational College have transformed student learning. In this technologically evolved world, the Super Star Learning Pass helps kids succeed academically. The findings show that educators used asynchronous and synchronous digital technology and instructional methods to help students learn, measure progress, and communicate with parents remotely. Asynchronous and synchronous education work best for online student learning, according to the research. In an organized learning sequence, the notion suggests ways teachers might use synchronous and asynchronous digital technologies and instructional methods (Martin, F., Sun, T., Turk, M., & Ritzhaupt, A., 2021).

The many benefits of utilizing blended learning Education have transitioned from being traditional to being innovative, and this shift will eventually become the standard. During the "Internet" era, educational institutions such as colleges and universities will deeply integrate information technology and teaching in order to promote artificial intelligence and other new technologies that will empower education. Educating students in classrooms equipped with intelligence will become the norm. With the introduction of a new educational paradigm, "Artificial Intelligence Education" altered the teaching and learning objectives of the smart classroom. Learning places a greater emphasis on higher-order problem-solving, reflection, and

evaluation than it does on literacy, comprehension, and other surface-level talents.

Learning that is more in-depth and makes use of intelligent classroom technology is absolutely necessary for talent development both now and in the future. When it comes to enhancing students' mastery of the course's knowledge, skill, and attitude goals, faculty members are researching blended teaching approaches that combine online and offline instruction, increasing teaching engagement, improving relevance and flexibility, and utilizing big data, learning analytics, and other technologies. Instruction in the classroom and online are both components of blended learning. To achieve superior outcomes, the Super Star Learning Channel, which is a blended learning site, effectively integrates both online and offline learning strategies. This innovative method has altered instructional strategies to better suit the needs of students. There is a possibility that teacher-led and digital instruction could be beneficial to blended learning in primary education. When compared to a control group, a sample of 2,217 students from a charter school network shown significant improvements in their reading skills. It is possible to teach reading using integrated learning in elementary school, even if there are early differences between different cohorts. It would appear from this that blended learning has the potential to improve reading abilities across all grade levels and nationalities (Macaruso et al.; J., 2020). Blended learning has several advantages. Education is becoming more inventive, and this will become the norm. In the "Internet" era, colleges and universities will deeply integrate information technology and teaching to promote artificial intelligence and other new technologies that will empower education. Student education in intelligent classrooms will become standard. With a new educational paradigm, "Artificial Intelligence Education" changed smart classroom teaching and learning objectives. Learning emphasizes higher-order problem-solving, reflection, and evaluation over literacy, understanding, and other skills. Deeper learning using intelligent classroom technology is essential for talent development now and in the future. Faculty are researching blended teaching approaches that combine online and offline instruction, increase teaching engagement, improve relevance and flexibility, and use big data, learning analytics, and other technologies to improve students' mastery of the course's knowledge, skill, and attitude goals. Blended learning includes classroom and online instruction. Super Star Learning Channel, a blended learning service, mixes online and offline learning methodologies for better results. This novel approach has changed

teaching methods to better serve pupils. Blended learning in primary education may benefit from teacher-led and digital instruction. The reading skills of 2217 charter school children improved significantly compared to a control group. Integrating reading instruction in elementary school is viable, even if cohorts diverge early on. It appears that integrated learning can increase reading across all grade levels and nationalities.

Blended learning has several advantages. Education is becoming more inventive, and this will become the norm. In the "Internet" era, colleges and universities will deeply integrate information technology and teaching to promote artificial intelligence and other new technologies that will empower education. Student education in intelligent classrooms will become standard. With a new educational paradigm, "Artificial Intelligence Education" changed smart classroom teaching and learning objectives. Learning emphasizes higher-order problem-solving, reflection, and evaluation over literacy, understanding, and other skills. Deeper learning using intelligent classroom technology is essential for talent development now and in the future. Faculty are researching blended teaching approaches that combine online and offline instruction, increase teaching engagement, improve relevance and flexibility, and use big data, learning analytics, and other technologies to improve students' mastery of the course's knowledge, skill, and attitude goals. Blended learning includes classroom and online instruction. Super Star Learning Channel, a blended learning service, mixes online and offline learning methodologies for better results. This novel approach has changed teaching methods to better serve pupils. Blended learning in primary education may benefit from teacher-led and digital instruction. The reading skills of 2217 charter school children improved significantly compared to a control group. Integrating reading instruction in elementary school is viable, even if cohorts diverge early on. It appears that integrated learning can increase reading across all grade levels and nationalities(Ren, X., Tong, L., Zeng, J., & Zhang, C., 2023).

Model Super Star Learning Pass. The Super Star Learning Pass Model is a novel blended learning framework. It uses digital resources to improve learning. The model offers interactive course materials, online examinations, virtual classrooms, and real-time feedback. It supports synchronous (live) and asynchronous (self-paced) learning, giving students several ways to engage with course content. Super Star's huge digital library of

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books, magazines, and high-quality course resources is now a professional mobile learning platform for smartphones, tablet PCs, and other mobile terminals. Study links make mobile learning faster and easier than PC learning. Teachers may establish courses, invite qualified students, design and manage class activities, and more using Super Star. Instead of recording learning data and statistics, The Super Star Learning Channel releases learning resources. The mobile library section offers books, periodicals, newspapers, open courses, and other learning resources; the mobile museum section recommends domestic museums, national treasures, and exhibitions; small programmers, school recruitment and employment, creative tools, interactive tools, and other columns provide diverse consulting information; and Shunde Technical Vocational College's cloud disc, notes, and collection functions have succeeded. Shunde Technical Vocational College uses the Super Star Learning Pass, a blended learning system that combines online and face-to-face instruction. This method promotes critical thinking and problem-solving to boost student engagement and performance. The Super Star Learning Pass customizes classes and evaluations for individual learning styles and growth rates. This method has enhanced student interest in learning, boosting self-confidence and academic performance. Using a vocational course in teaching Basic Computer Application f emphasizes the flipped classroom model's critical thinking benefits (Karapetian, A., 2020).

Overall, the Blended Teaching Online model under the Super Star Learning Pass framework has improved Basic Computer Application instruction at Shunde Technical Vocational College. The model's student engagement, performance, and satisfaction results demonstrate its potential to transform digital education. Blended Online Teaching for Basic Computer Applications at Shunde Technical Vocational College Using the Super Star Learning Pass Model. Blended teaching, often called hybrid learning, blends face-to-face instruction with online and digital media. This integrated learning strategy combines in-person and online strengths. The goal is to provide a more adaptable and effective learning environment for diverse pupils. Shunde Technical Vocational College implementation STVC has identified the Super Star Learning Pass Model as a way to improve its Basic Computer Applications courses. STVC teaches practical skills for the modern workforce as a technical vocational school. Adding the Super Star Learning Pass

Model to their curriculum modernizes teaching and improves results. Blended teaching using the Super Star Learning Pass Model for Basic Computer Applications at STVC has the following goals: Enhanced Learning Engagement: The college uses interactive and multimedia materials to engage students in the subject. Flexibility and Accessibility: Blended teaching lets students access materials anytime and anywhere, supporting differing learning paces and schedules. Improved Learning Outcomes: Continuous assessment and real-time feedback should help students understand their progress and improve. Skill Development: Practical, hands-on learning experiences help students master computer applications and prepare for the workforce.

1.2 Significance of the Study

Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shende Technical Vocational College is Significant. The Shunde Technical Vocational College study on blended online instruction based on the Super Star Learning Pass paradigm for basic computer applications and is important for various reasons. This work is crucial to meeting changing educational demands, integrating technology into traditional teaching techniques, and improving student learning.

1.3 Purpose of the Study

The objectives of the study are as follows:

1.3.1 To investigate blended teaching online based on the Super Star learning pass model on basic computer application for Shunde Technical Vocational college.

1.3.2 To compare students' achievements before and after learning through based on the Super Star learning pass model on basic computer application for Shunde Technical Vocational college.

1.3.3 To examine students' satisfaction with of using Blended Teaching Online based on the Super Star learning pass model on basic computer application for Shunde Technical Vocational college.

1.4 Research Questions and Hypothesis

   1.4.1 Information technology, according to based on blended teaching online based on the Super Star learning pass model on basic computer application for Shunde Technical Vocational college, was posttest higher that pretest after study form based on blended teaching online based on the Super Star learning pass model on basic computer application for Shunde Technical Vocational college enhances the learning achievement which is different significantly on statistics at the level .05.

   1.4.2 The satisfaction of the students towards based on blended teaching online based on the Super Star learning pass model on basic computer application for Shunde Technical Vocational college, enhances the learning achievement of Shunde Polytechnic students in China is in average of 4.50, considerable level.

1.5 Conceptual Framework

Conceptual framework of the effect of using based on blended teaching online based on the Super Star learning pass model on basic computer application for Shunde Technical Vocational college.

Independent Variable   Dependent Variable
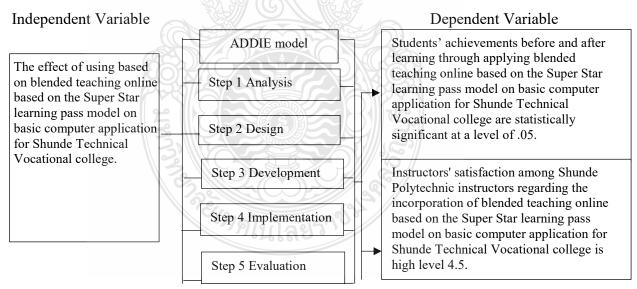
Figure 1.1 Blended teaching online, utilizing the Super Star learning pass model

1.6 Theoretical Perspective

   Theoretical perspective in blended teaching online based on the Super Star Learning Pass Model on basic computer application for Shunde Technical Vocational

College. Understanding the theoretical underpinnings of blended teaching using the Super Star Learning Pass Model provides a solid framework for its implementation and evaluation. Several educational theories support the integration of online and traditional teaching methods, particularly in the context of teaching basic computer applications. The following theoretical perspectives are relevant:

1.6.1 Constructivist Learning Theory; Constructivist learning theory posits that learners construct knowledge through experiences and reflections on those experiences. In the context of blended teaching for basic computer applications:

1) Active Learning: The Super Star Learning Pass model encourages active participation through interactive modules, simulations, and practical exercises. Students engage with the material directly, allowing them to construct knowledge by doing rather than passively receiving information.

2) Contextual Learning: Students can relate the computer applications they are learning to real-world scenarios, enhancing the relevance and applicability of their knowledge.

3) Social Constructivism; Social constructivism emphasizes the importance of social interactions and collaboration in learning. This perspective is crucial for blended learning environments:

(1) Collaborative Learning: The Super Star Learning Pass model can facilitate online discussion forums, group projects, and peer review activities. These collaborative elements enable students to learn from one another, share perspectives, and build a deeper understanding of the subject matter.

(2) Community of Practice: By interacting within a digital learning community, students at Shunde Technical Vocational College can develop a sense of belonging and mutual support, which enhances motivation and engagement.

(3) Cognitive Load Theory; Cognitive load theory focuses on the limitations of working memory and the need to design instructional materials that do not overwhelm learners:

4) Modular Learning: The Super Star Learning Pass model can break down complex topics into smaller, manageable modules. This approach helps manage cognitive load by allowing students to focus on one aspect of the subject at a time.

5) Multimedia Learning: Using various multimedia resources such as videos, animations, and interactive exercises can enhance understanding by catering to different sensory modalities and reducing the cognitive load associated with text-heavy content.

6) Self-Determination Theory; Self-determination theory (SDT) explores the intrinsic and extrinsic motivations that drive learning. In a blended learning environment, SDT can be applied to enhance student engagement:

(1) Autonomy: The Super Star Learning Pass model provides students with control over their learning pace and access to resources, fostering a sense of autonomy and intrinsic motivation.

(2) Competence: Through immediate feedback and adaptive learning paths, students can see their progress and feel a sense of competence and achievement.

(3) Relatedness: By integrating online interactions and support systems, students can feel connected to their peers and instructors, satisfying their need for relatedness.

7) Technology Acceptance Model (TAM); The Technology Acceptance Model helps explain how users come to accept and use a technology. This model is relevant for understanding how students and teachers might adopt the Super Star Learning Pass model:

(1) Perceived Usefulness: If students and teachers perceive the Super Star Learning Pass as enhancing their learning and teaching experiences, they are more likely to adopt it.

(2) Perceived Ease of Use: The user-friendly design and intuitive interface of the Super Star Learning Pass are crucial for its acceptance. Training and support can further enhance this perception.

6) Blended Learning Theory; Blended learning theory combines face-to-face and online learning experiences to create a cohesive educational approach:

(1) Optimal Integration: The Super Star Learning Pass model leverages the strengths of both in-person and online learning. It provides flexibility and accessibility through online modules while maintaining the benefits of direct teacher-student interactions during face-to-face sessions.

(2) Continuity and Support: This model ensures continuity of learning experiences, where online resources complement classroom activities, and vice versa, creating a seamless educational journey.

7) Application to Basic Computer Applications Course; In the context of teaching basic computer applications at Shunde Technical Vocational College, these theoretical perspectives guide the design and implementation of the blended learning approach:

(1) Constructivist and Social Constructivist Practices: Students engage in practical computer tasks and collaborate on projects, thereby constructing knowledge through experience and social interaction.

(2) Cognitive Load Management: The curriculum is organized into bite-sized, manageable modules, with multimedia elements to support different learning styles.

(3) Motivational Factors: The Super Star Learning Pass model supports autonomy, competence, and relatedness, aligning with self-determination theory to keep students motivated.

(4) Ease of Use and Usefulness: The platform's design ensures that both students and teachers find it easy to use and beneficial, which is critical for adoption and sustained use. By grounding the blended teaching approach in these theoretical perspectives, Shunde Technical Vocational College can ensure that its implementation is pedagogically sound and effectively enhances student learning outcomes in basic computer applications.

1.6.2 Data amassment was the researcher experimented with an experiment was one group pretest and post-test test scores design; the population was selected by purposive sampling. The measure and statistics and assessment are blended teaching online based on the Super Star Learning Pass Model on basic computer application for Shunde Technical Vocational College, pretest-posttest test scores, questionnaire of satisfying data were E1/E2, mean, standard definition, t-tests the dependent sample Statistics. Amassment statistics data after the experiment and calculate (O1) and (O2) for the mean ($\bar{x}$)and also compared, arrangement for the experimental model by blended teaching online based on the Super Star Learning Pass Model on basic computer

application for Shunde Technical Vocational College students to learn by themselves. (1) A request for cooperation with 120 students from Shunde Polytechnic in China., (2) Plan to use blended teaching online based on the Super Star Learning Pass Model on basic computer application for Shunde Technical Vocational College students in China., and (3) Process learning by using blended teaching online based on the Super Star Learning Pass Model on basic computer application for Shunde Technical Vocational College; there are three steps: the goal of learning, creative thinking, construction knowledge; pretest; post-test; assess students' satisfaction; check pretest and post-test.

  1.6.3 Data analysis.

   The statistics are used to analyze data.

    1) To The efficiency of using blended teaching online based on the Super Star Learning Pass Model on basic computer application for Shunde Technical Vocational College according to criteria experiment by E1/E2.

    2)To Compare the learning achievement of students using blended teaching online based on the Super Star Learning Pass Model on basic computer application for Shunde Technical Vocational College between pretest and post-test by t-test.

    3) To assess the students' satisfaction through the blended teaching online based on the Super Star Learning Pass Model on basic computer application for Shunde Technical Vocational College teaching by mean and standard deviation.

1.7 Definition Perspective

  1.7.1 Interactive Course Content: The program incorporates multimedia resources, including videos, simulations, and interactive exercises, to make learning more engaging and effective.

  1.7.3 Online Assessments: Regular online quizzes and tests help in assessing student understanding and provide immediate feedback.

  1.7.4 Virtual Classrooms: Live virtual sessions facilitate real-time interaction between instructors and students, fostering a collaborative learning environment.

  1.7.5 Personalized Learning Paths: The platform allows for personalized learning experiences, where students can focus on areas, they find challenging and progress at their own pace.

1.7.6 Teacher Support and Training: Instructors are provided with training and support to effectively use the digital tools and resources available through the Super Star Learning Pass Model.

1.7.7 Challenges and Solutions, the implementation of blended teaching in any institution comes with its own set of challenges, including:

1) Technical Issues: Ensuring all students have access to the necessary technology and internet connectivity. STVC addresses this by providing on-campus resources and technical support.

2) Training for Educators: Teachers need to be proficient in using the new digital tools. The college organizes regular professional development workshops to train faculty.

3) Student Adaptation: Some students may struggle to adapt to the new learning model. To mitigate this, STVC offers orientation sessions and continuous support.

The adoption of the Super Star Learning Pass Model for blended teaching in Basic Computer Applications at Shunde Technical Vocational College represents a significant step towards modernizing education and making it more responsive to the needs of today's students. By combining traditional teaching methods with advanced digital tools, STVC aims to provide a more engaging, flexible, and effective learning experience that prepares students for the demands of the digital age.

1.8 Expected Benefits

The expected benefits focus on the following key areas of the study's significance are:

1.8.1 Improving Education Quality and Access; Shunde Technical Vocational College students receive high-quality education regardless of their location because of blended teaching, which blends online and traditional classroom approaches. The powerful platform and broad resources of the Super Star Learning Pass model can create a comprehensive learning environment for different learning styles and paces.

1.8.2 Digital Literacy Promotion; as basic computer programs are the foundation of digital literacy; blended learning gives students hands-on experience with technology. This method teaches basic computer skills and prepares students for future technological advances and workforce digital demands.

1.8.3 Flexibility, Personalized Learning; The Super Star Learning Pass methodology personalizes learning. Online components allow students to learn at their own speed, review lessons, and receive rapid feedback. Technical vocational students may have different degrees of knowledge and skill; thus, this flexibility is helpful.

