

## Information technology, according to the ADDIE model on English subject teaching, enhances the learning achievement of Shunde Polytechnic students in China.

**Jianming FENG**

*Learning Technology and Innovation Division, Faculty of Technical Education, Rajamangala University of Technology Thanyaburi, Pathum Thani, 12110, Thailand*

*Jianming\_f@mail.rmutt.ac.th, ORCID:0009-0007-4494-4088*

**Thosporn SANGSAWANG\*(Corresponding author)**

*Educational Technology and Communications Division, Faculty of Technical Education, Rajamangala University of Technology Thanyaburi, Pathum Thani, 12110, Thailand*

*sthosporn@rmutt.ac.th, ORCID:0000-0002-7926-6949*

### ABSTRACT

The objectives of this study were to (1) investigate the efficiency of information technology according to the ADDIE model on English subjects to Shunde Polytechnic students in China, (2) compare students' achievements before and after learning through information technology according ADDIE model on English subject for enhance learning achievement of Shunde Polytechnic students in China, and (3) examine students' satisfaction with of using information technology according ADDIE model on English subject teaching for enhance learning achievement of Shunde Polytechnic students in China. The sample comprised 30 students at Shunde Polytechnic in China, derived through a purposive sampling technique. The instruments used for collecting the data were (1) The information technology according ADDIE model on English subjects for enhanced learning achievement, a student's pretest and a post-test, and a teacher satisfaction form. The statistics used for analyzing the data were percentage, mean, standard deviation, and the t-test for the dependent sample. The research findings revealed that applying basic information technology according to the ADDIE model on English subjects to enhance learning achievement was efficient by E1/E2 (82.40/81.33). The evaluation of content the information technology according to the ADDIE model on English subject teaching by the experts was totally appropriate at the excellent level ( $\bar{x}=4.78$ , SD. = .58), and the evaluation of media by the experts was totally appropriate at the excellent level ( $\bar{x}=4.50$ , SD. = .58). After learning the application, the students' achievements were higher than before. The mean and standard deviation for before learning were 8.80 and 2.33, while for after learning, they were 16.27 and 1.48. The t-test score between before and after learning was 20.68, with a significant difference at the .05 level. According to Shunde Polytechnic, teachers' satisfaction with information technology according to the ADDIE model on English subjects for enhanced learning achievement was high, with a mean of 4.51.

**Keywords:** Information Technology, ADDIE model, English subject

### INTRODUCTION

The teaching concept and the teaching method of Chinese higher Education have undergone significant transformations as a direct result of the widespread application of information technology, such as big data, cloud services, and social networks. The teaching of English as a topic in colleges and universities has started to shift toward a more individualized and diverse development because of the proliferation of new learning methods such as mobile learning, ubiquitous learning, Online Education, and flipped classrooms. Teachers of English as a subject at colleges and universities, as well as their students, have generally acknowledged and embraced the "Internet and education" paradigm of teaching English as a subject in colleges. The teaching that occurs before, during, and after English classes in college has been the focus of several recent improvements and innovations in the field. The lightning-fast advancement of information technology serves as a backdrop for this event, which is currently taking place. The "online plus offline" hybrid teaching approach provides a platform that is both convenient and rich in educational resources with the goal of expanding classroom learning beyond the traditional paradigm of a single offline course. This allows for the expansion of classroom learning beyond the typical single offline course. Such extensive resources not only provide a more humanized kind of technical support for the classroom instruction that college English teachers deliver, but they also consistently optimize both the classroom instruction that college English teachers deliver for the English topic as well as the classroom instruction that they deliver for the English subject. This, in turn, calls for the constant development and strengthening of the information abilities of college English teachers to connect digital material more effectively with English topic training. In addition, the teaching of English in colleges and universities should continue to make use of contemporary technology, namely the role that information technology plays in the instruction of non-native speakers. It is becoming increasingly important to investigate whether, to what extent, and under which moderator variables computer-assisted language learning (CALL) can produce more effective outcomes than traditional language instruction.

Over the past few decades, more and more different types of computer-assisted language learning (CALL) programs have been incorporated into language classrooms. One of the most significant problems that technology attempts to solve is that of Education.

A meta-analysis, on the other hand, is a statistical and quantitative procedure that integrates the findings of several separate research projects to reach a single overarching conclusion. Researchers looked at 67 articles and these out of a total of 1,000 works that had relevant titles and abstracts to compile their findings for this investigation into the effects of educational technology on the teaching of the English language. From 2009 to 2020, each publication and thesis were considered for inclusion in this study; however, due to a lack of information, seven of the articles were not considered. In addition, SPSS (particularly its sub-branch, Kruskal-Wallis's test) and CMA were the two tools that were utilized to calculate and analyze the data collected for this study. The total effect size that was computed for studies under both fixed and random models was statistically significant. In addition, the analysis of impacts that were broken down according to the year in which they were published, the instruments used in research, and the research techniques showed that the effect size of those factors was significant. Technology-assisted English instruction has demonstrated both an effective effect size and the efficacy of this technology in the context of language learning (Rahmati et al., A., 2021).

English serves a significant purpose in the overall application process because it is a language topic. The education method that is primarily utilized in college English classes is that of indoctrination teaching in big groups. This is because college English is a public basic course. The assumption that Education should be focused on passing tests is strongly ingrained; teachers have a dominant position in the classroom, and students and teachers struggle to communicate effectively. The inability to increase pupils' comprehensive English language skills can have a favorable influence on the academic advancement and career development of such students. The advent of modern information technology has brought with it the potential to provide technical assistance and knowledge reserves. These two factors have contributed to the improvement of college English topic teaching material, the innovation of education models, and the strengthening of students' comprehensive application abilities. Teachers and students in colleges and universities should make full use of the auxiliary role that modern information technology plays in classroom teaching, after-class tutoring, practical application, and communication. In addition, teachers and students should take basic English knowledge reserve, application ability improvement, and cultural exchange integration as the main improvement spaces to effectively improve the performance of college English subject teaching. Students in college English classes rely mostly on memorization, and application assignments often consist of material reading and topic writing.