1.8.4 Increased Student Motivation and Engagement; The Super Star Learning Pass's interactive and multimedia resources make learning fun. The blended method uses movies, simulations, quizzes, and interactive modules to keep students engaged and boost academic performance.

1.8.5 Teacher Efficiency and Resource Use; Shunde Technical Vocational College instructors can improve efficiency via integrated learning. The online platform may save resources, decrease repetitive processes, and provide student progress metrics, allowing teachers to focus on more individualized and higher-order teaching.

1.8.6 Scalability, Consistency; The Super Star Learning Pass model guarantees high-quality educational content. It also lets the college teach more students without sacrificing quality. Technical vocational education requires scalability for practical skills training.

1.8.7 Educational Trend Preparation; Blended learning aligns with global educational trends and prepares Shunde Technical Vocational College for future educational delivery changes. An established and tested blended learning system puts the college at the forefront of educational innovation as the world evolves toward digital and remote learning.

1.8.8 Empirical Data for Research; The study provides vital empirical evidence on the Super Star Learning Pass model's vocational efficacy. Further study and development using this data may improve the model and its use in other subjects and institutions.

In conclusion, Shunde Technical Vocational College's study on blended teaching online based on the Super Star Learning Pass model for basic computer applications improves educational quality, digital literacy, and flexibility, engagement, and scalability. Student and teacher benefits are immediate, but it also advances educational research and practice.

CHAPTER 2
LITERATURE REVIEW

The goal of this chapter is complemented with the introduction. This chapter will contribute further to the literature review during the design of the study constructing an appropriate framework for efficiency evaluation in higher education institutions: identify rational approaches and research tools for assessing efficiency in public undergraduate universities within Sichuan province. This chapter is divided into the following parts:

2.1 Higher Education Evaluation

    2.1.1 Definition of connotation

    2.1.2 Methods for Measuring the Efficiency of Higher Education

    2.1.3 Objects for Measuring the Efficiency of Higher Education

2.2 DEA research method

    2.3.1 Application of CCR Model

    2.3.2 Application of BCC Model

    2.3.3 Application of Malmquist Index

2.3 Application of DEA in Measuring Higher Education Efficiency

    2.3.1 Application of CCR Model

    2.3.2 Application of BCC Model

    2.3.3 Application of Malmquist Index

2.4 Input-Output Indicators for Higher Education Efficiency Evaluation

    2.4.1 Basic framework of input-output indicators

    2.4.2 The selection of efficiency indicators for higher education

    2.4.3 Application of Principal Component Analysis (PCA)

2.1 Higher Education Efficiency Evaluation

2.1.1 Definition of connotation

In various literature, educational efficiency is also referred to as educational production efficiency(Levin, 1974), education public efficiency(Jackson, 1982), or education utilization efficiency (Grosskopf et al., 2014). Returning to the core

definition of "efficiency" in economics, it is frequently employed to assess the relationship between input and output within an economic system. This entails determining whether the minimum resource input achieves a predetermined objective or if the given resource input yields the utmost benefit(Zhang, 2009). The study of educational efficiency has garnered significant attention both domestically and internationally. In the exploration of educational efficiency, early research focused on "what constitutes educational efficiency" (Lockheed & Hanushek, 1988)and "which factors influence educational efficiency" (Daraio et al., 2021). As research has progressed, substantial interest has emerged in how to measure and enhance education, leading to extensive inquiries (Johnes et al., 2017).

2.1.2 Methods for Measuring the Efficiency of Higher Education

Up to this point, a plethora of literature exists concerning the measurement of educational efficiency, utilizing various methodologies such as parametric and non-parametric approaches. These include techniques like Data Envelopment Analysis, Malmquist Index, Bootstrapping, Robust Frontiers, Meta-Frontier, or Stochastic Frontier Analysis (Witte & L O Pez-Torres, 2017), offering pathways for improving educational efficiency. However, due to the semi-public nature of higher education and the complexity of quantifying the relationship between inputs and outputs, parametric methods suffer from substantial limitations. Non-parametric methods, on the other hand, hold advantages in measuring higher education efficiency, given their flexibility in not requiring predetermined function forms and uniform units of measurement (Hanushek & Woessmann, 2020; Pham Van et al., 2022). Among the non-parametric methods, Data Envelopment Analysis (DEA) is widely used for evaluation. It involves directly constructing an economic mathematical model using input and output data to assess the relative efficiency of different sectors, hence referred to as DEA efficiency. The fundamental principle of this method involves establishing a relatively efficient production frontier by maintaining constant inputs or outputs for Decision-Making Units (DMUs). Through mathematical programming and statistical techniques, the DMUs are projected onto the DEA production frontier, and their relative efficiency is evaluated by comparing the extent to which they deviate from this frontier(Johnes et al., 2017). Detailed elaboration on DEA theory will be provided in Chapter Three.

2.1.3 Objects for Measuring the Efficiency of Higher Education

The measurement of educational efficiency can be broadly categorized into two main approaches. The first approach focuses on the Economic Value of Education, which examines the impact of education on economic growth(Gylfason, 2001; Hanushek & Woessmann, 2010; Sanderson, 1995). This falls within the realm of macro-level research. The second approach delves into the Economic Aspects of Educational Institutions, analyzing the effective allocation and utilization of resources within educational institutions. This includes studying the input and output efficiency of these institutions (Cheng et al., 2022; Ding et al., 2023; Elsayed & Khalil, 2017; Kuah et al., 2010; Ratner et al., 2023), constituting micro-level research.

Research pertaining to educational institutions often focuses on institutions within the researcher's own country, offering a broad scope aimed at describing the efficiency of educational institutions within that nation and making comparisons. For instance, Cai et al. measured the efficiency of educational institutions across various regions in China and provided suggestions for the overall development of higher education in China(蔡文伯 & 黄晋生, 2019). Nazarko measured 19 technical universities in Poland, suggesting that the impact of higher education institutions on their achievements outweighs the influence of their resource quantity (Nazarko & V S Aparauskas, 2014). Thanassoulis et al. evaluated the efficiency of higher education institutions in the UK and noted a decline in productivity for most institutions(Thanassoulis et al., 2011).

Furthermore, some scholars have engaged in international comparisons of educational efficiency. Xu et al. utilized panel data from 53 countries in the fields of education and technology, discovering that significant educational efficiency and technological progress are concentrated in several developing countries. Wolszczak found that from 2000 to 2014, educational technology efficiency contributed to development to varying degrees, depending on the pace of economic development and the promotion of educational technology policies (Xu & Liu, 2017). Wolszczak-Derlacz conducted research evaluating the relative efficiency of 500 higher education institutions in ten European countries and the US between 2000 and 2012. Various models were estimated using different input-output sets and assumed frontiers: global, regional, and

country-specific(Wolszczak-Derlacz, 2017).

However, the development of higher education ultimately manifests in each individual at the micro level, with local colleges and universities accounting for over 90% in China. Variations exist among different regions due to disparities in educational foundations and economic development levels. The vision for higher education development also varies by region. Hence, analyzing the local higher education situation based on regional differences is crucial for formulating policies that best suit the respective areas. Spillane argues that different local policymakers' varying perceptions and understandings of teaching reform from national reform initiatives help explain differences among local educational institutions in their responses to external policies. Different interpretations of reform recommendations lead to significant policy implementation discrepancies (Spillane, 1998).

Furthermore, research on educational efficiency and equity has always been an unavoidable issue in this field. To pursue equity in higher education and address inequalities in real reform, striking a balance between equity and efficiency is essential. Scholars who advocate using efficiency as a means to promote equity believe that safeguards should be established through national policies and institutional arrangements, fostering efficient and orderly development. Competition among institutions at different levels should be avoided, as it can lead to chaos; "order is essential for effectiveness." The relationship between equity and efficiency is dynamic, continually evolving, promoting their better realization. As higher education becomes more accessible to the masses, this contradiction will increasingly manifest at the micro-teaching level, necessitating a greater focus on fairness in the educational process and a shift from an economics-centric perspective to a multidisciplinary approach (Zhang & Lv, 2002).

Si and Qiao utilized Data Envelopment Analysis (DEA) with the CCR and BCC models to analyze and calculate the comprehensive technical efficiency, pure technical efficiency, scale efficiency, scale income, and scale elasticity of basic education expenditure from 2005 to 2014. They found that increasing investment in junior high school stages in the investment structure of basic education is more effective in improving overall expenditure performance than in other stages(Si & Qiao, 2017).

Nellutla employed the CCR model to measure educational efficiency in Andhra Pradesh (Nellutla et al., 2018).

Based on the aforementioned summary, the emergence and development of educational efficiency assessment underscore the significance of this research. The current state of research on the evaluation objects of educational efficiency lacks a micro-level analysis at the provincial level, indicating a gap in the research landscape. This study aims to address this gap by focusing on local public undergraduate colleges and universities, using Sichuan Province in China as an example. By doing so, it directs attention to the developmental needs of local higher education and seeks differentiated research. Furthermore, it aims to provide stronger decision-making support for local government higher education policies.

2.2 The Data Envelopment Analysis (DEA) research method

2.2.1 The emergence and development of DEA

The Data Envelopment Analysis (DEA) model was introduced by Charnes, Cooper, and Rhodes in 1978, serving as a computational approach to assess the relative efficiency of individual decision-making units (DMUs) (Charnes et al., 1978). Its purpose is to ascertain the effectiveness of resource allocation and operational processes within these entities(Rostamzadeh et al., 2021). The fundamental concept of the DEA model involves the collection of metric data from various DMUs and utilizes this data to compute composite technical efficiency, pure technical efficiency, and DMU scale efficiency values. DEA significantly enriches the production function theory within microeconomics and, concurrently, holds distinct advantages in avoiding subjective factors and minimizing errors. This has garnered substantial attention since its inception (胡博, 2017).

Yang Guoliang et al. asserts that the DEA method comprises several pivotal elements which dictate the specific form and application of the model. These crucial elements encompass: 1) The Production Possibility Set (PPS) can be assumed as constant returns to scale, variable returns to scale, non-increasing returns to scale, or non-decreasing returns to scale. 2) A performance measurement scale used to assess performance quality, which includes radial measures, non-radial measures, and the like.

3) Various preference types, with commonly used preferences such as Pareto, average, and matrix preferences. 4) The type of variables where input-output data of Decision Making Units (DMUs) can possess different characteristics like non-discretionary variables, uncontrollable variables, bounded variables, or negative variables. 5) The hierarchy of the problem. 6) The determinacy of data. The combination of these elements can give rise to diverse models of the DEA method suited for addressing different issues(杨国梁 et al., 2013).

Based on the aforementioned classification of elements, the primary DEA models include:

1) Based on Production Possibility Set (PPS) Assumptions: CCR-DEA model(Charnes et al., 1978).

2) The DEA model based on the assumption of variable returns to scale within the production possibility set is referred to as the BCC-DEA model(Banker et al., 1984). Cobb-Douglas DEA model (Banker & Maindiratta, 1986a)、NIRS, NDRS, and FDH models(Deprins et al., 1984).

3) based on Different Measurement Scales: Russell Measure model(Lovell, 1978a)、Pareto-Koopmans model(Charnes et al., 1985a)、SBM model (Slacks-Based Measure)(Tone, 2001)、RAM model (Range Adjusted Measure) (Cooper et al., 1999).

4)Based on Different Preferences: Weight Restriction model(Allen et al., 1997)、Cone Ratio Constraint model(Charnes et al., 1989).

5)Based on Variable Types: NDV-DEA model (Non-discretionary Variable DEA) (Rajiv et al., 1986)、NCV-DEA model (Non-controllable Variable DEA) BND-DEA model (Bounded Variable DEA)、Undesirable Variables DEA model(Liu et al., 2010)、Ordinal Variable DEA model(Cook & Zhu, 2006)、- DEA model with No Clear Inputs(Thanassoulis et al., 1996) DEA model with Category Existence (Syrj Nen, 2004)

6）Multi-Stage and Multi-Level DEA Models: Two-stage DEA model (Seiford & Zhu, 1999)Network DEA model (F Re & Grosskopf, 2000)Hierarchical DEA model(Meng et al., 2008).

Furthermore, considering diverse research objectives, additional DEA models have been developed, including Super Efficiency DEA Model、Cross Efficiency DEA Model(Doyle & Green, 1994; Sexton et al.) Statistically-based DEA Models(Land et al., 1994; Thore, 1987)Fuzzy Number DEA Model(Ho et al., 2010; Zadeh, 1978). Due to its characteristic of not requiring the a priori specification of utility or production function forms when assessing efficiency, the DEA model possesses considerable flexibility in practical applications. The underlying principles of its application will be extensively discussed in the theoretical framework of Chapter 3.

2.2.2 The scope of application of DEA

In the application process of the DEA model, decision-making units (DMUs) can encompass a wide array of sectors, including agriculture, banking, education, aviation, computer industry, sports, stock markets, government, and more (Kuah et al., 2010). The extensive applicability of the DEA model is corroborated by numerous sources in the literature.

"In the healthcare industry, researchers have utilized DEA to analyze the input-output efficiency, focusing on the public and welfare aspects of the healthcare sector (Liu & Lyu, 2020; Wei et al., 2011). In evaluating the performance of companies and enterprises, Yang introduced a two-stage DEA model to provide valuable managerial insights while assessing the dual impacts of operations and business strategies within the Canadian life and health insurance industry (Yang, 2006). Sueyoshi et al. summarized four decades of DEA applications in the fields of energy and environment, encompassing the concept and methodology of environmental assessment using DEA. They noted a significant surge in the number of articles applying DEA to energy and environmental studies, particularly after the 2000s (Sueyoshi et al., 2017). Henriques conducted a systematic review of literature in the banking industry domain, analyzing 59 papers categorized into ten classes based on different perspectives of two-stage DEA research, including economic context, geographical regions of banking units, methodological features, and model types (internal or external). The study offered a comprehensive summary of the models employed, suggesting that the primary objectives of most papers involved extending or enhancing DEA models型(Henriques et al., 2020). Nurmatov conducted a literature survey on the application of DEA in tourism and hotel studies.

After a comprehensive review of 350 tourism-related articles utilizing DEA, limitations in existing research were emphasized, and important directions for future research were outlined(Nurmatov et al., 2021). Puertas proposed the DEA-GreenMetric index, highlighting the multidimensional focus of universities on not only environmental but also social and economic issues in the context of sustainability. The study suggested that universities need to exert greater efforts to enhance performance related to environmental variables (energy, water usage, waste management) rather than infrastructure, transportation, or education improvement(Puertas & Marti, 2019). Table 2.1 provides an overview of model variations and applications, offering readers further insights. Furthermore, several scholars have specifically reviewed the development of the DEA model(Kuah et al., 2010; Panwar et al., 2022; 胡博, 2017; 杨国梁 et al., 2013), aiding researchers in gaining a comprehensive understanding of the evolution of DEA applications."

Table 2.1 Research on DEA

author	Model	Application field
(Charnes et al., 1978)	DEA-CCR	Medical treatment(Wei et al., 2011),Insurance company, Ports(Elsayed & Shabaan Khalil, 2017), Education (Visbal-Cadavid et al., 2017)
(Banker et al., 1984)	DEA-BCC	Pharmaceutical industry(Liu & Lyu, 2020), resource utilization efficiency(Cheng et al., 2022), Airports(Razali & Shah, 2010), Education(Sant I N & Sicilia, 2015)
(Tone, 2001)	DEA-SBM	Highway operation(Xu et al., 2023), the container terminal (Liu et al., 2022)
(Andersen & Petersen, 1993)	Super-efficiency	Mobile currency(Muvingi et al., 2023), educational evaluation(Sun & Yang et al., 2023)
(F A Re & Grosskopf, 1997)	Network DEA	Construction projects(Luo et al., 2022), the public transport system(Kang et al., 2023)

author	Model	Application field
(Banker & Maindiratta, 1986b)	Cobb-Douglas-DEA	Tariff Amendment(Costa et al., 2015), software development(Pendharkar et al., 2008)
(Lovell, 1978b)	Russell-DEA	Healthcare(Azadi & Saen, 2013)
(Charnes et al., 1985b)	Pareto-Koopmans DEA	Network structure evaluation(Khati & Mukherjee, 2020), bank performance evaluation (Maleki et al., 2019)

The current state of research on the DEA methodology and its applications validates the scientific rationale behind the method chosen for this study. Given the inherent differences among various research subjects, the application of DEA continues to offer ample room for development. Particularly in the realm of method application, there exists an area of underexplored research pertaining to variable handling. Consequently, this study's focus on DEA variable handling as a developmental aspect contributes to its innovation and practical significance within the research process.

2.3 Application of DEA in Measuring Higher Education Efficiency

2.3.1 Application of CCR Model

According to Section 2.2, the application of DEA involves both basic and variant models. Scholars have employed both basic and variant DEA models in measuring higher education efficiency. In the CCR model, each decision-making unit's (DMU) inputs and outputs are quantified, and by determining weights, these inputs and outputs are combined to ascertain the efficiency scores for each DMU. This model assumes a competitive relationship among DMUs, implying that an increase in the efficiency of one DMU may lead to a decrease in the efficiency of others. The mathematical expression of the CCR model is a linear programming problem with the objective of maximizing the efficiency score of the evaluated DMU while ensuring that the efficiency scores of other DMUs do not exceed 1. As a result, the optimal solution yields weight combinations that enable each DMU to reach its highest efficiency level.

The CCR model can only evaluate the relative efficiency of DMUs, i.e., their efficiency levels relative to other DMUs. It cannot provide specific guidance on how to improve efficiency to reach optimal levels, nor can it indicate how inputs and outputs should be adjusted to enhance efficiency.