The traditional exam-oriented education ideology limits the communication aspect of English as a language subject and focuses exclusively on the English completion test as well as CET-4 and CET-6, ignoring the practical demand for English application ability in the admissions process, the employment market, and cultural interactions. Although English for Medical Purposes courses are becoming increasingly popular among nurses and nursing students in the East Asian region, relatively little study has been conducted to evaluate whether these courses suit the pragmatic or learning demands of students. This study aims to showcase the specific learning objectives and pragmatic needs of 66 South Korean nursing students who attended the Medical English course. The study analyzes the data collected from questionnaires and interviews to highlight the values and conventions of the discourse community that the students are trying to learn. According to the findings of the study, most students agree that there is a need for English for Specific Purposes courses; however, they report that the current courses do not fully fit their needs and expectations due to (a) an English-only classroom policy, (b) limited academic literacy in English, and (c) non-localized materials. While the majority of students agree that there is a need for these courses, they also report that the current courses do not fully fit their needs and expectations. The findings help language educators, policymakers, and researchers in the East Asian region better understand the importance of looking at the specificity of English for Medical Purposes courses and the student's unique needs, and they provide them with suggestions for enhancing the effectiveness and specificity of English for Medical Purposes courses (Choi, L., 2021).

However, although the country strongly advocates and develops higher education informatization, college English teachers cannot rapidly improve their informatization ability in a short time due to subjective, objective, or other factors. In addition, how to combine informatization with teaching reasonably and flexibly use informatization in teaching practice has become an urgent problem to be solved. All these problems will lead to the organic combination of these convenient resources and English subject teaching in the era of big data. However, due to subjective or objective factors, modern means cannot be combined with college English subject teaching, which to a certain extent also reflects that college English teachers' informatization awareness and ability need to be improved.

## LITERATURE REVIEW

The Use of Information Technology According to the ADDIE Model in English Subject Teaching to Enhance Learning Achievement of Shunde Polytechnic Students in China. Information technology has significantly transformed the landscape of Education worldwide. The integration of technology in pedagogy has become increasingly essential in fostering effective learning environments. Shunde Polytechnic, situated in China, recognizes the importance of harnessing technology to enhance English subject teaching and subsequently improve learning achievement among its students. This literature review aims to explore the use of information technology, guided by the ADDIE model, in English subject teaching to boost the learning outcomes of Shunde Polytechnic students.

### The Role of Information Technology in Education

Shunde Polytechnic makes use of digital resources to improve English subject teaching, thereby bridging geographic distances and providing a variety of educational tools. By boosting student involvement, interaction, and access to resources, this technology makes English education more efficient. The proliferation of mobile technology over the last decade has created a window of opportunity to usher Education into the 21st century. When it comes to the art of teaching and learning English, the incorporation of mobile technology creates a unique environment for Education on the part of both teachers and the students they teach. This is true for both parties involved. Because of this, carrying out an exhaustive evaluation of works that have been published in the past is necessary to discover areas where mobile technology might be utilized more effectively in English language teaching and training. The objective of this research is to carry out a Systematic Literature Review (SLR) to determine the fundamental factors that influence the teaching and learning of English through the utilization of mobile technology, as well as the existing research that contributes to the solution of the problems. According to the findings, making available appropriate educational technology is one of the most important critical success factors that can improve English Education and instruction. This paper identifies the most significant limitations and gaps that exist in the existing research on teaching and learning English through the use of mobile technologies (Shahrol et al.; H., 2020).

### The ADDIE Model in Educational Design

Analysis, Design, Development, Implementation, and Evaluation make up the five stages that make up the ADDIE model, which is a well-known framework for the instructional design process. This model offers an organized approach to the development of curricula and instructional methods, which makes it an appropriate framework for the implementation of technology-enhanced English subject teaching. Educators at Shunde Polytechnic would evaluate their students' individual learning goals and requirements during this stage of the process. It would be helpful for the process of technology selection and integration to understand the specific difficulties and requirements associated with teaching English at the institution. During this step of the process, the educators at Shunde Polytechnic would assess the specific learning goals and requirements of their students. Understanding the specific challenges and requirements associated with teaching English at the university would be beneficial for the process of selecting and integrating technology. This would be helpful since it would be helpful.

**Design:** The design phase involves creating a blueprint for the instructional materials and technology applications. Educators would determine the most appropriate digital resources, platforms, and tools to achieve the desired learning outcomes.

**Development:** During this phase, educational content and technology applications are developed according to the design specifications. Shunde Polytechnic instructors would create digital lessons, multimedia resources, and interactive activities tailored to the English subject curriculum.

**Implementation:** Instructors would introduce the technology-enhanced materials into their teaching methodologies. This phase requires adequate training for both teachers and students to ensure a smooth integration of technology.

**Evaluation:** Continuous assessment is crucial in the ADDIE model. Shunde Polytechnic would employ formative and summative evaluations to measure the effectiveness of the technology-enhanced instruction. Feedback from students and instructors would guide improvements in the curriculum and technology implementation.

### Impact on Learning Achievement

Multiple studies have pointed to the beneficial effects that incorporating technology into classroom instruction can have on students' overall levels of academic attainment. The utilization of multimedia, interactive simulations, and internet resources can boost student engagement, retention, and comprehension. Because of the use of the ADDIE approach in conjunction with information technology, Shunde Polytechnic can anticipate an improvement in the English language competency of its students as well as an overall improvement in their academic performance.