2.3.2 Application of BCC Model

Addressing the limitations of the CCR model, Banker, Charnes, and Cooper introduced the BCC model in 1984 as a specialized approach for evaluating the technical efficiency of decision-making units(Banker et al., 1984). The BCC model is an improved version of the CCR model, primarily designed to address some of the deficiencies and shortcomings of the CCR model. In assessing DMU efficiency, the BCC model accounts for the possibility of increasing returns to scale. This implies that in the BCC model, the production process of DMUs may exhibit increasing returns to scale, where efficiency improves with the expansion of production scale. This makes the BCC model more closely aligned with real-world situations and better able to reflect the impact of production scale on efficiency. The mathematical expression of the BCC model is a linear programming problem involving the determination of appropriate weights to combine inputs and outputs for evaluating the efficiency scores of each DMU. Similar to the CCR model, the BCC model assumes a competitive relationship among DMUs, where an increase in the efficiency of one DMU could potentially lead to a decrease in the efficiency of others. The BCC model provides more accurate treatment of cases involving increasing returns to scale, enhancing the assessment of DMU efficiency, and offering more targeted optimization recommendations.

Wu (2020) employed a three-stage DEA model to assess the efficiency of higher education institutions across 31 mainland Chinese provinces in the year 2016(Wu et al., 2020). The authors concluded that the pure technical efficiency of higher education institutions in various provinces of China was relatively high. However, they observed that the scale efficiency was comparatively low, resulting in an overall lower level of efficiency.

Łukasz Brzezicki conducted an efficiency analysis using the BCC model on cross-sectional data from both public and private universities in Poland for the years 2011 to 2014. The study's findings indicated that public universities exhibited higher

efficiency in terms of graduate quantity, while their efficiency was lower when considering graduate salary levels. Conversely, for private institutions, the situation was reversed. The level of efficiency was influenced by variables associated with specific universities and the socio-economic conditions of their respective regions. The study examined the efficiency of educational activities in public and private universities from the perspectives of graduate quantity, educational quality, and the labor market (Brzezicki & Others, 2020; Dumitrescu et al., 2020).

Salas (2020) utilized the DEA analysis method to examine cross-sectional data from 45 public universities in Spain. The study revealed that universities with a higher proportion of funded scholars tended to have lower efficiency levels. Conversely, a higher proportion of scholars obtaining tenure positively contributed to the overall production efficiency of Spain's higher education sector(Salas-Velasco, 2020). Dumitrescu (2020) employed the DEA model to assess Romanian public universities from 2012 to 2018. The study findings indicated that 11 universities exhibited efficiency when the Variable Returns to Scale (VRS) method was applied, whereas only two universities demonstrated efficiency under the Constant Returns to Scale (CRS) approach(Dumitrescu et al., 2020).

Mammadov & Aypay (2020) conducted a DEA efficiency analysis on 15 research universities in Turkey and concluded that the rationale for establishing research-oriented universities in Turkey according to international standards is much weaker than it appears. Turkish higher education now must and should align itself with international "standards" to accommodate the evolution of the knowledge society and globalization (Mammadov & Aypay, 2020a).

2.3.3 Application of Malmquist Index

The mentioned research outcomes represent static data analyses conducted by scholars from different countries using the DEA model for various research purposes. However, analyzing the performance of research subjects over time and understanding their own progress should also be a crucial concern in higher education efficiency analysis. Hence, the combination of the DEA model with the Malmquist Index analysis using panel data has also been widely applied in higher education efficiency evaluation.

Leipeng (2021)conducted a study based on panel data from 36 tourism colleges for the years 2014 to 2017. The study divided the process of technological achievement transformation into two stages: research creation and outcome transformation. Leipeng utilized the DEA-BCC model and the DEA-Malmquist Index model to measure the efficiency of technological achievement transformation (Peng & Shenghan, 2021).

Wangjialan (2020)employed the Malmquist Productivity Index model to investigate the technical efficiency, technological change, and productivity performance of eight universities in New Zealand during the period from 2013 to 2018. The study indicated that the average catch-up and frontier-shift efficiency of New Zealand universities remained relatively unchanged, implying that these universities did not make significant progress during those years (Wang et al., 2020).

In their study, Wuzhaoxue (2021) employed a three-stage Data Envelopment Analysis (DEA) and the Malmquist Productivity Index method to evaluate the static and dynamic efficiency of research input and output data in universities directly under the Ministry of Education. The author concluded that the three-stage DEA model provides a more accurate measurement of research input and university output efficiency compared to traditional DEA methods(Xue et al., 2021).

Zong Xiaohua et al. utilized the DEA-BCC model and Malmquist index to assess the research efficiency and its changes in "Double First Class" universities directly under the Ministry of Education, selected as samples from 2010 to 2015. The study revealed that the overall research efficiency of these universities was relatively low, with slow improvement during the period (宗晓华 & 付呈祥, 2019).

Lisana Sumarah Pratignyo et al. applied the Data Envelopment Analysis method and the Malmquist index to analyze the efficiency values of seven educational programs in the academic years 2017 to 2019. The study identified the most effective decision units and the most productive educational plans(Pratignyo et al., 2023).

Among the various models of variation, the fundamental DEA model remains the most essential to follow. While model adjustments and innovations have their cutting-edge value, they primarily stem from cases where complexities arise, and additional factors or constraints need consideration. In such instances, introducing

modified models might be more appropriate. These modified models can offer a more accurate reflection of real-world situations, providing a more comprehensive and in-depth efficiency assessment.

However, in this study, we have deliberately constrained our research sample scope and maintained a focused objective with controlled conditions. The study's purpose is to provide reliable information for policy formulation for local governments and universities. Therefore, utilizing the traditional DEA model aligns well with the research goals of this paper and effectively serves its intended purpose.

2.4 Input-Output Indicators for Higher Education Efficiency Evaluation

2.4.1 Basic framework of input-output indicators

In DEA research, a fundamental step is the selection of appropriate input and output indicators. According to Li Jiao, when setting the input-output indicators for higher education efficiency evaluation, one should follow the principles of fairness and objectivity, comprehensiveness, operability, determinacy, and comparability(李娇 & 王松博, 2020). Based on these principles, the basic framework for studying higher education efficiency is constructed.
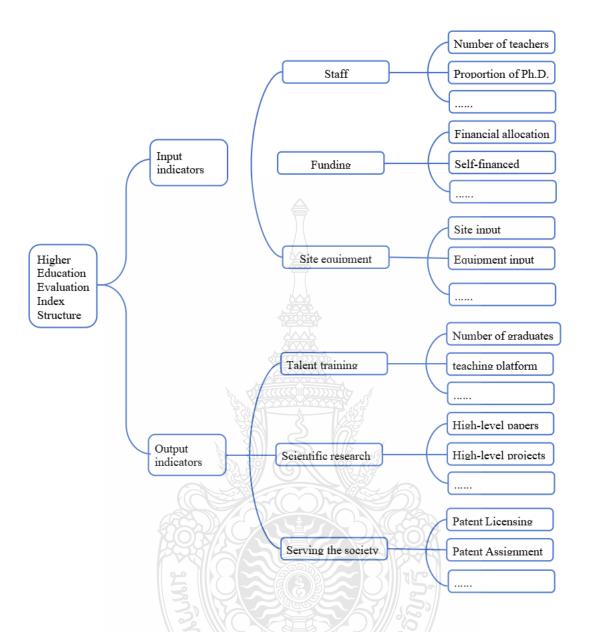
Figure 2.1 Basic Framework of Higher Education Input-Output

Source: Li Jiao & Wang Songbo. (2020). Preliminary Exploration of Indicator System Design for University Discipline Development

Based on Input-Output Theory. Higher Education Forum, 11, 76-78.(李娇 & 王松博, 2020)

2.4.2 The selection of efficiency indicators for higher education

In existing research, the selection of efficiency indicators for higher education has been as follows:

Table 2.2 Review of Input-Output Indicators

Categories of Indicators	Level 1 Indicators	Level 2 Indicators	Authors
Input indicators	Staff	Number of teachers	(Lee & Johnes, 2022; Liang et al., 2021) (Chen et al., 2021; Ding et al., 2023; Sun & Wang et al., 2023)
		Number of researchers	(Ghimire et al., 2021; Mammadov & Aypay, 2020)
		Proportion of Ph.D. professors	(Cossani et al., 2022; Navas et al., 2020)
	Funding	Financial allocation	(Cossani et al., 2022)
		expenditure	(Ghimire et al., 2021; Stumbrienė et al., 2022; Sun & Wang et al., 2023; Tavares et al., 2021)
		Teaching input	(Chen et al., 2021; Torres-Samuel et al., 2020)
		Research input	(Torres-Samuel et al., 2020)
	Site equipment	Number of graduates	(Chen et al., 2021)
		Number of Sites	(Cossani et al., 2022)

Categories of Indicators	Level 1 Indicators	Level 2 Indicators	Authors
Output indicators	Talent training	Number of graduates	(Mammadov & Aypay, 2020; Navas et al., 2020; Stumbrienė et al., 2022; Tavares et al., 2021)
		Number of undergraduate students	(Chen et al., 2021)
		Number of graduate students	(Chen et al., 2021; Sun & Wang et al., 2023)
	Scientific research	Number of publications	(Cossani et al., 2022; Ding et al., 2023; Ghimire et al., 2021; Mammadov & Aypay, 2020; Navas et al., 2020)
		research funding	(Chen et al., 2021; Ding et al., 2023; Ghimire et al., 2021; Mammadov & Aypay, 2020)
		Number of scientific research achievements	(Cossani et al., 2022; Tavares et al., 2021)
		academic satisfaction	(Sun & Wang et al., 2023)
	Serving the society	Number of Patent Assignment	(Torres-Samuel et al., 2020)、
		Number of Patent Licensing	(Agasisti, 2023)

2.4.3 Application of Principal Component Analysis (PCA)

In order to further enhance the applicability of indicators in DEA analysis, scholars have introduced new methods for handling indicators in recent years, among which Principal Component Analysis (PCA) is widely applied.

Ashour proposed that in the measurement process, the requirement for a sufficient number of research samples in DEA analysis can lead to errors in the results when there are too many variables. Therefore, Principal Component Analysis (PCA) is considered an important statistical tool for reducing the dimensionality of the original variables. To obtain new variables representing principal components, factors for each variable have already been determined, which aids in identifying their influences(Ashour, 2022).

Panwar et al. discussed in their "Review on the 40 Years of Existence of Data Envelopment Analysis Models" that PCA (Principal Component Analysis) was used to reduce the number of criteria, and the additive DEA (Data Envelopment Analysis) model was employed to measure the efficiency of suppliers or efficient suppliers. (Panwar et al., 2022).

Cao selected 9 highly developed countries in higher education and 13 indicators as references for global higher education quality and sustainability. Principal Component Analysis (PCA) was employed to reduce the dimensionality of these 13 indicators and extract factor coefficient score matrices. Among them, four major components were used for further analysis. Entropy Weight Method (EWM) was used to allocate weights for each sub-indicator to obtain a quantifiable Quality Sustainability Measurement (QSM)(Cao et al., 2023).

In addition, the PCA-DEA research method has also been widely applied in various fields. Ž Stević applied the PCA–DEA–MCDM model to develop an efficiency evaluation model for transportation companies (Stevi C et al., 2022). Chen combined the PCA model with the DEA-Malmquist model based on qualitative and quantitative data from 205 listed companies to analyze the efficiency of low-carbon supply chain financing from both static and dynamic perspectives(Chen et al., 2023). Shi et al. selected risk management indicators from 26 commercial banks in China for the years 2011 to 2019, used Principal Component Analysis (PCA) to remove redundant

input indicators and employed the DEA-BCC model in combination with window analysis to evaluate the technical efficiency of risk management in Chinese commercial banks(Shi & Yu, 2021). Peixoto used multivariate statistical techniques, Principal Component Analysis, and Data Envelopment Analysis to measure the performance of Brazilian HUF participating in REHUF(Peixoto et al., 2020).

While the PCA method has been employed in some research related to higher education, its usage remains relatively limited. This is primarily due to the current focus of efficiency studies in higher education on large-scale panel data that are easy to collect. In these cases, the emphasis is often on having a sufficient sample size, and many researchers do not engage in data preprocessing and dimension reduction. However, in the case of this study, which focuses on provincial undergraduate institutions, the sample size is limited yet holds significant implications for the development of regional higher education. To enhance the rigor of this research, the PCA-DEA method has been introduced for the efficiency analysis of local undergraduate institutions, representing one of the innovative aspects of this study.

CHAPTER 3
RESEARCH METHODOLOGY

The research objectives of the study are as follows (1) to investigate blended teaching online based on the Super Star learning pass model on basic computer application for Shunde Technical Vocational college., (2) to compare students' achievements before and after learning through based on the Super Star learning pass model on basic computer application for Shunde Technical Vocational college., and (3) to examine students' satisfaction with of using Blended Teaching Online based on the Super Star learning pass model on basic computer application for Shunde Technical Vocational college. This study describes the research methodology used according to the ADDIE model to collect data. The research uses quantitative, qualitative, and mixed research methods. The research instruments for data collection, the data collection procedures, and the statistical methods used for data analysis are explained as follows:

      3.1 Theoretical Framework

      3.2 Sampling Technique

      3.3 Instrumentation

      3.4 Procedure of the Data Collection

      3.5 Data Processing and Analysis

      3.6 Statistical Analysis

3.1 Theoretical Framework

3.1.1 The objective is to examine the implementation of the Super Star learning pass model for blended education in basic computer application at Shunde Technical Vocational College. The study examines the effectiveness of information technology (IT) at Shunde Polytechnic in China, with a specific focus on Basic Computer Application f subjects. The inquiry is grounded in the theoretical framework of the ADDIE model. This paradigm integrates fundamental principles from instructional design, technological integration, and educational psychology. This paradigm provides a systematic approach to developing, implementing, and evaluating technology-enhanced learning experiences. Presented below is a comprehensive examination of the

fundamental components, The study examines the effectiveness of information technology (IT) at Shunde Polytechnic in China, with a specific focus on Basic Computer Application f subjects. The inquiry is grounded in the theoretical framework of the ADDIE model. This paradigm integrates fundamental principles from instructional design, technological integration, and educational psychology. This paradigm provides a systematic approach to developing, implementing, and evaluating technology-enhanced learning experiences. The following is a breakdown of the conceptual components, Experimental Methodology

3.1.1.1 The research design was created in alignment with the stated purpose and proceeded methodically through the subsequent stages. The investigation was carried out utilizing a quantitative experimental design methodology. The data was gathered in a quantitative or numerical format obtained from the test, and the researcher employed a one-group pretest-posttest strategy. This study included a pre-test of a singular group, followed by a post-test to measure the effect. Below is the outlined design diagram:

Group: O1   x   O2

O1= Measurement of the pretest score

X = information technology according ADDIE model on Basic Computer Application f subject teaching for enhance learning achievement

O2= Measurement of the achievement of the posttest score

3.1.1.2 The ADDIE Model is a fundamental framework for instructional design, consisting of five essential phases: Analysis, Design, Development, Implementation, and Evaluation. The systematic method provides explicit guidance for integrating information technology into Basic Computer Application f training at Shunde Polytechnic. Every stage of the ADDIE model contributes to the process of decision-making and planning, guaranteeing that the incorporation of IT is in line with learning objectives, student requirements, and instructional aims. The ADDIE Model is a widely used instructional design framework that includes the stages of Analysis, Design, Development, Implementation, and Evaluation. It provides a methodical approach for

creating instructional materials and courses that have a significant effect. To implement the ADDIE Model of Information Technology (IT) education for teaching Basic Computer Application f themes to Shunde Polytechnic teachers in China, complete the subsequent steps:

1) Analysis was the analysis determined the precise requirements and goals of Shunde Polytechnic teachers regarding teaching and learning IT for the Basic Computer Application of language subject. Comprehend the current information and abilities. Determine the most pertinent and valuable tools, technology, and IT resources to improve Basic Computer Application of language instruction.

2) Develop a thorough blueprint that delineates the overarching framework of the IT curriculum for the Basic Computer Application f topic. Specify the extent, educational goals, and anticipated results. Determine the suitable pedagogical approaches, techniques, and subject matter that are in accordance with the requirements and objectives of the educators. Generate a syllabus or curriculum framework that clearly delineates the subjects to be addressed and the order in which they will be taught.

3) Development of teaching materials and real resources, Creation of instructional materials and tangible resources, Producing presentations, movies, interactive events, online modules, and various other forms of content. Select the appropriate IT tools and platforms, such as learning management systems, to implement the delivery of recommendations. Communication tools and a platform for collaboration.

4) Implementation, execution was Implementation was Providing IT guidance to professors at Shunde Polytechnic through the facilitation of workshops, training sessions, and online webinars. Our goal is to offer access to online materials and provide the necessary support and direction for efficiently utilizing IT tools and technologies in Basic Computer Application of teaching. Additionally, we aim to evaluate how IT teaching impacts the integration of technology by Basic Computer Application of teachers. Evaluate and enhance Assist Shunde Polytechnic educators in tailoring courses to their specific needs. Basic Computer Application of instruction that utilizes technology enhances teachers' proficiency and self-assurance in IT.

3.1.1.3 Instructional Design Principles. The theoretical framework emphasizes the importance of creating engaging, dynamic, and effective learning experiences, based on the principles of instructional design. When producing technology-enhanced instructional materials and activities, instructional designers consider student characteristics, learning styles, and educational objectives. Diverse pedagogical strategies, such as scaffolding, differentiation, and formative assessment, are utilized to support students with various learning requirements and improve the attainment of pertinent learning objectives. Technological integration models: The theoretical framework covers technology integration approaches, such as SAMR (Substitution, Augmentation, Modification, Redefinition) and TPACK (Technological Pedagogical Content Knowledge). These techniques include recommendations for effectively incorporating technology into teaching methods to enhance academic achievement. By thoroughly evaluating the functionalities and constraints of different technologies, educators can select appropriate tools and methodologies that align with the objectives of teaching the Basic Computer Application of subject at Shunde Polytechnic. Educational psychology theories enrich the theoretical framework by providing useful insights into the mechanisms of student learning and their interaction with technology-enhanced learning environments. The ideas of cognitive load theory, situational learning, and constructivism guide the decisions made in instructional design and improve the effectiveness of integrating IT. By understanding the cognitive processes involved in learning, educators may design learning experiences that promote the acquisition of knowledge, foster critical thinking, and enhance problem-solving abilities. The theoretical framework acknowledges the influence of cultural and contextual elements on the integration of technology in education. At Shunde Polytechnic, the theoretical framework prioritizes the integration of technology in learning to meet the requirements of different learners and encourage inclusive educational practices. This is achieved by considering the distinct cultural norms, educational methodologies, and institutional limitations present at the institution.