Students at Shunde Polytechnic can improve their academic performance thanks to the incorporation of information technology into the teaching of the English subject. This incorporation follows the guidelines of the ADDIE model. The educational institution can generate a stimulating and interesting learning environment by conducting an in-depth needs assessment of their student body, generating technologically improved course materials and resources, ensuring that technology is properly implemented, and analyzing the results of these efforts. The dedication of Shunde Polytechnic to utilizing technological advancements for the purpose of enhancing the teaching of English subjects is an important step toward securing a more promising educational future for the institution's student body. Validating the efficacy of this strategy and honing its use will require additional research as well as case studies. The ADDIE has five steps: Analysis, Design, Development, Implementation, and Evaluation. This research involves only analysis and design. This survey included Patuk 4 Public Middle School seventh graders. Data-gathering tools include observation sheets, interview guidelines, and validation sheets. The ADDIE approach has customized instructional materials to student characteristics, according to Core Competencies (KI), Basic Competencies (KD), Competency Achievement Indicators, table of contents, module activities, evaluation, and summary comprise the design. Statistics teaching uses RME processes to promote students' critical thinking. This research can continue during learning development, implementation, and evaluation (Hikayat et al.; H., 2020).

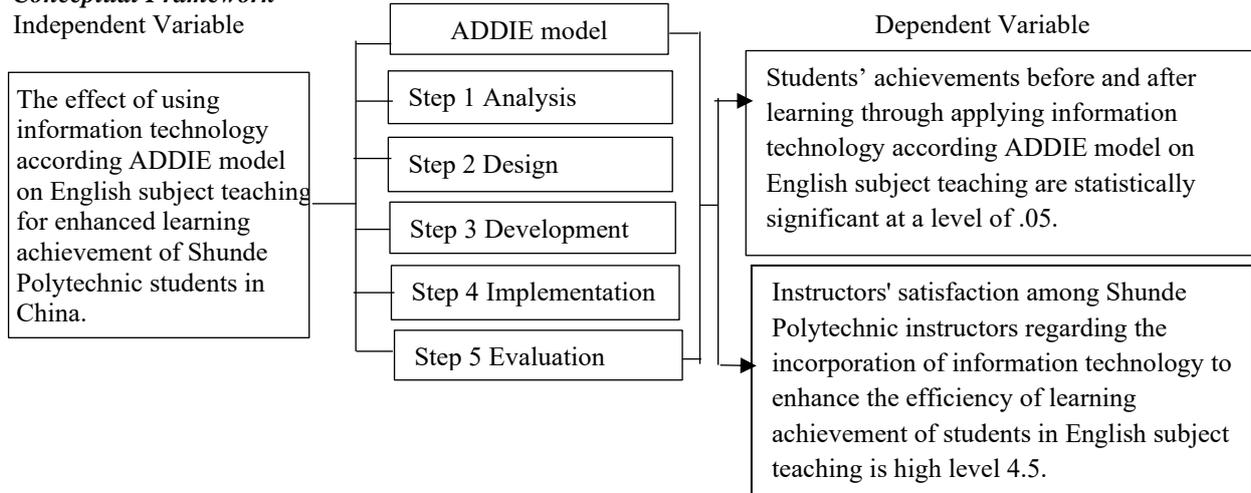
## METHODOLOGY

### *Research Questions and Hypothesis*

There are three research hypotheses as to the following:

- 1) The practical impact of applying information technology according ADDIE model on English subject teaching to enhance the learning achievement of Shunde Polytechnic students in China is statistically significant at a level of .05.
- 2) The level of satisfaction among Shunde Polytechnic students in China about information technology according to the ADDIE model on English subject teaching is high.

### *Conceptual Framework*



**Figure 1.1** Conceptual framework of the effect of using information technology according to the ADDIE model on English subject teaching to enhance learning achievement of Shunde Polytechnic students in China.

### *Theoretical Perspective*

Using the ADDIE method to integrate IT into English classes for Shunde Polytechnic teachers in China requires theoretical consideration. These viewpoints shape the IT curriculum and enhance learning. Theoretical viewpoints include:

- 1) Constructivism stresses active learning through meaningful experiences. IT integration can inspire students to use English language apps and resources online, collaborate on digital projects, and solve problems using technology. The ADDIE model and constructivist approach promote critical thinking and creativity through interactive and engaging activities. It can promote students' self-directed learning ability, problem-solving ability, cooperation and communication ability, information literacy, creativity and innovation ability, and critical thinking ability.
- 2) Cognitive Load Theory: Instructional materials should manage working memory. Shunde Polytechnic IT-integrated English lessons benefit from multimedia presentations, interactive simulations, and online quizzes. You can choose IT tools and resources to learn and remember in ADDIE's design phase. This strategy improves student learning outcomes, resource utilization, engagement, motivation, cooperative and self-directed

learning, and personalized feedback. Students will learn and develop cognitive skills better, increase academic achievement, and enjoy learning.

- 3) TRACK combines content, pedagogy, and tech. Shunde Polytechnic teachers use ADDIE to merge IT, English language curriculum, and efficient teaching. This perspective emphasizes connecting technology to learning goals and changing pedagogy to employ IT. Information technology, English language curriculum, and good teaching methods can boost student motivation, tailored learning support, learning space and time, and learning outcomes and grades.
- 4) Collectivism stresses networks and digital links in learning. Shunde Polytechnic teachers can connect students, teachers, and English language resources using social media, forums, and collaborative technologies. ADDIE's implementation phase encourages continual interaction, information sharing, and real-world applications of IT-enhanced language learning. It can strengthen the communication between teachers and students and promote the learning effect and personal development of students.
- 5) Ubiquitous Learning; Mobile devices and digital resources enable anytime, anywhere learning. IT-integrated English classes at Shunde Polytechnic enable students' study and practice on phones and tablets. ADDIE's evaluation phase can show if ubiquitous learning improves English. Enhance students' learning efficiency, flexibility, personalization, engagement, and creativity.
- 6) Universal Design for Learning (UDL) promotes inclusive and accessible Education by accommodating varied learning styles and demands. IT tools can help English language learners represent, participate, and express themselves in ADDIE. This guarantees that the IT curriculum is tailored to a wide spectrum of teachers. Teachers can provide more effective learning opportunities and promote the overall development of students. Let the student achievement have greater progress.

These theoretical viewpoints inside the ADDIE paradigm can help Shunde Polytechnic English teachers develop a well-rounded and innovative IT-integrated curriculum. Technology is strategically integrated to improve learning outcomes and create a dynamic and engaging educational experience. Rewrite IT theory. ADDIE model for Shunde Polytechnic English subject teaching in China. This mode of operation not only lets the students increase learning and enthusiasm but also lets the students greatly improve their performance.

### ***Research of Methodology***

The research methods used in this paper include literature analysis, observation, interview, and field research. Mainly based on article analysis and practical teaching experience, this paper explores the value and significance of the application of information technology in teaching English subjects.

- 1) The population: The population of this study was 120 students in grade 22 of English majors in the academic year 2023 of Shunde Polytechnic students in China. The sample of this study was 30 students in grade 22 of English majors 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.
- 2) The research instruments consisted of (1) the effect of using information technology in teaching English subjects to enhance learning achievement of Shunde Polytechnic students in China, and (2) the content and media quality questionnaire for information technology according to ADDIE model on English subject teaching to enhance learning achievement of Shunde Polytechnic students in China.
- 3) learning achievement questionnaire of students between pretest and post-test scores using information technology in teaching English subjects.
- 4) Satisfaction questionnaires to assess the student's level of information technology in teaching English subject. The data were analyzed using E1/E2, Mean, Standard Deviation, and t-test. Variables: Independent Variables are information technology according to the ADDIE model on English subject teaching for enhanced learning achievement of Shunde Polytechnic students in China. Dependent Variables are (1) the learning achievement of students towards information technology in teaching English subjects, and (2) the student's satisfaction with the information technology in teaching English subjects. Content. The integration of information technology in college English teaching not only enhances the theoretical framework but also propels the further development of information technology. By investigating this amalgamation, we gain a better understanding of the practical application of information technology in college English teaching, as well as its ongoing development and changes. This also helps to identify any critical issues in current information teaching and to summarize teaching experiences, mitigating the shortcomings of traditional teaching methods while exploring the English teaching theory within the context of information technology. As such, this enriches and enhances the theory of education and teaching informatization, ultimately leading to an effective improvement in English scores. Performance.

Data amassment: 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 the information technology in teaching English subject, 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 information technology in teaching English subject to enhance learning achievement of Shunde Polytechnic students to learn by themselves. (1) A request for cooperation with 120 students from Shunde Polytechnic in China., (2) Plan to use information technology according to the ADDIE model on English subject teaching to enhance the learning achievement of Shunde Polytechnic students in China., and (3) Process learning by using information technology in teaching English subjects; there are three steps: the goal of learning, creative thinking, construction knowledge; pretest; post-test; assess students' satisfaction; check pretest and post-test.

### **Data analysis**

The statistics used to analyze data.

- 1) To The efficiency of using information technology to enhance the learning achievement of students in the English language according to criteria experiment by E1/E2.
- 2) Compare the learning achievement of students using information technology in teaching English subjects between pretest and post-test by t-test.
- 3) To assess the students' satisfaction through the information technology according to the ADDIE model on English subject teaching by mean and standard deviation.

### **Definition Perspective**

The study discusses information technology, English subject teaching, and students' acceptance. 30 Guangdong-based Shunde Polytechnic students were examined. Shunde Polytechnic evaluated August-July 2023. Computer networks and software store, transfer and apply data. Current research outputs and accomplishments in a sector or subject are compiled and analyzed to determine research status at home and abroad. Theoretical foundations guide field research and practice. It contains several theoretical perspectives and models established by researchers and practitioners via significant research. Information technology, meaning information Technology (IT), refers to the technologies and tools involved in processing, storing, transmitting, and managing information. These technologies include computer science and software development, hardware devices, network communications, and technical applications related to information. It plays a vital role in modern society. It covers a range of fields, including but not limited to the following aspects (1) Computer science, including programming, algorithm design, data structure, artificial intelligence, computer graphics, etc., dedicated to the development and improvement of computer software and hardware., (2) Network communication: Involves the construction, management, and maintenance of computer networks, including the Internet, local area network, wide area network, etc., to achieve the transmission and sharing of information between different devices., (3) Database Management: This field focuses on how to organize, store, and manage large amounts of data, ensuring its security and accessibility. (4) Software development: Develop applications, mobile applications, websites, etc., to meet the needs of people in different fields., (5) Information security: Focuses on protecting information from unauthorized access, tampering and destruction, including network security, data encryption, etc., (6) Hardware technology: Includes the design, manufacture, and maintenance of computer hardware components, e.g., processors, memory, storage devices, etc., (7) Human-computer interaction; Creating user-friendly interfaces for computer systems and applications., and (8) Digital transformation: Helping organizations and enterprises use information technology to optimize business processes and improve efficiency to meet the requirements of modern digitalization.

The ADDIE Model is a widely used instructional design framework that stands for Analysis, Design, Development, Implementation, and Evaluation. It provides a structured approach to creating effective educational materials and courses. When applying the ADDIE Model of Information Technology (IT) instruction in teaching English subjects to Shunde Polytechnic teachers in China, follow these steps (1) Analysis: The analysis identified the specific needs and objectives of Shunde Polytechnic teachers related to IT teaching and learning for the English language subject. Understand existing knowledge and skills. Identify the most relevant and useful tools, technologies, and IT resources to enhance English language teaching., (2) Design a comprehensive plan that outlines the overall structure of the IT instruction for the English subject. Define the scope, learning objectives, and expected outcomes. Decide on the appropriate instructional strategies, methods, and content that align with the needs and goals of the teachers. Create a syllabus or curriculum outline that outlines the topics to be covered and the sequence of instruction., (3) Development of teaching materials and real resources, Creating presentations, videos, interactive events, online modules, and other content. Choose the IT tools and platforms to use to deliver recommendations, such as learning management systems. Communication tools and collaboration platform., (4) Implementation: Delivering IT guidance to Shunde Polytechnic professors, hosting workshops, training, and online webinars. Providing access to online resources and the support and guidance needed to effectively use IT tools and technologies in teaching English., and (5) Evaluation; IT teaching affects English teacher tech integration. Assess and improve Help Shunde Polytechnic instructors customize courses. Technology-based English instruction boosts teachers' IT skills and confidence.