In summary, the theoretical framework is based on using a quantitative experimental design approach. The data was collected in a quantitative or numerical form derived from the test, and the researcher used a one-group pretest-posttest design. This

design involved a pre-test of a single group, followed by a post-test effect. The Super Star learning pass model on basic computer application is used to examine the effectiveness of blended teaching online based on the Super Star learning pass model on basic computer application for Shunde Technical Vocational college. This approach offers a thorough method for planning and assessing technology-enhanced learning experiences. Through the incorporation of instructional design concepts, technological integration, educational psychology, and cultural concerns, educators can construct purposeful and efficient learning environments that foster student engagement, accomplishment, and triumph. In the study of the effect of information technology according blended teaching online based on the Super Star learning pass model on basic computer application for Shunde Technical Vocational college in China, there are three major objectives: 1) study the efficiency of information technology according ADDIE model on Basic Computer Application f subject teaching to enhance learning achievement of Shunde Polytechnic students in China, 2) compare students' achievements before and after learning through information technology according blended teaching online based on the Super Star learning pass model on basic computer application for Shunde Technical Vocational college, and 3) examine students' satisfaction with Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical. The sample of this study was 30 students of blended teaching online based on the Super Star learning pass model on basic computer application for Shunde Technical Vocational college students in China during the school year 2022. They were selected by using purposive sampling. The research instruments consisted of 1) investigating the efficiency of blended teaching online based on the Super Star learning pass model on basic computer application for Shunde Technical Vocational college students, China, 2) comparing students' achievements before and after learning through blended teaching online based on the Super Star learning pass model on basic computer application for Shunde Technical Vocational college students, China, and 3) examine students' satisfaction with information technology according ADDIE model on blended teaching online based on the Super Star learning pass model on basic computer application for Shunde Technical Vocational college Polytechnic students, China. Research Objectives to 1) Study the efficiency of information technology according to blended teaching online

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based on the Super Star learning pass model on basic computer application for Shunde Technical Vocational college in China. 2) Compare students' achievements before and after learning through using information technology according to blended teaching online based on the Super Star learning pass model on basic computer application for Shunde Technical Vocational college., and 3) Study the satisfaction of teachers who use information technology according ADDIE model on blended teaching online based on the Super Star learning pass model on basic computer application for Shunde Technical Vocational college students in China. The integration of blended teaching online based on the Super Star learning pass model on basic computer application for Shunde Technical Vocational college in China holds immense promise for enhancing learning achievement. This comprehensive review has underscored the potential benefits and importance of this approach in the context of Higher Education.

3.1.2 To compare students' achievements before and after learning through information technology according blended teaching online based on the Super Star learning pass model on basic computer application for Shunde Technical Vocational college. To assess the impact of information technology on students' learning outcomes in the Basic Computer Application f subject at Shunde Polytechnic in China, the following procedures can be undertaken, using blended teaching online based on the Super Star learning pass model:

3.1.2.1 Blended teaching online based on the Super Star learning pass model, often abbreviated as IT, refers to the use of computer systems and communication equipment to process, store, transmit, and manage digital information and data. It encompasses a diverse range of software, hardware, and network infrastructure utilized for collecting, storing, analyzing, and transmitting information effectively. In addition to introducing the basic concepts of information technology, this field also involves addressing common problems and providing solutions, such as seeking expert technical support. To access assistance, one can contact the technical support team of their school or educational institution, consult online technical support communities and documentation, or refer to the help documents and video tutorials available on the associated teaching platform. In Basic Computer Application f subject teaching for Information Technology Design, the blended teaching online based on the Super Star

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learning pass model on basic computer application for Shunde Technical Vocational college is utilized as a popular system for instructional design and development of educational media. The instruction involves using the design process. In the current study, the researcher created information technology according to blended teaching online based on the Super Star learning pass model on basic computer application for Shunde Technical Vocational college. The details provided below:

1) Analysis, using information technology according to blended teaching online based on the Super Star learning pass model on basic computer application for Shunde Technical Vocational college, it is necessary to analyze it first. We need to analyze students' background, ability level, learning needs, and expected goals. information technology according to blended teaching online based on the Super Star learning pass model on basic computer application for Shunde Technical Vocational college, learners need to have certain Basic Computer Application f professional knowledge and vocabulary, as well as reading comprehension ability. Therefore, we need to design information technology according to blended teaching online based on the Super Star learning pass model on basic computer application for subject teaching reading materials suitable for students and make corresponding teaching plans according to students' vocabulary and reading ability.

2) Design, after analyzing the background and needs of the students, we can start to design the curriculum. using information technology according to blended teaching online based on the Super Star learning pass model on basic computer application for Shunde Technical Vocational college, we need to set clear course objectives and teaching strategies. Course objectives should be measurable and closely related to the career and learning needs of students. Teaching strategies can include the use of multimedia resources, the introduction of examples and visual data, etc., aimed at improving students' vocabulary and reading comprehension.

3) Development, Information technology according to blended teaching online based on the Super Star learning pass model on basic computer application for subject teaching, we need to develop the curriculum next. Curriculum development includes the teaching strategies identified from the analysis and design stages as well as the realization of teaching resources. In the blended teaching online

based on the Super Star learning pass model on basic computer application for Shunde Technical Vocational college, we can use news, magazines and industry reports as teaching resources. At the same time, we can also use the Internet, video and animation and other multimedia resources to improve the learning effect of students.

4) Implementation, after developing the information technology according to blended teaching online based on the Super Star learning pass model on basic computer application for subject teaching, the next step is to commence the implementation of the lesson plan. During this phase, it is crucial to make necessary adjustments to the curriculum to meet the specific needs and goals of the students. Additionally, there is a need to ensure that the teaching methods and resources are adaptable to variations, whilst continuously improving the overall teaching process.

5) Evaluation, Following the implementation phase, it is imperative to conduct a thorough evaluation of information technology according to blended teaching online based on the Super Star learning pass model on basic computer application for Shunde Technical Vocational college subject teaching. This assessment should encompass both student learning outcomes and the quality of the instructional process. To evaluate student learning outcomes, possible methods may include examinations, questionnaires, and soliciting student feedback. In parallel, the instructional process can be evaluated through reflective teaching meetings and other related measures, thus providing valuable insights for future course refinement.

Using information technology according ADDIE model on Basic Computer Application f subject teaching for enhance learning achievement of students is helpful to design more effective courses and improve students' learning effect and teaching quality. The five steps of analysis, design, development, implementation and evaluation can be completed in a coordinated manner, thus helping us to achieve the curriculum objectives and provide better teaching services for students.

3.1.2.2 Procedure of blended teaching online based on the Super Star learning pass model on basic computer application for Shunde Technical Vocational college model on Elish subject teaching.

1) Specify Learning goals was Initially; it is imperative to unambiguously establish the learning goals for the Basic Computer Application of subject

teaching intervention. The objectives should adhere to the SMART criteria, which means they should be specific, measurable, achievable, relevant, and time bound. For instance, objectives could encompass the enhancement of Basic Computer Application f language competence, the refinement of communication skills, or the mastery of specific language competencies.

2) Pre-assessment was prior to implementing the technology-enhanced learning intervention, do a pre-assessment to gauge the initial levels of achievement among students. One possible approach is to conduct diagnostic exams, quizzes, or surveys to evaluate students' existing knowledge, skills, and abilities in relation to the learning objectives.

3) Create Educational Resources was utilizing the ADDIE approach to create instructional materials and activities that incorporate blended teaching online based on the Super Star learning pass model on basic computer application. Tasks may encompass the creation of multimedia presentations, interactive learning modules, online quizzes, virtual simulations, or collaborative projects. Ensure that the instructional materials are in accordance with the specified learning objectives and accommodate the varied requirements and preferences of students.

4) Execute Educational Intervention was executing the technology-enhanced learning intervention in accordance with the blended teaching online based on the Super Star learning pass model on basic computer application. This entails disseminating the educational contents and tasks to pupils via suitable technological platforms and resources. Offer explicit instructions and precise assistance to students on the methods to access and actively interact with the learning resources in a proficient manner.

5) Monitor and Evaluate Progress was during the implementation phase, closely observe the students' advancement and involvement with the technology-enhanced educational resources. Gather data on student engagement, achievement, and input by employing formative assessment techniques like quizzes, assignments, and peer assessments. Utilize learning analytics tools to monitor students' engagement with online resources and pinpoint areas that want enhancement.

6) Post-assessment was following the implementation of the technology-enhanced learning intervention, administer a post-assessment to evaluate students' levels of achievement. One such approach is to offer summative assessments, such as tests, projects, or presentations, to measure students' proficiency in achieving the learning objectives. Analyze the post-assessment results in relation to the pre-assessment data to evaluate the impact of the intervention on improving learning outcomes.

7) Data Analysis and Comparison was examining the pre-assessment and post-assessment data to compare the academic progress of pupils prior to and following their exposure to information technology. Compute descriptive statistics, such as the mean and standard deviation, to quantify variations in student performance. Perform statistical analyses, such as t-tests or ANOVA, to ascertain the statistical significance of the disparities in achievement levels.

8) Analysis and Contemplation was analyzing the results of the assessment data and evaluate the impact of the technology-enhanced learning intervention. Consider several aspects that could have impacted student performance results, including instructional design, technological usability, student engagement, and external influences. Analyze the positive aspects, limitations, potential advantages, and obstacles related to the intervention, and utilize this knowledge to guide future efforts in designing and implementing training.

9) Present and Distribute Findings was concluded by creating a report that outlines the outcomes of the comparative analysis and distributes the findings to pertinent stakeholders, such as educators, administrators, lawmakers, and students. Provide suggestions for enhancing the efficiency of technology-enhanced learning interventions and advocate for ongoing backing and investment in novel instructional methods.

3.1.3 To examine students' satisfaction with using Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical.

1) State the objectives. Clearly delineate the goals of the assessment, which include evaluating students' satisfaction with the usability, effectiveness, and relevance of the technology-enhanced learning materials and activities. Take into account

aspects such as user experience, engagement, and perceived impact on learning achievement.

2) Choose suitable measurement tools and instruments to evaluate students' contentment with the technology-enhanced learning intervention. Possible methods for gathering information may encompass surveys, questionnaires, interviews, focus groups, or online feedback forms. Verify that the measurement instruments possess validity, reliability, and are consistent with the specified objectives of the assessment.

3) Create a survey or questionnaire to get feedback from students regarding their level of satisfaction with the technology-enhanced learning experience. Incorporate inquiries that encompass several facets of the intervention, such as the simplicity of utilization, the efficacy of the material, its pertinence to learning objectives, the amount of engagement it generates, and the overall level of satisfaction. Utilize a Likert scale or open-ended questions to gather both qualitative and quantitative data.

4) Conduct a pilot test by administering the survey or questionnaire to a limited number of students to detect any possible problems or uncertainties in the phrasing, layout, or organization. Collect input from pilot participants and implement necessary modifications to guarantee the measuring tool's clarity, comprehensibility, and relevance.

5) Conduct Survey or Questionnaire was Distribute the final iteration of the survey or questionnaire to all students who took part in the technology-enhanced learning intervention. Effectively convey the objective of the assessment and furnish explicit guidelines for accomplishing the survey or questionnaire. To optimize participation and response rates, it is advisable to utilize online survey platforms or employ classroom-based administration methods.

6) Gather Data involves the collection of information by obtaining the responses of students to a survey or questionnaire. To encourage genuine and honest feedback, it is crucial to ensure that replies are kept anonymous and confidential. Monitor the rate at which students provide responses and give reminders or incentives to encourage all students to actively participate.

7)The process of analyzing data was conducted. Perform a comprehensive examination of the collected data to evaluate the extent of students' satisfaction with the

use of information technology in teaching the Basic Computer Application f subject. Calculate descriptive statistics, such as the average, frequencies, and proportions, to summarize the students' responses to each question in the survey. Conduct a thematic analysis or content analysis on the open-ended responses to identify dominant themes, patterns, and trends in the feedback given by students.

8) Analyze the data and explain the results, then consider the students' level of satisfaction with the technology-enhanced learning intervention. Analyze students' feedback and perceptions to determine their strengths, shortcomings, possibilities, and obstacles. Evaluate the extent to which the results are consistent with the examination's objectives and the broader aim of improving academic performance at Shunde Polytechnic.

9) Generate a comprehensive report that outlines the discoveries made during the investigation and distribute the outcomes to pertinent stakeholders, such as educators, administrators, policymakers, and students. Provide suggestions for enhancing the design, execution, and assessment of technology-enhanced educational interventions, considering students' comments and levels of satisfaction.

3.2 Sampling Technique

The population of this study was 120 students in grade 22 of in the academic year 2023 of Shunde Polytechnic students in China. The sample of this study was 30 students in grade 22 at Shunde Polytechnic students in China during the school year 2023. They were selected by using purposive sampling as they were the students of the researcher's Counselor.

3.3 Instrumentation

The research methodologies employed in this work encompass literature analysis, observation, interview, and field research. This study examines the importance and value of the Blended Teaching Online Based on the Super Star Learning Pass Model in teaching basic computer application at Shunde Technical. The analysis is primarily based on article analysis and actual teaching experience.

3.3.1 The research instruments consisted of (1) the effect of using Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical students in China, and (2) the content and media quality questionnaire for Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical.

3.3.2 learning achievement questionnaire of students between pretest and post-test scores using Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical.

3.3.3 Questionnaires will be used to evaluate the level of student satisfaction with the Blended Teaching Online based on the Super Star Learning Pass Model for Basic Computer Application at Shunde Technical. The data were examined using the E1/E2 method, calculating the mean, standard deviation, and performing a t-test. Variables: The study aims to investigate the impact of blended teaching, based on the Super Star Learning Pass Model, on the learning achievement of Shunde Polytechnic students in China, specifically in the field of basic computer applications. The dependent variables in this study are the learning achievement of students in the Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical, and the satisfaction of students with the Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical, Content. The implementation of Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical not only strengthens the theoretical framework but also accelerates the advancement of information technology. Through examining this amalgamation, we enhance our comprehension of the practical implementation of Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical, along with its continuous evolution and modifications. This approach also aids in identifying any significant deficiencies in current information instruction and in summarizing teaching experiences, thereby addressing the limitations of conventional teaching methods while investigating the Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical. Consequently, this contributes to the advancement of the philosophy of education and the

integration of technology in teaching, resulting in a significant enhancement of Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical scores.

1) Questionnaire was used for Reliability, also known as the reliability of the Questionnaire, is an index used to define the consistency of the results obtained after multiple tests on the same subjects by the same method. Cronbach's coefficient method is generally used for reliability test of social sciences. In general, the larger the coefficient value, the more prominent the internal consistency and the higher the credibility of the data. The study used a five-point Likert scale (Likert, 1932; Verhagen et al., 1998; Linacre, 2002). The questionnaire was utilized Reliability, or the reliability of the Questionnaire, is a metric used to measure the consistency of results produced from repeated tests on the same people using the same procedure. The Cronbach's coefficient approach is commonly employed to assess the reliability of social science tests. Typically, a higher coefficient value indicates stronger internal consistency and greater data reliability. The study employed a five-point Likert scale.

1 = strongly disagree

2 = disagree

3 = neutral

4 = moderately agree

5 = strongly agree

5-point Likert Scales

2) To enhance the precision and comprehensiveness of the investigation, the researchers devised a questionnaire. The data were utilized to comprehend the understanding and application of learning process theories pertaining to Information Technology, specifically in relation to the Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical. This approach enhances the academic performance of students at Shunde Polytechnic in China, as observed by scholars. Questionnaires are excellent for situations when there is a sizable audience and a need for a descriptive method using standardized questions. The Likert scale, in its ultimate configuration, is a quintuple-point scale that permits individuals to express their opinions. The questions in this questionnaire are designed and

modified based on previous research to align with the context of information technology. The questionnaire aims to evaluate the effectiveness of the Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application in improving the learning outcomes of students at Shunde Polytechnic in China. The questionnaire is administered using the Likert scale format, which consists of a five-point rating scale. The selection of Question Star was based on its ability to facilitate the distribution of questionnaires and guarantee the confidentiality of participants.

3) The choice of quantitative, qualitative, or mixed methods as means of investigation is driven by the research questions and the nature of the research questions. A research design has three methods: quantitative, qualitative, and mixed (Taherdoost, H., 2022). Kumar (2018) classified three research types of structured methods (quantitative), unstructured method (qualitative), and structured or unstructured methods (mixed or multiple methods).

4) Qualitative research is a methodical examination of social phenomena in their natural settings. Creswell (2009) defines qualitative research as a method used to investigate and comprehend the significance that an individual or group attributes to a social or human problem. For educational research, the qualitative technique is the most suitable strategy when academics aim to gain insights and perspectives from a group of students or teachers.