The English subject encompasses teaching content and objectives centered around the English language. Typically,

the subject covers listening, speaking, reading, writing, comprehension, and communication skills. It aims to enhance students' English language proficiency, including vocabulary, grammar, and pronunciation. In the education system, English is taught from primary to high school, with the teaching objectives and content varying according to the student's age and learning stage. English-related courses are also available at the university level to develop students' intercultural communication skills and professional English proficiency.

Shunde Polytechnic Teachers in China, meaning the Shunde Polytechnic, is an undergraduate institution situated in Foshan City's Shunde District in Guangdong Province, China. As a prestigious university with a rich history and excellent educational resources, Shunde Polytechnic boasts a team of highly qualified and professional educators. The faculty consists of professors, associate professors, lecturers, and various full-time teachers with extensive teaching experience and a diverse range of subject expertise. They typically hold master's or doctoral degrees from renowned universities and have distinguished themselves through academic research and practice. The faculty is devoted to providing superior teaching and actively engages in scientific research and academic exchange. They have earned a significant standing in the academic community and regularly participate in conferences, publish papers, and advance the discipline through innovation. Additionally, Shunde Polytechnic faculty members play active roles in school management and community service. They assume leadership positions in colleges and departments, organize various educational activities, shoulder social responsibilities, and make valuable contributions to the school's development and the local society's prosperity.

### ***Significance of the Study***

The research focuses on the following (1) This study outlines a teaching approach through the implementation of information technology according ADDIE model on English subject teaching. Currently, the field of information technology education is experiencing a period of significant progress. To effectively obtain large-scale and high-quality data and construct the optimal framework, we must gain theoretical grounding on foreign language instruction using information technology and big data analysis. To this end, we need to utilize information technology and big data technology, continually update, and improve the information systems, enhance teaching efficacy and overall quality, address various issues encountered during foreign language education and enhance learning achievement by students., (2) In information technology, according to ADDIE model on English subject teaching, teachers with their students recognize the formidable advantages that it ushers. Not only does it provide a fitting framework to learn and apply English, but it also effectively reinforces the proficiency of teachers themselves. By utilizing information technology in a manner that is both sensitive and appropriate, both teachers and students can make the most of the burgeoning benefits of modern science and technology to enhance the learning achievement of students., and (3) The effect of using information technology according ADDIE model on English subject teaching can enhance the learning achievement of students, change studying methods and methods, and strengthen students' learning. The use of information technology in English subjects includes access to learning resources, language learning tools, online collaboration and communication, multimedia learning, online assessment and feedback, and virtual practical experience, which is closely related to English subject learning. In the classroom, we need to take the development of information technology as an opportunity to deal with problems in time. Information technology makes a comprehensive analysis of the overall situation of students by using data processing ability, evaluates the overall situation and individual performance of students, and provides teaching references for teachers. Teachers can make full use of information technology, combined with intelligent computers based on data analysis collected by big data, fully grasp each student's personality characteristics and learning ability, formulate targeted teaching plans, teach students according to their aptitude because of overall teaching, combine differences and similarities, and effectively fill the links that traditional teaching cannot fill. Finally, achieve enhanced learning achievement for students.

## **CONCLUSION AND DISCUSSION**

### ***Conclusion***

In the study of the effect of information technology according ADDIE model on English subject teaching for enhanced learning achievement of Shunde Polytechnic students in China, there are three major objectives: 1). study the efficiency of information technology according ADDIE model on English subject teaching to enhance learning achievement of Shunde Polytechnic students in China, (2) compare students' achievements before and after learning through information technology according ADDIE model on English subject teaching to enhance learning achievement of Shunde Polytechnic students in China, and (3) examine students' satisfaction with information technology according ADDIE model on English subject teaching for enhance learning achievement of Shunde Polytechnic students in China. The sample of this study was 30 students of English Reading subject at Shunde Polytechnic 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 information technology according ADDIE model on English subjects for enhance learning achievement in Shunde Polytechnic students, China, (2) comparing students' achievements before and after learning through information technology according to ADDIE model on English subject for enhance learning achievement to Shunde Polytechnic students, China, and

(3) examine students' satisfaction with information technology according ADDIE model on English subject for enhance learning achievement to Shunde Polytechnic students, China. Research Objectives to (1) Study the efficiency of information technology according to the ADDIE model on English subject teaching to enhance the learning achievement of Shunde Polytechnic students in China. (2) Compare students' achievements before and after learning through using information technology according to the ADDIE model on English subject teaching to enhance the learning achievement of Shunde Polytechnic students in China., and (3) Study the satisfaction of teachers who use information technology according ADDIE model on English subject teaching to enhance the learning achievement of Shunde Polytechnic students in China. The integration of information technology within the framework of the ADDIE model for English subject teaching at Shunde Polytechnic 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.