5) Quantitative research involves the systematic collection and analysis of numerical data. It is the antithesis of qualitative research, which entails gathering and examining material that is not in digital form. The quantitative data in this study are characterized by their systematic and standardized nature, which contributes to the objectivity of the research and the generalizability of the conclusions (Xin, X., Shu-Jiang, Y., Nan, P., ChenXu, D., & Dan, L., 2022). While qualitative and quantitative research methods generally have distinct characteristics, it is commonly thought that they are complementary and should be used together. A "mixed method" refers to a research approach where researchers gather and examine both quantitative and qualitative data inside a single study. Mixed-method research necessitates intentionally diverse methodologies for gathering data, analyzing data, and interpreting findings. Mixed-method research capitalizes on the inherent advantages of qualitative and quantitative

methodologies, allowing researchers to investigate many viewpoints and reveal the connections within the complex layers of our numerous study inquiries. Thus, this study employs both quantitative and qualitative methodologies, known as a mixed technique, to address the limitations of each approach and enhance the overall strengths of the research. This comprehensive analysis aims to fulfill the research objectives effectively. The research presented in Table 3.1 demonstrates the simultaneous but distinct collection of quantitative and qualitative data. Both forms of data are of equal importance.

3.4 Procedure of the Data Collection

3.4.1 The researcher conducted an experiment using a pretest and post-test design with one group. The population was selected using purposive sampling. The evaluation of the Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical included measures such as pretest-posttest test scores, satisfaction questionnaire data (E1/E2), mean, standard deviation, and t-tests for dependent samples. Collect statistical data following the experiment and calculate (O1) and (O2) for the mean ($\bar{x}$). Compare and organize the experimental model for Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application, designed for self-learning by Shunde Technical students. (1) A request for collaboration with 120 students from Shunde Polytechnic in China. (2) Proposal to implement information technology through the Blended Teaching Online Based on the Super Star Learning Pass Model for teaching Basic Computer Application at Shunde Technical. (3) Utilize information technology for Basic Computer Application f language instruction through a three-step process: setting learning objectives, fostering creative thinking and knowledge construction, conducting pretests and post-tests, assessing student satisfaction, and comparing pretest and post-test results.

3.5 Data Processing and Analysis

3.5.1 Data Collection

The data was gathered utilizing the Delphi approach. The data collection consisted of four rounds, which were conducted as follows: Online blended teaching The use of the Super Star Learning Pass Model on Basic Computer Application at Shunde

Technical School has proven to be beneficial in enhancing students' learning achievements. This model has been instrumental in designing more effective courses and improving both the learning outcomes of students and the overall quality of teaching. The five stages of analysis, planning, development, implementation, and assessment can be executed in a synchronized manner, so enabling us to accomplish the curriculum objectives and deliver enhanced educational services to students.

First Step, the researcher examined theories of Blended Teaching Online based on the Super Star Learning Pass Model to generate questions for the pretest, posttest, and questionnaire on Basic Computer Application for Shunde Technical reading and attitude measurement.

Second step, the pretest, posttest and questionnaire were reviewed by the researcher's advisor and other experts in the field.

Third step, the pretest, posttest, and questionnaire were administered to a group of 30 Basic Computer Application f majors in grade 22 who were enrolled in the Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical. However, this group was not the same as the participants in the study.

Fourth step, A cohort of 30 grade 22 Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical students, who were registered in the subject of Basic Computer Application f reading at Shunde Polytechnic students in China, were instructed to undertake the pretest. The duration of the test was around one hour.

Fifth step, the researcher created the teaching plan based on Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical. This teaching plan was designed for Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical by the researcher's advisor and experts in the field.

Sixth step, the researcher conducted the class according to the instructional blueprint. The students at Shunde Technical were instructed in blended teaching online based on the Super Star learning pass model using the Blended Teaching Online method, based on the Super Star Learning Pass Model, which focused on Basic Computer Application.

Subsequently, students were tasked with completing both the post-test and questionnaire. The duration of the test was around one hour.

3.5.2 Study the efficiency of Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical.

1) Find the Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical students in China according to $E1/E2 = 80/80$ (Chaiyong Brahmawong, 2013). (E1) is the percentage of the average or means of all scores the students earn from their activities or assignments, such as drills, exercises, project works, etc., or other types of formative evaluation. (E2) is the percentage of the average or means of all scores the students earn from their post-test, final examinations, and other summative evaluation.

2) Evaluation of Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical students in China from three content experts and three media experts.

3) The assessment of content quality aspects of Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical students in China for content experts. The content experts who work in the field of Basic Computer Application f were asked to check the appropriateness of the content used in the Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical.

4) The assessment of media quality aspects of Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical students in China for media experts. The media experts who work in the field of information technology, computer and education technology or related fields were asked to check the appropriateness of the media used in the Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical.

5) The researcher did the following steps:

First step, the assessment in this study has been developed to fit the study hypothesis. Consequently, it was developed based on both theories that have been utilized in this study. The study shows that using the Blended Teaching Online Based on the

Super Star Learning Pass Model on Basic Computer Application for Shunde Technical in China. The aim of questionnaire has two main sections,

Part 1: the first section aims to measure experts' opinion with the Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical for enhance learning achievement of Shunde Polytechnic students in China. This part was a close-ended questionnaire that was based on the five (5) point Likert-type scales. The participants were asked to rate their degree of agreement on each statement from numbers 1-5. The interpretation of each number is described as follows:

Table 3.1 Range of mean and verbal interpretation, Range Value   Verbal
Interpretation

Agreement numbers	Range Value	Verbal Interpretation
5	4.50-5.00	Excellent
4	3.50-4.49	Good
3	2.50-3.49	Average
2	1.50-2.49	Poor
1	1.00-1.49	Very Poor

Part 2: this part was an open-ended questionnaire. The participants were asked to express their opinions and suggestions through Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical.

Second step, prior before trying out the assessment, three measurement and evaluation experts who work in the field of measurement and evaluation or education were asked to check the appropriateness of the language used in the questionnaire. The data obtained were used to calculate the Item Objective Congruence index (IOC).

The results of evaluation assessment with content quality of item objective congruence index (IOC) by measurement and evaluation experts found that the value of item objective congruence index (IOC) was 0.93 then take the assessment to content experts for further evaluation and results of evaluation assessment with media quality of

item objective congruence index (IOC) by measurement and evaluation experts found that the value of item objective congruence index (IOC) was 0.93 then take the assessment to media experts for further evaluation. Thus, the total mean score of the Item Objective Congruence (IOC) Index is supposed to be higher than 0.5 for acceptable data.

The evaluation criteria were used for checking the congruence between objectives and items of the test as follows:

Table 3.2 Value of item objective congruence index (IOC) and verbal interpretation

Item-Objective Congruence (IOC)	Verbal interpretation
+1	item is considered congruent with the objectives.
0	item is considered neutral in terms of whether it was congruent with the objectives.
-1	item is considered not congruent with the objectives.

Note: The total mean score of the Item-Objective Congruence (IOC) Index is supposed to be higher than 0.5 for acceptable data.

Third Step 3: The assessment will be used by experts. For the assessment of content quality aspects of Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical for enhance learning achievement of Shunde Polytechnic students in China for content experts and the assessment of media quality aspects of Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical students for media experts.

3.3.4 The achievement assessment (Pretest and Posttest), a pretest and posttest shared the same items. Both contained 40 questions related to Basic Computer Application f reading that they have learned in the class: 20 items contained Basic Computer Application f reading taught with an information technology according ADDIE model on Basic Computer Application f subject teaching and the other 20 items

contained Basic Computer Application f reading taught with a traditional teaching Approach. The students were assigned to do the pretest before learning Basic Computer Application f reading through the information technology according ADDIE model on Basic Computer Application f subject teaching and do the posttest after blended teaching online based on the Super Star learning pass model on basic computer application through this approach. The researcher went through the following steps:

First Step, the researcher selected the test types. Multiple-choice tests were chosen to use in the study.

Second step, the second section of the questionnaire has been developed to measure students' academic achievement on blended teaching online based on the Super Star learning pass model on basic computer application for Shunde Technical Vocational college.

Third step, three measurement and evaluation experts who work in the field of measurement and evaluation or education were asked to check the congruence between objectives and items in the test. The data obtained were used to calculate the Item Objective Congruence index (IOC).

The evaluation criteria were used for checking the congruence between objectives and items of the test as follows:

Table 3.3 Value of item objective congruence index (IOC) and verbal interpretation of achievement assessment

Item-Objective Congruence (IOC)	Verbal interpretation
+1	a test item is considered congruent with the objectives.
0	a test item is considered neutral in terms of whether it is congruent with the objectives.
-1	a test item is considered not congruent with the objectives.

Note: The total mean score of the Item-Objective Congruence (IOC) Index is supposed to be higher than 0.5 for acceptable data.

Fourth step, both the pretest and posttest were tried out with 30 students grade 22 of Basic Computer Application f majors who have Basic Computer Application f reading subjects who were enrolled in the Shunde Polytechnic students in China but were not the samples of this study. After the tests have been tried out, used in finding the difficulty index, discrimination index and reliability index of the achievement test. It was found that the difficulty index should be between 0.2-0.8, the discriminant index should be 0.2 or higher and reliability should be 0.8 or higher using Kuder-Richardson's K-R#20 formula.

Fifth step, the pretest and posttest are used with the participants to explore their vocabulary knowledge before and after blended teaching online based on the Super Star learning pass model on basic computer application into Basic Computer Application f subject teaching.

3.3.5 The questionnaire on students' satisfaction with Information technology-based utilization to teaching on Basic Computer Application f subject for university teachers in China. The questionnaire was used to ask about the students' learning using Information technology-based utilization to teaching on Basic Computer Application f subject for university teachers in China. The researcher took the following steps.

First step, the questionnaire in this study has been developed to fit the study hypothesis. Consequently, it was developed based on both theories that have been utilized in this study. The study shows that using the Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical. The aim of questionnaire has two main sections.

Part 1: The first section aims to measure students' satisfaction with the online learning platforms. This part was a close-ended questionnaire that was based on the five (5) point Likert-type scales. The participants were asked to rate their degree of agreement on each statement from numbers 1-5. The interpretation of each number is described as follows:

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Table 3.4 Range of mean and verbal interpretation

Agreement numbers	Range Value	Verbal Interpretation
5	4.50-5.00	Strongly agree
4	3.50-4.49	Agree
3	2.50-3.49	Undecided
2	1.50-2.49	Disagree
1	1.00-1.49	Strongly disagree

*Part 2, t*his part was an open-ended questionnaire. The participants were asked to express their opinions and suggestions towards learning through information technology according to blended teaching online based on the Super Star learning pass model on basic computer application for Shunde Technical Vocational college in terms of achievements and satisfaction.

Second step, before trying out the questionnaire, three measurement and evaluation experts who work in the field of measurement and evaluation or education were asked to check the appropriateness of the Basic Computer Application f subject teaching used in the questionnaire. The data obtained were used to calculate the Item Objective Congruence index (IOC).The evaluation criteria were used for checking the congruence between objectives and items of the test as follows:

Table 3.5 Value of item objective congruence index (IOC) and verbal interpretation of questionnaire on teacher' satisfaction

Item-Objective Congruence (IOC)	Verbal interpretation
+1	item is considered congruent with the objectives.
0	item is considered neutral in terms of whether it was congruent with the objectives.
-1	item is considered not congruent with the objectives.

Note: The total mean score of the Item-Objective Congruence (IOC) Index is supposed to be higher than 0.5 for acceptable data.

Third step, the questionnaire will be used by the participants to explore their satisfaction with learning through information technology according ADDIE model on Basic Computer Application f subject teaching. The questionnaires were applied to Shunde Polytechnic students.

3.6 Statistical Analysis

3.6.1 The researcher conducted the data analysis as the following procedures:

1) Find the efficiency of Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical, according to E1/E2 = 80/80 (Chaiyong Brahmawong, 2009). (E1) is the percentage of the average or means of all scores the students earn from their activities or assignments, such as drills, exercises, project works, etc., or other types of formative evaluation. (E2) is the percentage of the average or means of all scores the students earn from their post-test, final examinations, and other summative evaluations.

2) Compare the achievement test before and after using Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical by applying the t-test dependent. Study the satisfaction of students in Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical by mean and standard deviation.

3) The basic statistics in data analysis are:

(1) The formula for calculating the arithmetic mean ($\bar{x}$) is:

$$\bar{x} = \boxed{(\sum x)/N}$$

Whereas $\bar{x}$ =   Average or Arithmetic Mean

               $\sum x$ =   Sum of all score results

               N =   Number of students

2) The formula for calculating the standard derivation (SD.) is:

$$SD. = \sqrt{\frac{\sum(x-\bar{x})^2}{N}}$$

Whereas   SD.   =   Standard derivation

                N   =   Number of students

                $\bar{x}$ =   Mean value

                x =   Teachers 's score

3) The formula used to determine the quality of the instruments were: In finding content validity of the achievement test, we conducted the IOC formula (Item Objectives Congruence) by following the formula below:

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

Whereas   IOC   =   Index of correspondence between the test and the objective

                $\sum R$ =   Sum of individual expert's value

                R   =   Expert's rating

                N   =   Number of experts

4) The formula used in finding the difficulty index of the achievement test were:

$$P = \frac{R_H + R_L}{N_H + N_L}$$

Whereas   P   =   difficulty level

                RH   =   the number of people who chose the highest option rate

                RL   =   the number of people who chose the lowest option rate

                NH   =   the total number of people in the high group

                NL   =   the total number of people in the low group

Table 3.6 Range of difficulty index and verbal interpretation

Difficulty Index	Verbal Interpretation
0.00-0.20	Very Difficult
0.21-0.40	Difficult
0.41-0.60	Average / Moderately Difficult
0.61-0.80	Easy
0.81-1.00	Very Easy

5) The formula for calculating the item discrimination of the achievement test is:

$$r = \frac{R_H - R_L}{N_H \, or \, N_L}$$

Whereas r = Discrimination index

R_H = Number of correct responses in the high group

R_L = Number of correct responses in the low group

N_H = Total number of students in the high group

N_L = Total number of students in the low group

Table 3.7 Range of discrimination index and verbal interpretation

Discrimination Index	Verbal Interpretation
0.40 and above	Very Discriminating / Very Good Item
0.30 to 0.39	Discriminating / Good Item
0.20 to 0.29	Moderately Discriminating Item
0.10 to 0.19	Not Discriminating / Marginal Item
Below 0.10	Poor / Questionable Item

6) The formula for calculating the reliability of the achievement test K-R#20 by Kuder-Richardson is:

$$\text{rtt} = \frac{k}{k-1}\left[1 - \frac{\Sigma pq}{S^2}\right]$$

Whereas rtt = Reliability index

k = Number of test items

p = The proportion of the correct answer

q = The proportion of the incorrect answer

S2 = The variation of the entire test

7) The formula for calculating the variability of the achievement test is:

$$S2 = \frac{n\Sigma fx^2 - (\Sigma fx^2)}{n(n-1)}$$

Whereas S2 = Variance

n = Number of students

x = Achievement test score

f = Data of frequency

8) The formula used to verify the hypothesis were: The formula used in analyzing the differences in achievement scores using the dependent t-test was:

$$t = \frac{\Sigma D}{\sqrt{\frac{n\Sigma D^2 - (\Sigma D)^2}{n-1}}}$$

Whereas ΣD = Sum of variance score of achievement test

ΣD^2 = Sum of different squares of achievement test scores

$(\Sigma D)^2$ = Sum of variance score of the square test

n = Number of students

D = Difference between pre-test and post-test scores

9) An initial study was conducted with the experts and instructors. The survey was on a five-point Likert-type scale. Data collection was done by questionnaires which were analyzed to determine the results. The part with selection items was analyzed using frequency and percentage. The part with five scales was analyzed using mean (M), standard deviation (SD.) and correlation. To analyze the consensus of 17 experts, the researcher checked the data through mode, median, and interquartile ranges as follows:

1) The value of median should be at least 3.50.

2) The absolute difference between median and mode should not be above 1.00.

3) The value of interquartile range (IQ3 - IQ1) should not be above 1.5.

4) The IQR = Interquartile Range (IQR< 0.50 ≥ 1.00 = Congruent; IQR>1.00 = Incongruent). Mean and level of experts' opinions of selected psychology theories. The mean is shown in table 3.2 and was used to analyze the significant difference between respondents' opinions of selected psychology theories.

Table 3.8 Mean and level of experts' opinions of selected psychology theories

No.	M	Level of opinions
1	1.00 – 1.49	Strongly disagree
2	1.50 – 2.49	Disagree
3	2.50 – 3.49	Neutral
4	3.50 – 4.49	Moderately agree
5	4.50 – 5.00	Strongly agree

Note: M = mean.

The levels of the standard deviation, which is a measure of the dispersion of a set of data from its mean were as follows:

0.000-0.999   means   less spread apart data

More than 1.000   means   more spread apart data

The qualitative data from the interviews and observations were experts' opinions of selected psychology theories, qualification requirements, training approaches, and assessment.

CHAPTER 4
RESEARCH RESULT

This chapter provides a descriptive and meaningful analysis of an Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical. The categories summarize the results of the interview and survey data analysis. The following tables present a summary of the ADDIE model analysis results. The research methodology used for Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical is explained below.