- **Alignment with Modern Educational Needs:** The global educational landscape is rapidly evolving, and technology plays a pivotal role in addressing the needs of the digital age. By adopting the ADDIE model and leveraging information technology, Shunde Polytechnic acknowledges the importance of staying relevant and meeting the learning expectations of contemporary students.
- **Customization and Flexibility:** The ADDIE model's iterative nature allows for continuous adaptation and improvement. This adaptability is crucial in addressing the unique requirements and challenges of English subject teaching. Shunde Polytechnic can tailor its instructional materials and technology applications to suit the diverse needs and learning styles of its student population.
- **Enhanced Engagement and Interactivity:** Information technology provides opportunities for interactive learning experiences that can significantly enhance student engagement. Incorporating multimedia, simulations, and online resources can make the English subject curriculum more engaging and accessible, ultimately leading to improved learning outcomes.
- **Data-Driven Decision-Making:** The evaluation phase of the ADDIE model emphasizes data collection and analysis. Shunde Polytechnic can harness this data to make informed decisions about the effectiveness of their technology-enhanced instruction. This data-driven approach allows for continuous improvement and optimization of the teaching process.
- **Global Reach and Accessibility:** Information technology transcends geographical boundaries, making educational resources and opportunities more accessible. Shunde Polytechnic can use technology to connect with a broader audience, including remote learners and international students, further enriching the learning experience.
- **Preparation for the Future:** Equipping students with digital literacy skills is essential for their success in a technology-driven world. The integration of information technology in English subject teaching not only enhances academic achievement but also prepares students for the challenges and opportunities they will encounter in their future careers.

In conclusion, the implementation of information technology according to the ADDIE model in English subject teaching at Shunde Polytechnic is a forward-looking and pedagogically sound approach. It aligns with the evolving demands of Education, fosters engagement, and has the potential to significantly enhance learning achievement among students. However, successful implementation requires a commitment to thorough analysis, thoughtful design, careful development, effective implementation, and ongoing evaluation. Shunde Polytechnic's dedication to this approach positions it as a leader in innovative and effective English subject instruction, ultimately benefiting both students and the institution. Further research and practical experience will continue to refine and validate the effectiveness of this approach over time.

### *Discussion*

The discussion of the study on the information technology according ADDIE model on English subject teaching for enhance learning achievement to Shunde Polytechnic students in China is as follows (1) study the efficiency of using information technology according ADDIE model on English subject teaching for enhance learning achievement of Shunde Polytechnic students in China., (2) results of evaluation efficiency of information technology according ADDIE model on English subject teaching for enhance learning achievement of Shunde Polytechnic students in China. The average mean score of the ongoing score was 82.40, and the mean score of post-tests was 81.33, which indicated a substantial improvement in information technology according ADDIE model on English subject teaching for enhanced learning achievement of Shunde Polytechnic students in China.

The result revealed that the value of efficiency of E1/E2 was 82.40/81.33. To summarize, this online learning based on information technology according ADDIE model on English subject teaching to enhance learning achievement of Shunde Polytechnic students in China is developed according to the standard criteria 80/80 defined because there is a process for finding the effectiveness of lessons that are consistent with the research process that is accurate and clear., and (3) results of the evaluation of information technology according to the ADDIE model on English subject teaching for enhanced learning achievement of Shunde Polytechnic students in China by three content experts and three media experts. The results of the content quality assessment of information technology according ADDIE model on English subject teaching for enhanced learning achievement of Shunde Polytechnic students in China were evaluated by three content experts. The overall quality was excellent level ( $\bar{x}=4.78$ , SD. = .23). When considering each item, it was found that consistency between content and learning objectives, the content is interesting, content accurate, the language used in the content is appropriate for the learners, activities are consistent with the content, and the overview of the content is complete were excellent level ( $\bar{x}= 5.00$ , SD. = .00), respectively. The results of the media quality assessment of the information technology according ADDIE model on English subject teaching for enhanced learning achievement of Shunde Polytechnic students in China were evaluated by three media experts. The overall quality was excellent level ( $\bar{x}=4.50$ , SD. = .58). When considering each item, it was found that learning through information technology according ADDIE model on English subject teaching is easy to understand, easy to use, uncomplicated, and the details are clear and easy to understand were excellent level ( $\bar{x}= 4.85$ , SD. = .58), respectively. This may be due to the quality assessment process of information technology according to the ADDIE model on English subject teaching. There are the correct procedures and processes systematically through quality assessment from experts with real specific knowledge. Compare achievements between before and after learning through information technology according to the ADDIE model on English subject teaching to enhance the learning achievement of Shunde Polytechnic students in China. They presented the learning achievement of information technology according to the ADDIE model on English subject teaching to enhance the learning achievement of Shunde Polytechnic students in China. The mean score of pretests was 8.80, and the score of standard deviation (SD.) was 2.33. The result after using the information technology according ADDIE model on English subject teaching constituted a substantial improvement in students, which translated into a high post-test of 16.27 and standard deviation (SD.) of 14.8 and t-test analysis before and after the treatment of 20.68, which demonstrated a considerable difference was statistically significant at the .05 level. This may be due to information technology, according to ADDIE model on English subject teaching that enables participants to learn at their own pace and helps learning achievement goals. Study the satisfaction of teachers who use information technology according to the ADDIE model on English subject teaching to enhance the learning achievement of Shunde Polytechnic students in China. The results of the evaluation of students' satisfaction questionnaire on learning with information technology according to the ADDIE model on English subject teaching for enhance learning achievement of Shunde Polytechnic students in China by 30 students. The overall students' satisfaction was strongly agreed on level ( $\bar{x}=4.51$ , SD. = .50). When considering each item, it was found that English teaching in information technology can be innovative teaching methods strongly agreed level ( $\bar{x}= 4.67$ , SD. = .48) and. English teaching in information technology can provide rich learning resources. was strongly agree level ( $\bar{x}=4.60$ , SD. = .50), respectively. The new trends and opportunities exchange ideas and practices and promote transdisciplinary and cross-domain collaboration (Zhang et al., P., 2023).