  4.1 Demographic data

  4.2 Descriptive Statistics of Variables

4.1 Demographic data

The demographic characteristics of the population in this study consisted of 120 students enrolled in 22 classes of Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application at Shunde Technical in the academic year 2023. These students were from Shunde Polytechnic in China. The study's sample consisted of 30 students who were enrolled in 22 Basic Computer Application f major classes at Shunde Polytechnic in China during the 2023 academic year. The participants were chosen through purposive sampling based on their status as students of the researcher's Counselor. The study instruments included an investigation of the impact of implementing the Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical. The categories offer a succinct overview of the conclusions drawn from the analysis of the interview and survey data. The following tables present a succinct summary of the analytical findings acquired through the utilization of the ADDIE model. The following section presents an explanation of the research technique used for Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical. It also includes a questionnaire on content and media quality. This chapter provides a thorough and important analysis of a Blended Teaching Online Based on the Super Star

Learning Pass Model on Basic Computer Application for Shunde Technical. The categories offer a succinct overview of the conclusions drawn from the analysis of the interview and survey data. The following tables offer a succinct summary of the analytical findings collected from the study on Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical. The categories offer a succinct overview of the conclusions obtained from the analysis of the interview and survey data. The following tables offer a succinct summary of the analytical findings derived from the study on Blended Teaching Online Based on the Super Star Learning Pass Model, focusing on Basic Computer Application for Shunde Technical. The categories offer a succinct overview of the conclusions drawn from the analysis of the interview and survey data. The following tables present a succinct summary of the analytical findings acquired through the utilization of the ADDIE model. The next part offers a detailed explanation of the study methodology used for implementing Blended Teaching Online Based on the Super Star Learning Pass Model for teaching Basic Computer Application at Shunde Technical. The next part offers a detailed explanation of the study methodology used for implementing Blended Teaching Online Based on the Super Star Learning Pass Model for teaching Basic Computer Application at Shunde Technical. The next part offers a detailed explanation of the study methodology used for implementing Blended Teaching Online Based on the Super Star Learning Pass Model for teaching Basic Computer Application at Shunde Technical. Assessing the learning progress of pupils in Basic Computer Application f topics by comparing their pretest and post-test scores using information technology. Questionnaires are used to evaluate the proficiency of students in using information technology for teaching the Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application. The data were evaluated using statistical methods including E1/E2 analysis, calculation of the mean and standard deviation, and conducting a t-test. The variables in this study are the independent variables. The study focuses on a complete and important analysis of a Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical. The categories offer a succinct overview of the conclusions drawn from the analysis of the interview and survey data. The following tables offer a succinct summary

of the analytical findings derived from the study on Blended Teaching Online Based on the Super Star Learning Pass Model for Basic Computer Application at Shunde Technical. The categories offer a succinct overview of the conclusions obtained from the analysis of the interview and survey data. The following tables present a succinct summary of the analytical findings derived from the implementation of the Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application. The next part offers a detailed explanation of the study methodology used for implementing Blended Teaching Online Based on the Super Star Learning Pass Model for teaching Basic Computer Application at Shunde Technical. The next section is a detailed explanation of the study methodology used for implementing Blended Teaching Online Based on the Super Star Learning Pass Model for teaching Basic Computer Application at Shunde Technical. The dependent variable in this study is the learning achievement of students in a Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical. The categories offer a succinct overview of the conclusions drawn from the analysis of the interview and survey data. The following tables offer a succinct summary of the analytical findings collected from the study on Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical. The categories offer a succinct overview of the conclusions obtained from the analysis of the interview and survey data. The following tables offer a succinct summary of the analytical findings collected from the study on Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical. The categories offer a succinct overview of the conclusions drawn from the analysis of the interview and survey data. The following tables offer a succinct summary of the analytical findings derived from the study on Blended Teaching Online Based on the Super Star Learning Pass Model for Basic Computer Application at Shunde Technical. The categories offer a succinct overview of the conclusions drawn from the analysis of the interview and survey data. The following tables present a succinct summary of the analytical findings acquired through the utilization of the Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application. The next section is a detailed explanation of the study methodology used for implementing

Blended Teaching Online Based on the Super Star Learning Pass Model for teaching Basic Computer Application at Shunde Technical. The next part offers a detailed explanation of the study methodology used for implementing Blended Teaching Online Based on the Super Star Learning Pass Model for teaching Basic Computer Application at Shunde Technical. The next part offers a detailed explanation of the study methodology used for implementing Blended Teaching Online Based on the Super Star Learning Pass Model for teaching Basic Computer Application at Shunde Technical. The following section offers a comprehensive explanation of the research methodology used for Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical. Additionally, this chapter presents a thorough analysis of the students' satisfaction with the teaching approach. The categories offer a succinct overview of the conclusions drawn from the analysis of the interview and survey data. The following tables offer a succinct summary of the analytical findings collected from the study on Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical. The categories offer a succinct overview of the conclusions drawn from the analysis of the interview and survey data. The following tables present a succinct summary of the analytical findings acquired through the utilization of the ADDIE model. The next part offers a detailed explanation of the study methodology used for implementing Blended Teaching Online Based on the Super Star Learning Pass Model for teaching Basic Computer Application at Shunde Technical. The next part offers a detailed explanation of the study methodology used for implementing Blended Teaching Online Based on the Super Star Learning Pass Model for teaching Basic Computer Application at Shunde Technical. The text contains content. The incorporation of Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application instruction not only strengthens the theoretical foundation but also advances the progress of This chapter provides a comprehensive and meaningful analysis of a Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical. The categories offer a succinct overview of the conclusions drawn from the analysis of the interview and survey data. The following tables offer a succinct summary of the analytical findings collected from the study on Blended Teaching Online Based on

the Super Star Learning Pass Model for Basic Computer Application at Shunde Technical. The categories offer a succinct overview of the conclusions drawn from the analysis of the interview and survey data. The following tables present a succinct summary of the analytical findings achieved through the utilization of the Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application. The next section is a detailed explanation of the study methodology used for implementing Blended Teaching Online Based on the Super Star Learning Pass Model for teaching Basic Computer Application at Shunde Technical. The next part offers a detailed explanation of the study methodology used for implementing Blended Teaching Online Based on the Super Star Learning Pass Model for teaching Basic Computer Application at Shunde Technical. This investigation provides a comprehensive analysis of the practical implementation of a Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical. The categories offer a succinct overview of the conclusions drawn from the analysis of the interview and survey data. The following tables present a succinct summary of the analytical findings achieved through the utilization of the ADDIE model. The following section offers a detailed explanation of the study methodology used for Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical, along with its continuous evolution and modifications. This also aids in identifying any crucial issues in current information instruction and summarizing teaching experiences, thereby addressing the limitations of traditional teaching methods while exploring Basic Computer Application f teaching theory within the context of this chapter. It presents a comprehensive and meaningful analysis of a Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical. The categories offer a succinct overview of the conclusions drawn from the analysis of the interview and survey data. The following tables offer a succinct summary of the analytical findings collected from the study on Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical. The categories offer a succinct overview of the conclusions drawn from the analysis of the interview and survey data. The following tables offer a succinct summary of the analytical findings collected from the study on Blended Teaching Online Based on

the Super Star Learning Pass Model for Basic Computer Application at Shunde Technical. The categories offer a succinct overview of the conclusions drawn from the analysis of the interview and survey data. The following tables give a succinct summary of the analytical findings acquired from a comprehensive and important investigation of a Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical. The categories offer a succinct overview of the conclusions drawn from the examination of the interview and survey data. The following tables offer a succinct summary of the analytical findings collected from the study on Blended Teaching Online Based on the Super Star Learning Pass Model for Basic Computer Application at Shunde Technical. The categories offer a succinct overview of the conclusions drawn from the analysis of the interview and survey data. The following tables offer a succinct summary of the analytical findings collected from the study on Blended Teaching Online Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application. The categories offer a succinct overview of the conclusions drawn from the analysis of the interview and survey data. The following tables present a succinct summary of the analytical findings acquired through the utilization of the Blended Teaching Online Based on the Super Star LearningPass Model on Basic Computer Application. The next part offers a detailed explanation of the study methodology used for implementing Blended Teaching Online Based on the Super Star Learning Pass Model for teaching Basic Computer Application at Shunde Technical. The next part offers a detailed explanation of the research methodology used for Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical. The next part offers a detailed explanation of the study methodology used for implementing Blended Teaching Online Based on the Super Star Learning Pass Model for teaching Basic Computer Application at Shunde Technical. The next part offers a detailed explanation of the study methodology used for implementing Blended Teaching Online Based on the Super Star Learning Pass Model for teaching Basic Computer Application at Shunde Technical. The next part offers a detailed explanation of the study methodology used for implementing Blended Teaching Online Based on the Super Star Learning Pass Model for teaching Basic Computer Application at Shunde Technical. The next section is a detailed

explanation of the study methodology used for implementing Blended Teaching Online Based on the Super Star Learning Pass Model for teaching Basic Computer Application at Shunde Technical. Consequently, this contributes to the development and advancement of the philosophy of education and the integration of technology in teaching, finally resulting in a significant enhancement in Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application test results. Efficiency. Data collection, the researcher conducted an experiment using a pretest and post-test design with one group; the population was selected using purposive sampling. This chapter provides a comprehensive and important analysis of a Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical. The analysis includes measures, statistics, and assessments. The categories offer a succinct overview of the conclusions drawn from the analysis of the interview and survey data. The following tables offer a succinct summary of the analytical findings acquired from the implementation of a Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical. The categories offer a succinct overview of the conclusions drawn from the analysis of the interview and survey data. The following tables offer a succinct summary of the analytical findings collected from the study on Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical. The categories offer a succinct overview of the conclusions drawn from the analysis of the interview and survey data. The following tables offer a succinct summary of the analytical findings collected from the study on Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical. The categories offer a succinct overview of the conclusions obtained from the analysis of the interview and survey data. The following tables present a succinct summary of the analytical findings gained from the implementation of Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical. The next part offers a detailed explanation of the study methodology used for implementing Blended Teaching Online Based on the Super Star Learning Pass Model for teaching Basic Computer Application at Shunde Technical. The next part offers a detailed explanation of the study methodology used for implementing Blended

Teaching Online Based on the Super Star Learning Pass Model for teaching Basic Computer Application at Shunde Technical. The next part offers a detailed explanation of the study methodology used for implementing the Blended Teaching Online Based on the Super Star Learning Pass Model for teaching Basic Computer Application at Shunde Technical. The following section presents a detailed description of the research methodology used for Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical. The research employed pretest-posttest test scores, satisfaction questionnaires (E1/E2), mean, standard deviation, and t-tests for dependent sample statistics. Collect statistical data following the experiment and calculate (O1) and (O2) to determine the mean ($\bar{x}$). Additionally, compare and organize the experimental model using Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application in order to improve the self-learning achievements of Shunde Polytechnic students. (1) A proposal to collaborate with 120 students from Shunde Polytechnic in China. (2) Intention to implement information technology based on the Super Star Learning Pass Model for Blended Teaching Online, specifically focusing on Basic Computer Application for Shunde Technical. The categories offer a succinct overview of the conclusions drawn from the examination of the interview and survey data. The following tables offer a succinct summary of the analytical findings collected from the study on Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical. The categories offer a succinct overview of the conclusions drawn from the analysis of the interview and survey data. The following tables present a succinct summary of the analytical findings achieved through the implementation of Blended Teaching Online Based on the Super Star Learning Pass Model for Basic Computer Application at Shunde Technical. The next part offers a detailed explanation of the study methodology used for implementing Blended Teaching Online Based on the Super Star Learning Pass Model for teaching Basic Computer Application at Shunde Technical. The following section offers a clear explanation of the research methodology used for Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical. This chapter presents a comprehensive and important analysis of a Blended Teaching Online Based

on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical. The categories offer a succinct overview of the conclusions drawn from the analysis of the interview and survey data. The following tables present a succinct summary of the analytical findings acquired through the implementation of Blended Teaching Online Based on the Super Star Learning Pass Model for Basic Computer Application at Shunde Technical. The following section offers a detailed explanation of the research methodology used for Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical. Additionally, it discusses the process of utilizing Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application subjects, which involves three steps: setting learning goals, fostering creative thinking, and constructing knowledge. The evaluation of student performance includes conducting pretests and post-tests, assessing student satisfaction, and comparing the results of the pretests and post-tests. The statistics employed for data analysis are utilized to assess the effectiveness of utilizing the Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical. This chapter provides a comprehensive and meaningful investigation of the topic. The categories offer a succinct overview of the conclusions drawn from the analysis of the interview and survey data. The following tables offer a succinct summary of the analytical findings collected from the study on Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical. The categories offer a succinct overview of the conclusions drawn from the examination of the interview and survey data. The following tables present a succinct summary of the analytical findings acquired through the utilization of the Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application. The next part offers a detailed explanation of the study methodology used for implementing Blended Teaching Online Based on the Super Star Learning Pass Model for teaching Basic Computer Application at Shunde Technical. The following section presents an explanation of the research technique used for Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical, based on the criteria experiment conducted by E1/E2. Additionally, it compares the learning achievement of students using Blended

Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application subjects before and after the intervention using a t-test. Lastly, it evaluates the students' satisfaction through a detailed and important examination of a Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical. The categories offer a succinct overview of the conclusions drawn from the examination of the interview and survey data. The following tables offer a succinct summary of the analytical findings collected from the study on Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical. The categories offer a succinct overview of the conclusions drawn from the examination of the interview and survey data. The following tables offer a succinct summary of the analytical findings collected from the study on Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical. The categories offer a succinct overview of the conclusions drawn from the analysis of the interview and survey data. The following tables present a succinct summary of the analytical findings gained from the implementation of Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical. The next part offers a detailed explanation of the study methodology used for implementing Blended Teaching Online Based on the Super Star Learning Pass Model for teaching Basic Computer Application at Shunde Technical. The next part offers a detailed explanation of the study methodology used for implementing Blended Teaching Online Based on the Super Star Learning Pass Model in the context of teaching basic computer application at Shunde Technical. The following part presents a detailed explanation of the research methodology used for Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical teaching, utilizing mean and standard deviation as statistical measures.

4.2 Descriptive Statistics of Variables

4.2.1 Analyze the effectiveness of utilizing information technology through the implementation of the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical by E1/E2.

4.2.2 Analyze the difference in learning achievement of students before and after using information technology in the Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical. Use a t-test to compare the pre-test and post-test scores.

4.2.3 Analyze the satisfaction levels of students who utilize information technology through Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical. This analysis will be done using the mean and standard deviation.

4.3 Analysis Results

4.3.1 Examine the efficacy of information technology in Blended Teaching Online Based on the Super Star Learning Pass Model for teaching Basic Computer Application to students at Shunde Technical. Information technology according to Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical in China.

Table 4.1 The assessment results of the efficiency of Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical have been obtained.

Items	n	$\bar{x}$	Percentage	Standard	E1/E2
Ongoing score	100	86.10	86.10	80	82.40
Post-test score	20	16.22	81.33	80	81.33

From Table 4.1, The average mean score of continuing assessments was 82.40, while the mean score of post-tests was 81.33. This suggests a significant improvement in information technology skills through the Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical. The analysis showed that the efficiency ratio of E1 to E2 was 82.40 to 81.33. In summary, this online learning program, called the Blended Teaching Online Based on the Super Star Learning Pass Model, focuses on teaching basic computer applications to

students at Shunde Technical. The program has been built in accordance with the established standard criteria of 80/80.

4.3.2 An assessment of information technology in relation to Blended Teaching Online. According to the Super Star Learning Pass Model, three content experts evaluated the Basic Computer Application for Shunde Technical. The 10 evaluation items are derived from a form created by three subject matter experts. This section employs a 5-point grading scale to depict the viewpoints of topic specialists. Each criterion rating is denoted as depicted in the table below.

Table 4.2 The evaluation results of investigating the efficiency of information technology in Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical were conducted by three topic experts.

Evaluation Items	$\bar{x}$	SD.	Result Interpretatio
1. Ensuring coherence between the material and learning objectives.	5	0.00	Excellent
2. The subject matter is captivating.	4.5	0.00	Excellent
3. The content and exercises are suitable for learners.	4.7	0.58	Excellent
4. The content in each activity is suitable.	4.55	0.58	Excellent
5. Content sorting is suitable.	4.38	0.58	Excellent
6. Precision of information.	5.00	0.00	Excellent
7. The reading material utilized in the content is suitable for the learners.	5.00	0.00	Excellent
8. The activities align with the material.	5.00	0.00	Excellent
9. There is a presenting format designed to enhance the learners' interest.	4.67	0.58	Excellent
10. The summary of the content is finished.	5.00	0.00	Excellent
Total	**4.78**	**0.23**	**Excellent**

From Table 4.2, The content quality assessment of the Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde

Technical was examined by three content experts. The overall quality was at an excellent level, with a mean of 4.78 and a standard deviation of 0.23. Upon evaluation, it was determined that the consistency between content and learning objectives, the level of interest in the content, the accuracy of the content, the appropriateness of the Basic Computer Application f subject teaching used in the content for the learners, the alignment of activities with the content, and the completeness of the content overview were all rated at an excellent level ($\bar{x} = 5.00$, SD = 0.00), respectively.

       4.3.3 An assessment of the online blended teaching approach using the Super Star Learning Pass Model for teaching basic computer applications at Shunde Technical School was conducted by three media specialists.

       The 10 evaluation items are derived from the form provided by three media professionals. This section employs a 5-point grading scale to depict the opinions of media specialists. Each criterion rating is specified as depicted in the table below.

Table 4.3 The evaluation results of the information technology, specifically the Blended Teaching Online Based on the Super Star Learning Pass Model, on Basic Computer Application for Shunde Technical were conducted by three media specialists.

Evaluation Items	$\bar{x}$	SD.	Result Interpretation
1. The Super Star Learning Pass Model is an online-based blended teaching approach that utilizes information technology to facilitate learning. It is specifically designed to teach basic computer applications for the Shunde Technical subject in a user-friendly manner.	4.85	0.58	Excellent
2. The arrangement of activities and content is suitable.	4.53	0.58	Good

Evaluation Items	$\bar{x}$	SD.	Result Interpretation
3. User-friendly, straightforward.	4.67	0.58	Excellent
4. The visuals align with the material.	4.33	0.58	Good
5. The graphics effectively communicate the intended meaning.	4.42	0.58	Good
6. The activities are suitable for the learners.	4.00	0.00	Good
7. Fascinating material.	4.64	0.58	Good
8. Desire to acquire knowledge and skills.	4.33	0.58	Good
9. Enhances comprehension of the topic.	4.33	0.58	Good
10. The information is evident and readily comprehensible.	4.85	0.58	Excellent
Total	4.50	0.58	Good

From Table 4.3, The media quality assessment of the Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical was examined by three media specialists. The overall quality was at an excellent level, with a mean of 4.50 and a standard deviation of 0.58. Upon evaluation of each item, it was determined that the Blended Teaching Online Based on the Super Star Learning Pass Model for Basic Computer Application at Shunde Technical is characterized by its ease of comprehension, user-friendliness, simplicity, and clarity of details, all of which were rated at an excellent level ($\bar{x} = 4.85$, SD. $= 0.58$), respectively.