### **Suggestion for Further Study**

Based on the summary and discussion of the study, the researcher has several suggestions for further study as follows (1) The analysis resulted in better IT English teaching methodologies and courses., (2) IT English subject-specific teaching resources and tools are our goal., (3) IT English subject teaching strategy and collect data to assess its efficacy., (4) The experimental results from the deployment stage will evaluate information technology English teaching., and (5) recognizing teacher and student IT English teaching requirements, problems, and expectations. SRL approaches directly affected students' English proficiency, whereas self-efficacy indirectly did. This study suggests ways to include SRL tactics in English curriculum and instruction to boost Thai EFL students' self-efficacy (Li et al.; K., 2023).

### **References:**

- Anthony, L., Koo, A. C., & Hew, S. H. (2020). Self-regulated learning strategies in higher Education: Fostering digital literacy for sustainable lifelong learning. *Education and Information Technologies*, pp. 25, 2393-2414.
- Aziz, N. N., Haron, H., & Harun, A. F. (2020). ICT-supported participatory engagement within the E-learning community. *Indonesian Journal of Electrical Engineering and Computer Science*, 20(1), 492-499.
- Banegas, D. L., & Lowe, R. J. (2021). Creative writing for publication: An action research study of motivation, engagement, and language development in Argentinian secondary schools. *Studies in Second Language Learning and Teaching*, 11(3), 401-421.

- Benjelloun, F.-Z., & Lahcen, A. A. (2019). Big data security: challenges, recommendations and solutions. In *Web Services: Concepts, Methodologies, Tools, and Applications* (pp. 25-38). IGI Global.
- Broo, D. G., Kaynak, O., & Sait, S. M. (2022). Rethinking engineering education at the age of Industry 5.0. *Journal of Industrial Information Integration*, 25, 100311.
- Buelow, J. R., Barry, T., & Rich, L. E. (2018). Supporting learning engagement with online students. *Online Learning*, 22(4), 313–340.
- Choi, L. (2021). Implementing English for Medical Purposes (EMP) in South Korea: Nursing students' ongoing needs analysis. *Nurse Education Today*, p. 104, 104989. <https://doi.org/10.1016/j.nedt.2021.104989>.
- Byrne, D. (2018). Enhancing information retention of forensic science students: incorporating a simulated crime scene practicum in the college classroom. *Social Sci. Res*, p. 13.
- Castro-Rodríguez, M. M., Marín-Suelves, D., López-Gómez, S., & Rodríguez-Rodríguez, J. (2021). Mapping of scientific production on blended learning in higher education education. *Education Sciences*, 11(9), 494.
- Dewi, A., & Alam, A. (2021). The Effect of Contextual Teaching and Learning Approach and Learning Creativity on Student Learning Outcomes. *Journal of Educational Science and Technology (EST)*. <https://doi.org/10.26858/est.v7i3.24675>.
- Dorobăț, I., Corbea, A. M. I., & Muntean, M. (2019). Integrating student trust in a conceptual model for assessing learning management system success in Higher Education: An empirical analysis. *IEEE Access*, 7, 69202-69214.
- Firmansyah, R., Putri, D. M., Wicaksono, M. G. S., Putri, S. F., & Widiyanto, A. A. (2021). The University students' perspectives on the advantages and disadvantages of online learning due to COVID-19. 2nd Annual Management, Business and Economic Conference (AMBEC 2020),
- Ghaffari, A., Maleki, S., Sadeghi, S. A., Montazeralzohour, F., Mahmoudi, M. T., Shojae, A., & Sarvghadi, P. (2020). Evaluation of the Factors Affecting the Elementary Teachers' Exhilaration. *Advances in Bioscience and Clinical Medicine*, 8(3), 16-22.
- Hikayat, C., Suparman, S., Hairun, Y., & Suharna, H. (2020). Design of Realistic Mathematics Education Approach to Improve Critical Thinking Skills. *Universal Journal of Educational Research*, 8, 2232-2244. <https://doi.org/10.13189/ujer.2020.080606>.
- Hassan, N. F. B., Puteh, S. B., & Sanusi, A. B. M. (2018). Elements of technology enabled/enhanced active learning (TEAL) to enhance the quality and employability of bachelor's students. MATEC Web of Conferences,
- Jaya, M. S. A., Sukasih, N. K., Karman, I. W., & Ariana, I. M. (2022). Audio-visual media of spreadsheet-based financial management learning to support blended learning. *International Conference on Applied Science and Technology on Social Science 2021 (iCAST-SS, 2021)*,
- Jeronen, E., Palmberg, I., & Yli-Panula, E. (2016). Teaching methods in biology education and sustainability education including outdoor education Education for promoting sustainability-A literature review. *Education Sciences*, 7(1), 1.
- Khaliq, F., Zaman, A., & Ghaffar, A. (2018). Teachers' emotional and social intelligence and its relationship with students' cohesiveness in the classroom learning environment. *Global Social Sciences Review*, 3(1), 159-174.
- Li, Y., Sangsawang, T., & Vipahasna, K. (2023). Utilizing the Delphi Technique to Develop a Self-Regulated Learning Model. *Journal of Applied Data Sciences*, 4(3), 254-263. [doi:https://doi.org/10.47738/jads.v4i3.124](https://doi.org/10.47738/jads.v4i3.124)
- Lauri, L., Virkus, S., & Heidmets, M. (2021). Information cultures and strategies for coping with information overload: the case of Estonian higher education institutions. *Journal of Documentation*, 77(2), 518-541.
- Levine, D. A. (2020). Made in China 2025. *Journal of Strategic Security*, 13(3), 1-16.
- Linarsih, A. (2020). Developing Positive Education Integrated Extensive Reading Materials for EFL Students. *Jurnal Pendidikan Bahasa*, 9(2), 253-265.
- Lu, S., & Li, T. (2023). An Investigation into the Paths Towards Enhancing the Quality of Postgraduate Education. *Adult and Higher Education*, 5(10), 32-36.
- Mayer-Schönberger, V., & Cukier, K. (2013). *Big data: A revolution that will transform how we live, work, and think*. Houghton Mifflin Harcourt.
- Mondol, M. S., & Mohiuddin, M. G. (2020). Confronting Covid-19 with a paradigm shift in teaching and learning: A study on online classes. *International Journal of Social, Political and Economic Research*, 7(2), 231-247.
- Nuryanto, M. (2021). Fostering success and motivating EFL learners using Zoom meeting: A synchronous learning strategy. *Anglophile Journal*, 1(2), 1-12.
- Ojanperä, S., O'Clery, N., & Graham, M. (2018). Data science, artificial intelligence and the future of work. *The Alan Turing Institute*.
- Olufunke, O.-F. T., Harun, J. B., & Zakaria, M. A. Z. M. (2022). The Benefits of Implementing Authentic-Based Multimedia Learning in Higher Education Institutions. *Open Journal of Social Sciences*, 10(9), 74–86.