4.3.4 Compare the academic performance of students before and after their exposure to information technology through Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical.

The students' achievements in basic computer application at Shunde Technical were assessed before and after the implementation of the Blended Teaching Online Based on the Super Star Learning Pass Model. This assessment aligns with objective 2 and the results are presented in Table 4.4.

Table 4.4 Comparison of the average scores of students before and after using information technology in the Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical.

Items	n	$\bar{x}$	SD.	*df*	t-test	Sig. (2-tailed)
Pre-test	30	8.80	2.33	29	20.86	0.05
Post-test	30	16.27	1.48			

**p< .05

From Table 4.4, This study demonstrated the effectiveness of Blended Teaching Online Based on the Super Star Learning Pass Model in educating students at Shunde Technical in Basic Computer Application. The mean score of the pre-tests was 8.80, with a standard deviation of 2.33. The implementation of information technology, notably the Blended Teaching Online Based on the Super Star Learning Pass Model, in teaching Basic Computer Application at Shunde Technical led to a notable enhancement in students' academic achievement. The improvement is clearly demonstrated by the high post-test score of 16.27, which has a standard deviation of 14.8. The t-test analysis conducted before and after the treatment resulted in a value of 20.86, suggesting a significant and statistically meaningful difference at the .05 level.

Examine the level of satisfaction among students who utilize information technology through Blended Teaching Online Based on the Super Star Learning Pass Model for Basic Computer Application at Shunde Technical.

An evaluation questionnaire was used to assess students' satisfaction with the use of information technology in the Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical.

Table 4.5 The evaluation results of satisfaction with information technology for Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical are as follows:

Evaluation Items	$\bar{x}$	SD.	Result Interpretation
1. Personalized learning can be applied to Basic Computer Application f instruction in the field of information technology.	4.40	0.51	Strongly Agree
2. Teaching Basic Computer Application f in the field of information technology provides abundant learning tools.	4.60	0.50	Strongly Agree
3. Information technology can serve as a guiding tool for Basic Computer Application of instruction.	4.50	0.51	Strongly Agree
4. Basic Computer Application f instruction in the field of information technology might involve collaboration and effective communication.	4.37	0.51	Agree
5. Information technology in the context of teaching Basic Computer Application enables instant feedback and evaluation.	4.53	0.51	Strongly Agree
6. Foundational computer applications for instruction in the field of information technology can be utilized. multimedia teaching resources.	4.50	0.51	Strongly Agree
7. Learning basic computer applications is essential in the field of information technology. management and tracking.	4.53	0.51	Strongly Agree

Evaluation Items	$\bar{x}$	SD.	Result Interpretation
8. The application of basic computer skills in teaching information technology might be characterized as innovative. teaching methods.	4.67	0.48	Strongly Agree
9. The application of basic computer skills in teaching within the field of information technology has the potential to be multicultural. teaching.	4.43	0.50	Agree
10. The fundamental computer application for instruction in information technology might be reconsidered and redesigned. improved.	4.57	0.50	Strongly Agree
Total	**4.51**	**0.50**	**Strongly Agree**

From Table 4.5, the results of evaluation of students' satisfaction with information technology according Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical by 30 students. The overall students' satisfaction was strongly agree level ($\bar{x}$=4.51, SD. = 0.50). When considering each item, it was found that Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical can be innovative teaching methods was strongly agree level ($\bar{x}$= 4.67, SD. = 0.48) and Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application in information technology can get rich learning resources. was strongly agree level ($\bar{x}$= 4.60, SD. = 0.50), respectively.

CHAPTER 5
DISCUSSION AND CONCLUSION

This chapter provides the summary, discussion, conclusion, limitations, and contributions of the study, information technology according to Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical.

    5.1 Discussion
    5.2 Conclusion
    5.3 Contributions

5.1 Discussion

5 1.1 In the study of the effect of Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical, there are three major objectives (1) study the efficiency of Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical, (2) compare students' achievements between before and after learning through Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical, and (3) examine students' satisfaction with Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical. The sample of this study were 30 students of Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application, during the school year 2022. They were selected by using purposive sampling. The research instruments consisted of (1) investigate the efficiency of information technology according the Super Star Learning Pass Model on Basic Computer Application f subject for enhance learning achievement to Shunde Polytechnic students, China, (2) compare students' achievements between before and after learning through information technology according the Super Star Learning Pass Model on Basic Computer Application f subject for enhance learning achievement to Shunde Polytechnic students, China, and (3) examine students' satisfaction with information technology according the Super Star Learning Pass Model on Basic Computer Application f subject

for enhance learning achievement to Shunde Polytechnic students, China. The conclusion, discussion and suggestion of the research are as follows:

5.1.2 The Super Star Learning Pass Model utilized accomplishment assessments in the form of a Pretest and Posttest, with both assessments containing an identical set of items. Both assessments consisted of 40 questions pertaining to the fundamental principles of computer applications that were covered throughout the curriculum. The Super Star Learning Pass Model was used to teach a Basic Computer Application of reading, which consisted of 20 elements and incorporated information technology. Prior to studying Basic Computer Application through the Super Star Learning Pass Model, the students were instructed to complete a pretest in information technology. The researcher proceeded through the subsequent stages: The initial step was the researcher's selection of the test types. The study opted to utilize multiple-choice examinations. The second part involves the development of the second section of the questionnaire, which aims to assess students' academic performance in information technology based on the Super Star Learning Pass Model. In the third step, three experts specializing in measurement and evaluation in the fields of measurement and evaluation, or education were requested to assess the alignment between the objectives and items in the exam. The acquired data were utilized to compute the Item Objective Congruence index (IOC). The assessment criteria were employed to assess the alignment between the objectives and items of the test, with the expectation that the overall average score of the Item-Objective Congruence (IOC) Index would exceed 0.95 to indicate satisfactory results. An assessment item is deemed compatible with the stated objectives. In the fourth step, both the pretest and posttest were administered to a sample of 30 students in grade 22 of the Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application. These students were enrolled in Shunde Polytechnic in China and had Basic Computer Application f as their reading subjects. However, it is important to note that these students were not part of the sample for this study. Once the tests have been administered, they are utilized to determine the difficulty index, discrimination index, and reliability index of the accomplishment test. The study revealed that the optimal range for the difficulty index is 0.2 to 0.8, while the discriminant index should be 0.2 or greater. Additionally, a reliability score of 0.8 or higher is recommended, as

determined by the Kuder-Richardson's K-R#20 formula. In the fifth step, the participants' vocabulary knowledge is assessed using a pretest and posttest before and after they engage in the Basic Computer Application of reading through an information technology, following the Super Star Learning Pass Model. The survey aims to assess the level of satisfaction among university professors in China on the use of Information Technology in teaching Basic Computer Application courses. The questionnaire was administered to inquire about the employment of Information technology in teaching Basic Computer Application to university teachers in China, with a focus on the students' learning outcomes. The researcher proceeded by following the subsequent measures. The initial phase involves the development of a questionnaire specifically tailored to align with the hypothesis of the study. Therefore, it was developed based on the theories that have been employed in this study. The study demonstrates the utilization of the Blended Teaching Online Based on the Super Star Learning Pass Model for teaching Basic Computer Application at Shunde Technical. The questionnaire is divided into two primary portions with the objective of achieving a certain goal. Section 1: The initial part of the study is to assess students' contentment with online educational platforms. This section consisted of a closed-ended questionnaire that utilized five-point Likert-type scales. The participants were instructed to assess their level of concurrence for each statement using a scale ranging from 1 to 5. The numerical value is denoted as 4.50 on the range scale, while the corresponding verbal interpretation is "Strongly concur." Part 2 consisted of an open-ended questionnaire. The participants were requested to articulate their viewpoints and recommendations about the utilization of information technology for learning, in accordance with the Super Star Learning Pass Model. Prior to attempting the questionnaire, three experts specializing in measurement and evaluation in the fields of education were consulted to assess the suitability of the Basic Computer Application for topic teaching. The acquired data were utilized to compute the Item Objective Congruence index (IOC).The assessment criteria were utilized to assess the alignment between the objectives and items of the exam, specifically through the calculation of the Item Objective Congruence (IOC) index and the verbal interpretation of the questionnaire on teacher satisfaction. The verbal interpretation of the item is deemed to be in alignment with the objectives. An appropriate data set should have a cumulative mean score for the

Item-Objective Congruence (IOC) Index that exceeds 0.95. In the third stage, participants will utilize a questionnaire to assess their level of satisfaction with learning through information technology, based on the Super Star Learning Pass Model. The questionnaires were administered to students at Shunde Polytechnic.

5.2 Conclusion

5.2.1The research seeks to examine the influence of information technology on fundamental computer applications at Shunde Technical by implementing the Super Star Learning Pass Model, which is based on Blended Teaching Online. The main goals consist of three basic objectives: Analyze the efficacy of information technology in Blended Teaching Online, specifically in the context of the Super Star Learning Pass Model for teaching Basic Computer Application at Shunde Technical. 2) Analyze the academic progress of students at Shunde Technical before and after implementing information technology in Blended Teaching Online, specifically using the Super Star Learning Pass Model to teach Basic Computer Application. 3) Assess the degree of contentment among students at Shunde Technical with Blended Teaching Online Based on the Super Star Learning Pass Model for teaching Basic Computer Application. The study's sample comprised 30 students who were enrolled in the Basic Computer Application of Reading program at Shunde Polytechnic in China during the 2022 academic year. The subjects were selected via purposive sampling. The research instruments consisted of three components: (1) evaluating the efficacy of information technology in Blended Teaching Online using the Super Star Learning Pass Model for Basic Computer Application at Shunde Technical, (2) comparing students' academic performance before and after utilizing information technology in Blended Teaching Online based on the Super Star Learning Pass Model for Basic Computer Application at Shunde Technical, and (3) assessing students' satisfaction with information technology in Blended Teaching Online based on the Super Star Learning Pass Model for Basic Computer Application at Shunde Technical. The research aims to examine the effectiveness of information technology in the context of Blended Teaching Online using the Super Star Learning Pass Model. The focus will be on the application of basic

computer skills for Shunde Technical. (2) Evaluate the academic advancement of students before and after using information technology by implementing the Blended Teaching Online Based on the Super Star Learning Pass Model for Basic Computer Application at Shunde Technical., and (3) Assess the satisfaction level of teachers who use information technology through the Blended Teaching Online based on the Super Star Learning Pass Model for teaching basic computer applications at Shunde Technical. The integration of information technology into the framework of Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical demonstrates significant potential for enhancing learning outcomes. This comprehensive assessment has emphasized the potential benefits and importance of this method in the field of Higher Education.

5.2.2 Conformity with Current Educational Standards: Rapid changes are occurring in the global educational landscape, and technology plays a vital role in addressing the demands of the digital age. Shunde Technical acknowledges the importance of staying current and meeting the educational requirements of contemporary students through the implementation of Blended Teaching Online Based on the Super Star Learning Pass Model for Basic Computer Application.

5.2.3 Personalization and adaptability: Blended Online Education This research is based on the Super Star Learning Pass Model for Basic Computer Application in Shunde. The iterative nature of a process allows for continuous modifications and improvements. Adaptability is crucial for effectively addressing the unique demands and obstacles encountered when teaching the subject of Basic Computer Application. Shunde Polytechnic possesses the capacity to tailor its instructional materials and technological implementations to cater to the diverse requirements and learning inclinations of its students.

5.2.4 Enhanced involvement and Interactivity: Information technology provides opportunities for interactive learning activities that can significantly enhance student involvement. By using multimedia, simulations, and online resources, the Basic Computer Application curriculum can be improved by increasing its appeal and accessibility, ultimately leading to improved learning outcomes.

The assessment stage of the Blended Teaching Online the Super Star Learning Pass Model on Basic Computer Application allows Shunde Technical to use the data to make informed decisions about the effectiveness of their technology-enhanced training. Using data in this manner allows for continuous improvement and simplification of the educational process. Worldwide Scope and Ease of Access: Information technology surpasses geographical limitations, hence enhancing the accessibility of educational resources and opportunities. Shunde Polytechnic may leverage technology to establish connections with a wider range of individuals, such as distant learners and overseas students, thereby enhancing the educational experience.

Ensuring the success of children in a technology-dependent environment requires the provision of digital literacy skills. Incorporating information technology into the instruction of Basic Computer Application subjects not only enhances academic achievement but also prepares students with the essential competencies and understanding for their future vocational pursuits. In conclusion, the implementation of information technology, specifically the Blended Teaching Online Based on the Super Star Learning Pass Model, for teaching basic computer application at Shunde Technical is a forward-thinking and academically robust approach. It aligns with the evolving demands of Education, encourages active engagement, and has the potential to significantly enhance students' academic achievement. However, to succeed in the implementation phase, it is essential to commit to thorough analysis, intentional design, precise development, effective execution, and ongoing review. Shunde Polytechnic's dedication to this plan positions it as a leader in pioneering and effective training of Basic Computer Application disciplines, resulting in advantages for both students and the university. Continued research and practical application will enhance and validate the effectiveness of this approach throughout time.

1) Employing the technique of integrated online teaching. The incorporation of information technology (IT) into Basic Computer Application lessons for instructors at Shunde Polytechnic in China requires careful examination from a theoretical standpoint, utilizing the Super Star Learning Pass Model. These viewpoints shape the structure of the IT curriculum and enhance the process of gaining information. Several theoretical views include:

2) Constructivism highlights the need of actively learning via meaningful participation in situations. By integrating IT, students can be encouraged to actively utilize language apps and online resources for Basic Computer Application, participate in collaborative digital projects, and effectively employ technology to tackle obstacles. The online blended education program, utilizing the Super Star Learning Pass Model, specifically targets the instruction of fundamental computer application skills to the students in Shunde. The technical and constructivist approach promotes critical thinking and creativity via the use of engaging and interactive activities. It has the potential to improve students' ability to engage in independent learning, solve problems, collaborate and communicate effectively, acquire information literacy skills, foster creativity and innovation, and develop critical thinking skills.

3) Cognitive Load Theory states that instructional materials should efficiently manage the cognitive load on working memory. The Basic Computer Application lectures at Shunde Polytechnic are enhanced by the integration of IT, which includes multimedia presentations, interactive simulations, and online quizzes. During the design process of Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical, you can choose information technology tools and resources that can assist in learning and retention. This strategy improves students' academic performance, optimizes resource use, encourages active engagement, motivation, fosters collaboration and independent learning, and provides personalized feedback. Students will improve their cognitive capacities, better their academic achievement, and experience enjoyment from the learning process.

4) TRACK combines content, pedagogy, and technology. Teachers at Shunde Polytechnic employ the Super Star Learning Pass Model to apply Blended Teaching Online for the Basic Computer Application course at Shunde Technical. This perspective emphasizes the significance of integrating technology with educational goals and adapting instructional approaches to include information technology. By implementing information technology, integrating Basic Computer Application f language curriculum, and utilizing effective teaching methods, there is the potential to

increase student motivation, offer personalized learning support, optimize study space and time, and enhance learning outcomes and grades.

5) Collectivism prioritizes the significance of networks and digital links in the learning process. Shunde Polytechnic teachers can employ social media, forums, and collaborative technologies to foster relationships among students, teachers, and language resources for Basic Computer Application. Online blended teaching The Super Star Learning Pass Model on Basic Computer Application for Shunde Technical encourages continuous involvement, exchange of information, and practical implementation of IT-enhanced language learning in real-life situations. It possesses the capacity to improve communication between teachers and students, consequently promoting academic advancement and personal development.

6) Ubiquitous learning refers to the ability to learn anytime and anywhere, facilitated by mobile devices and digital resources. The IT-integrated Basic Computer Application classes at Shunde Polytechnic allow students to study and practice using smartphones and tablets. Online blended teaching based on the Super Star Learning Pass model is being implemented for teaching basic computer applications at Shunde Technical. Optimize students' learning efficacy, adaptability, customization, involvement, and innovation.

7) Universal Design for Learning (UDL) advocates for inclusive and accessible education by accommodating diverse learning styles and needs. IT tools can facilitate the representation, engagement, and self-expression of language learners in Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical. This ensures that the IT curriculum is customized to meet the needs of a diverse range of teachers. Teachers have the ability to offer more efficient learning experiences and enhance the overall growth of students. Facilitate significant advancements in student achievement.

The theoretical perspectives inside the Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical paradigm can assist teachers at Shunde Polytechnic in creating a comprehensive and innovative IT-integrated curriculum. Technology is deliberately incorporated to enhance learning results and foster a dynamic and captivating educational environment. Revise

the principles and concepts of information technology. Online blended teaching at Shunde Polytechnic in China is based on the Super Star Learning Pass Model for basic computer application subject. This way of operation not only enhances students' learning and passion, but also significantly enhances their performance. The following text presents a discussion on a study conducted at Shunde Polytechnic in China. The study focuses on the use of the Super Star Learning Pass Model in Blended Teaching Online to enhance learning achievement in the subject of Basic Computer Application for Shunde Technical students. (1) This study aims to assess the effectiveness of using the Blended Teaching Online Based on the Super Star Learning Pass Model for teaching Basic Computer Application at Shunde Technical. (2) The evaluation results indicate the efficiency of the Blended Teaching Online Based on the Super Star Learning Pass Model for teaching Basic Computer Application at Shunde Technical. The mean score of the ongoing assessments was 82.40, while the mean score of the post-tests was 81.33. This suggests a significant improvement in information technology, according to the ADDIE model, in the teaching of Basic Computer Application for enhanced learning achievement among students at Shunde Polytechnic in China. The analysis showed that the efficiency ratio of E1 to E2 was 82.40 to 81.33. In summary, this online learning program, called Blended Teaching Online Based on the Super Star Learning Pass Model, focuses on teaching basic computer applications to students at Shunde Polytechnic in China. The program was developed based on a set of criteria that require a research process to determine the effectiveness of the lessons. The evaluation of the program involved three content experts and three media experts. The content quality assessment of information technology for Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical was examined by three content experts. The overall quality was at an excellent level, with a mean of 4.78 and a standard deviation of 0.23. Upon evaluation, it was determined that the consistency between content and learning objectives, the interesting nature of the content, the accuracy of the content, the appropriateness of the language used for the learners, the consistency of activities with the content, and the completeness of the content overview were all at an excellent level ($\bar{x}$ = 5.00, SD. = .00), respectively. The media quality assessment of the information technology, specifically the Blended Teaching Online Based on the Super

Star Learning Pass Model on Basic Computer Application for Shunde Technical, was examined by three media specialists. The overall quality was at an excellent level, with a mean of 4.50 and a standard deviation of 0.58. Upon evaluation of each item, it was determined that the learning experience provided by the Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical was highly favorable in terms of being comprehensible, user-friendly, straightforward, and having clear and easily understandable details ($\bar{x} = 4.85$, SD. $= .58$). This could be attributed to the quality assessment procedure of information technology as per the Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical. The necessary procedures and processes are routinely implemented to ensure quality assessment by specialists with specialized knowledge. Examine the accomplishments before and after acquiring knowledge using information technology, specifically in relation to the Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical. The learning achievement of information technology was provided based on the Blended Teaching Online using the Super Star Learning Pass Model for Basic Computer Application at Shunde Technical. The average score of the pretests was 8.80, with a standard deviation of 2.33. The utilization of information technology in Blended Teaching Online, based on the Super Star Learning Pass Model, resulted in a significant improvement in the post-test scores of Basic Computer Application for Shunde Technical. The average post-test score was 16.27, with a standard deviation of 14.8. The t-test analysis conducted before and after the treatment showed a significant difference, with a value of 20.68, indicating statistical significance at the .05 level. This phenomenon can be attributed to the implementation of information technology, namely the Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical. This approach allows participants to learn at their own speed and facilitates the attainment of learning goals. Examine the level of contentment among teachers who utilize information technology through the Blended instruction Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical topic instruction, with the aim of improving the academic performance of Shunde Polytechnic students in China. The

assessment results of the students' satisfaction questionnaire on learning with information technology, based on the Blended Teaching Online using the Super Star Learning Pass Model, were conducted on 30 students from Shunde Technical. The focus of the evaluation was on the Basic Computer Application course. The students' satisfaction level was highly agreed upon, with a mean of 4.51 and a standard deviation of 0.50. Upon examination of each item, it was determined that the Basic Computer Application for teaching in information technology exhibits a high degree of agreement ($\bar{x}$ = 4.67, SD. = 0.48) with regards to innovative teaching approaches. Additionally, it was seen that the Basic Computer Application for teaching in information technology offers abundant learning materials. The average degree of agreement was 4.60, with a standard deviation of 0.50. The emerging trends and opportunities facilitate the sharing of ideas and practices and encourage collaboration across different disciplines and domains (Zhang et al., P., 2023).

Recommendations for Future Research: After analyzing and discussing the study's summary, the researcher proposes many proposals for additional investigation: (1) The analysis led to improved teaching methods and courses for IT Basic Computer Application. (2) Our objective is to develop subject-specific teaching resources and tools for IT Basic Computer Application. (3) We aim to devise a teaching strategy for IT Basic Computer Application and gather data to evaluate its effectiveness. (4) The results of the experimental phase will assess the use of information technology in teaching Basic Computer Application. (5) We acknowledge the needs, challenges, and expectations of both teachers and students in IT Basic Computer Application teaching. Student's Basic Computer Application skill was directly influenced by SRL techniques, whereas self-efficacy had an indirect impact. This study proposes strategies for incorporating self-regulated learning (SRL) techniques into the Basic Computer Application curriculum and instruction in order to enhance the self-efficacy of Thai English as a Foreign Language (EFL) students (Li et al.; K., 2023).

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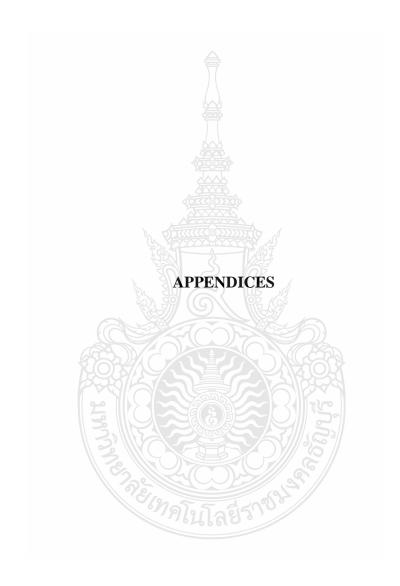
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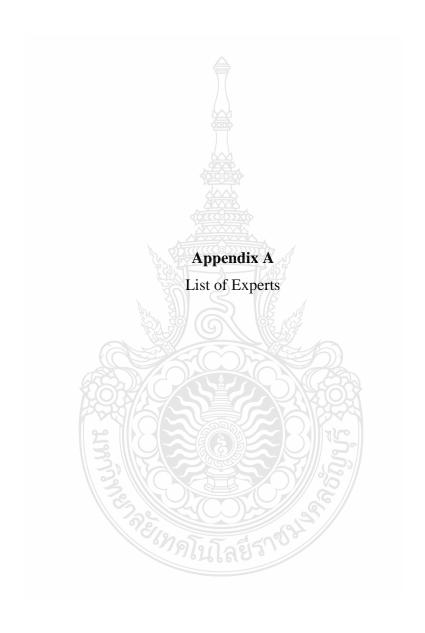
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APPENDICES

Appendix A

List of Experts

List of Experts

No.	Name of experts	Address / Position of work, /Email
1	Zijian Chen	Shunde District/Shunde Vocational and Technical College of Marxism teaching and research department director/526958109@qq.com /Assoc.Prof
2	Luoxian Chen	Shunde District/Deputy director of logistics Department of Shunde Vocational and Technical College/77080027@qq.com/Assoc.Prof
3	Jiawei Li	Shunde District/Vice Dean, School of Energy and Automotive Engineering, Shunde Vocational College of Technology/434849949@qq.com/Assoc.Prof
4	Jinghao Qiu	Shunde District/Vice Dean of School of Humanities, Shunde Vocational and Technical College/259222398@qq.com/Assoc.Prof
5	Shirui Wu	Shunde District/Vice President of Intelligent Manufacturing College of Shunde Vocational and Technical College58206656@qq.com/Assoc.Prof
6	Zean Chen	Shunde District/Vice President of School of Foreign Language and Foreign Trade, Shunde Vocational and Technical College/2704370365@qq.com/Assoc.Prof
7	Yulian Wen	Shunde District/Vice Dean of Business School, Shunde Vocational and Technical College/467959514@qq.com/Assoc.Prof
8	Yunxuan Zhong	Shunde District/Vice President, School of Hotel and Tourism Management, Shunde Vocational and Technical College/814318788@qq.com/Assoc.Prof
9	Gunagya Chen	Shunde District/Vice Dean of School of Light Chemical and Material, Shunde Vocational and Technical College/1806322210@qq.com/Assoc.Prof

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15 July, 2023

Dear Prof. Dr. Anjisen. Shunde District/Deputy Director of the Teaching and Research Office of the School of Marxism, Shunde Vocational and Technical College.

Subject: Respectfully requesting a letter of invitation of experts for Ph.D. Dissertation

I am writing to request your assistance as an honorary external research reviewer in evaluating the research instruments of Mr. Sun He, Master of Education Program in Technology and Learning Innovation Rajamangala University of Technology Thanyaburi, who has been working on the dissertation titled "Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical Vocational College". under the supervision of Assistant Professor Dr. Thosporn Sangsawang. In this regard, I would like to request your valuable time to evaluate the research instruments as I strongly believe that your expertise will be of great value in improving the research instruments.

If you have any questions or need further information, please feel free to contact Mr. Sun He on the e-mail: Sun_h@mail.rmutt.ac.th

Yours sincerely,

(Assistant Professor Arnon Niyomphol)
Dean of Faculty of Technical Education

MHESI 0910.37/2023

Office of the Dean, Faculty of Technical Education
Rajamangala University of Technology Thanyaburi
Klong Luang, Pathum Thani 12110 Thailand
Tel:+66-2-549-4710 Fax:+66-2-577-5049

15 July, 2023

Dear Prof. Dr. YaoTian. Shunde District/ Shunde Vocational and Technical College School of
Continuing Education Self-taught Associate to Undergraduate Academic Assistant.

Subject: Respectfully requesting a letter of invitation of experts for Ph.D. Dissertation

     I am writing to request your assistance as an honorary external research reviewer in
evaluating the research instruments of Mr. Sun He, Master of Education Program in Technology
and Learning Innovation Rajamangala University of Technology Thanyaburi, who has been
working on the dissertation titled "Blended Teaching Online Based on the Super Star Learning
Pass Model on Basic Computer Application for Shunde Technical Vocational College". under
the supervision of Assistant Professor Dr. Thosporn Sangsawang. In this regard, I would like to
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expertise will be of great value in improving the research instruments.

     If you have any questions or need further information, please feel free to contact
Mr. Sun He on the e-mail: Sun_h@mail.rmutt.ac.th

Yours sincerely,

(Assistant Professor Arnon Niyomphol)
Dean of Faculty of Technical Education

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Rajamangala University of Technology Thanyaburi
Klong Luang, Pathum Thani 12110 Thailand
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15 July, 2023

Dear Prof. Dr. Jiaolike. Shunde District/Head of Electronics Major, School of Intelligent Manufacturing, Shunde Vocational and Technical College.

Subject: Respectfully requesting a letter of invitation of experts for Ph.D. Dissertation

I am writing to request your assistance as an honorary external research reviewer in evaluating the research instruments of Mr. Sun He, Master of Education Program in Technology and Learning Innovation Rajamangala University of Technology Thanyaburi, who has been working on the dissertation titled "Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical Vocational College". under the supervision of Assistant Professor Dr. Thosporn Sangsawang. In this regard, I would like to request your valuable time to evaluate the research instruments as I strongly believe that your expertise will be of great value in improving the research instruments.

If you have any questions or need further information, please feel free to contact Mr. Sun He on the e-mail: Sun_h@mail.rmutt.ac.th

Yours sincerely,

(Assistant Professor Arnon Niyomphol)
Dean of Faculty of Technical Education

MHESI 0910.39/2023

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Klong Luang, Pathum Thani 12110 Thailand
Tel:+66-2-549-4710 Fax:+66-2-577-5049

15 July, 2023

Dear Prof. Dr. ZhouQinQing. Shunde District/Dean of the School of Continuing Education of Shunde Vocational and Technical College.

Subject: Respectfully requesting a letter of invitation of experts for Ph.D. Dissertation

I am writing to request your assistance as an honorary external research reviewer in evaluating the research instruments of Mr. Sun He, Master of Education Program in Technology and Learning Innovation Rajamangala University of Technology Thanyaburi, who has been working on the dissertation titled "Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical Vocational College". under the supervision of Assistant Professor Dr. Thosporn Sangsawang. In this regard, I would like to request your valuable time to evaluate the research instruments as I strongly believe that your expertise will be of great value in improving the research instruments.

If you have any questions or need further information, please feel free to contact Mr. Sun He on the e-mail: Sun_h@mail.rmutt.ac.th

Yours sincerely,

(Assistant Professor Arnon Niyomphol)
Dean of Faculty of Technical Education

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MHESI 0910.40/2023

Office of the Dean, Faculty of Technical Education
Rajamangala University of Technology Thanyaburi
Klong Luang, Pathum Thani 12110 Thailand
Tel:+66-2-549-4710 Fax:+66-2-577-5049

15 July, 2023

Dear Prof. Dr. Zhongjianghong. Shunde District/Director of the Computer Application Technology Teaching and Research Section of Shunde Vocational and Technical College.

Subject: Respectfully requesting a letter of invitation of experts for Ph.D. Dissertation

I am writing to request your assistance as an honorary external research reviewer in evaluating the research instruments of Mr. Sun He, Master of Education Program in Technology and Learning Innovation Rajamangala University of Technology Thanyaburi, who has been working on the dissertation titled "Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical Vocational College". under the supervision of Assistant Professor Dr. Thosporn Sangsawang. In this regard, I would like to request your valuable time to evaluate the research instruments as I strongly believe that your expertise will be of great value in improving the research instruments.

If you have any questions or need further information, please feel free to contact Mr. Sun He on the e-mail: Sun_h@mail.rmutt.ac.th

Yours sincerely,

(Assistant Professor Arnon Niyomphol)
Dean of Faculty of Technical Education

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MHESI 0910.41/2023

Office of the Dean, Faculty of Technical Education
Rajamangala University of Technology Thanyaburi
Klong Luang, Pathum Thani 12110 Thailand
Tel:+66-2-549-4710 Fax:+66-2-577-5049

15 July, 2023

Dear Prof. Dr. Lijinyang. Shunde District/Director of the Applied Electronic Technology
Teaching and Research Section of Shunde Vocational and Technical College.

Subject: Respectfully requesting a letter of invitation of experts for Ph.D. Dissertation

    I am writing to request your assistance as an honorary external research reviewer in
evaluating the research instruments of Mr. Sun He, Master of Education Program in Technology
and Learning Innovation Rajamangala University of Technology Thanyaburi, who has been
working on the dissertation titled "Blended Teaching Online Based on the Super Star Learning
Pass Model on Basic Computer Application for Shunde Technical Vocational College". under
the supervision of Assistant Professor Dr. Thosporn Sangsawang. In this regard, I would like to
request your valuable time to evaluate the research instruments as I strongly believe that your
expertise will be of great value in improving the research instruments.

    If you have any questions or need further information, please feel free to contact
Mr. Sun He on the e-mail: Sun_h@mail.rmutt.ac.th

Yours sincerely,

(Assistant Professor Arnon Niyomphol)
Dean of Faculty of Technical Education

MHESI 0910.42/2023

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Rajamangala University of Technology Thanyaburi
Klong Luang, Pathum Thani 12110 Thailand
Tel:+66-2-549-4710 Fax:+66-2-577-5049

15 July, 2023

Dear Prof. Dr. Luoyongsheng. Shunde District/Director of the Computer Network Technology Teaching and Research Section of Shunde Vocational and Technical College.

Subject: Respectfully requesting a letter of invitation of experts for Ph.D. Dissertation

I am writing to request your assistance as an honorary external research reviewer in evaluating the research instruments of Mr. Sun He, Master of Education Program in Technology and Learning Innovation Rajamangala University of Technology Thanyaburi, who has been working on the dissertation titled "Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical Vocational College". under the supervision of Assistant Professor Dr. Thosporn Sangsawang. In this regard, I would like to request your valuable time to evaluate the research instruments as I strongly believe that your expertise will be of great value in improving the research instruments.

If you have any questions or need further information, please feel free to contact Mr. Sun He on the e-mail: Sun_h@mail.rmutt.ac.th

Yours sincerely,

(Assistant Professor Arnon Niyomphol)
Dean of Faculty of Technical Education

MHESI 0910.43/2023

Office of the Dean, Faculty of Technical Education
Rajamangala University of Technology Thanyaburi
Klong Luang, Pathum Thani 12110 Thailand
Tel:+66-2-549-4710 Fax:+66-2-577-5049

15 July, 2023

Dear Prof. Dr. WuShunNan. Shunde District/Teacher at Shunde Vocational and Technical College Computer Management Center.

Subject: Respectfully requesting a letter of invitation of experts for Ph.D. Dissertation

I am writing to request your assistance as an honorary external research reviewer in evaluating the research instruments of Mr. Sun He, Master of Education Program in Technology and Learning Innovation Rajamangala University of Technology Thanyaburi, who has been working on the dissertation titled "Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical Vocational College". under the supervision of Assistant Professor Dr. Thosporn Sangsawang. In this regard, I would like to request your valuable time to evaluate the research instruments as I strongly believe that your expertise will be of great value in improving the research instruments.

If you have any questions or need further information, please feel free to contact Mr. Sun He on the e-mail: Sun_h@mail.rmutt.ac.th

Yours sincerely,

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Dean of Faculty of Technical Education

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Klong Luang, Pathum Thani 12110 Thailand
Tel:+66-2-549-4710 Fax:+66-2-577-5049

15 July, 2023

Dear Prof. Dr. Fengmanfu. Shunde District/Equipment maintenance teacher at Shunde Vocational and Technical College Computer Management Center.

Subject: Respectfully requesting a letter of invitation of experts for Ph.D. Dissertation

     I am writing to request your assistance as an honorary external research reviewer in evaluating the research instruments of Mr. Sun He, Master of Education Program in Technology and Learning Innovation Rajamangala University of Technology Thanyaburi, who has been working on the dissertation titled "Blended Teaching Online Based on the Super Star Learning Pass Model on Basic Computer Application for Shunde Technical Vocational College". under the supervision of Assistant Professor Dr. Thosporn Sangsawang. In this regard, I would like to request your valuable time to evaluate the research instruments as I strongly believe that your expertise will be of great value in improving the research instruments.

     If you have any questions or need further information, please feel free to contact Mr. Sun He on the e-mail: Sun_h@mail.rmutt.ac.th

Yours sincerely,

(Assistant Professor Arnon Niyomphol)
Dean of Faculty of Technical Education

Biography

Name-Surname	Mr. Sunhe
Date of Birth	Jun 23, 1996
Address	Meile New Village, Fengxiang South Road, Ronggui, Shunde District, Foshan City, Guangdong Province, China
Education	Bachelor degree, human resource Management
Work Experience	Course administrator, Shunde Vocational and Technical College, Daosheng East Road, Daliang Street, Shunde District, Guangdong, China (2019-2024)
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