- Penprase, B. E. (2018). The Fourth Industrial Revolution and Higher Education. *Higher education education in the era of the fourth industrial revolution*, 10(1), 978-981.
- Puspaningtyas, N. D., & Ulfa, M. (2020). Improving Student's Learning Outcomes In Blended Learning Through The Use Of Animated Video. *Kalamatika: Jurnal Pendidikan Matematika*, 5(2), 133-142.
- Rahmatullah, M., & Atika, A. (2021). Does Transformational Leadership Affecting the Innovative Skills of Students? *Managementria: Jurnal Manajemen Pendidikan Islam*, 6(2), 169-182.
- Rahmati, J., Izadpanah, S., & Shahnavaz, A. (2021). A meta-analysis on educational technology in English language teaching. *Language Testing in Asia*, 11, 1-20. <https://doi.org/10.1186/s40468-021-00121-w>.
- Reaves, J. (2019). 21st-century skills and the fourth industrial revolution: a critical future role for Online Education. *International Journal on Innovations in Online Education*, 3(1).
- Sangsawang, T., Jitgarun, K., and Kiattikomo, P.(2011). "An internet based Instructional Design Framework for vocational education," *International Journal of Soft Computing*, vol. 6, no. 4, pp. 119-127, 2011. doi:10.3923/ijscmp.2011.119.127
- Sangsawang, T. (2020). An instructional design for online learning in vocational Education according to a self-regulated learning framework for problem-solving during the COVID-19 crisis. *Indonesian Journal of Science and Technology*, 5(2), 283-298.
- Singh, J., Steele, K., & Singh, L. (2021). Combining the Best of Online and Face-to-Face Learning: Hybrid and Blended Learning Approach for COVID-19, Post Vaccine, & Post-Pandemic World. *Journal of Educational Technology Systems*, 50(2), 140–171. <http://doi.org/10.1177/004723952111047865>
- Shahrol, S., Sulaiman, S., Samingan, M., & Mohamed, H. (2020). A Systematic Literature Review on Teaching and Learning English Using Mobile Technology. *International Journal of Information and Education Technology*, 10, 709-714. <https://doi.org/10.18178/ijiet.2020.10.9.1447>.
- Schiepe-Tiska, A. (2019). School tracks as differential learning environments moderate the relationship between teaching quality and multidimensional learning goals in mathematics. *Frontiers in Education*,
- Shah, D. K., Piryani, S., Piryani, R. M., Islam, M. N., Jha, R. K., & Deo, G. P. (2019). Medical students' perceptions of their learning environment during clinical years at Chitwan Medical College in Nepal. *Advances in medical education Education and practice*, 555-562.
- Silva, B. N., Diyan, M., & Han, K. (2019). Big data analytics. *Deep learning: convergence to big data analytics*(2), 13-30.
- Sangsawang, T., Jitgarun, K., and Kiattikomo, P.( 2006). "Students Self Appraisal for online Training." In *ASIA Pacific Educational Research Association International Conference*, vol. 1, no.1, pp. 1-5,
- Sangsawang, T., Jitgarun, K., and Kiattikomo, P.. "Comparison of Selected Psychology Theories as in Gagne's, Constructivism, and Constructionism." In *The 4th International Conference on Developing Real-life Learning Experiences: Education Reform through Performance-Based Learning*, vol.1, no.1, pp. 327-328. 2006.
- Sangsawang, T. (2015). "Instructional Design Framework for Educational Media," *Procedia - Social and Behavioral Sciences*, vol. 176, pp. 65–80, 2015. doi:10.1016/j.sbspro.2015.01.445
- Tachie, S. A., Brenya, B., & Owusu, K. F. (2022). The impact of three critical success factors on online learning at higher institutions. *International Journal of Research in Business and Social Science (2147-4478)*, 11(5), 460–471.
- Vidić, T. (2021). Students' school satisfaction: the role of classroom climate, self-efficacy, and engagement. *International Journal of Cognitive Research in Science, Engineering and Education (IJCRSEE)*, 9(3), 347–357.
- Willems, J., Adachi, C., Bussey, F., Doherty, I., & Huijser, H. (2018). Debating the use of social media in higher Education in Australasia: Where are we now? *Australasian Journal of Educational Technology*, 34(5).
- Yuspiani, Y., & Wahyuddin, W. (2021). Transformasi ARSIP Diera Big DATA. *Idaarrah: Jurnal Manajemen Pendidikan*, 5(1), 73-82.
- Zhong, R. Y., Xu, X., Klotz, E., & Newman, S. T. (2017). Intelligent manufacturing in the context of industry 4.0: a review. *Engineering*, 3(5), 616-630.
- Zhang, Y., Sangsawang, T., & Vipahasna, P. (2023). Assessing Factors and Simulating Innovation: A Study of Innovative Capacities Among Data Science Professionals in China. *Journal of Applied Data Sciences*, 4(3), 213-228. doi:<https://doi.org/10.47738/jads.v4i3.123>