

Research on the Promotion of EAP Teachers' Information Literacy under TPACK Framework in the Era of Digital Intelligence

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Received: September 30, 2023

Accepted: October 29, 2023

Online Published: October 30, 2023

doi: 10.5539/elt.v16n11p57

URL: <https://doi.org/10.5539/elt.v16n11p57>

Abstract

Foreign language education is steadily transitioning into the digital teaching era, driven by advancements in digital information technology and artificial intelligence. The integration of digitalization technology into English for Academic Purposes (EAP) instruction imposes increasingly demanding prerequisites on EAP educators' information literacy within the pedagogical landscape. Employing the Technological Pedagogical Content Knowledge (TPACK) framework, this paper conducts a comprehensive examination of the knowledge components and distinctive attributes of EAP instructors in the age of digital intelligence. Through an in-depth assessment of the information literacy of EAP educators at a science and technology university, this study unveils a spectrum of challenges pertinent to information literacy in the domain of academic English instruction. Subsequently, the paper offers a set of recommendations for enhancing the information literacy competencies of academic English instructors, with the overarching objective of shedding light on the professional development of EAP educators.

Keywords: EAP teacher, information literacy, EAP teaching, TPACK

1. Introduction

As internationalization becomes increasingly integral to the landscape of higher education in China, numerous colleges and universities have embarked on the development of a novel college English curriculum. This progressive curriculum includes a range of courses, such as General English (EGP), English for Specific Purposes (notably Academic English or EAP), and Cross-Cultural Communication. Concurrently, the rapid evolution of information technology has propelled foreign language education into a transition from computer-aided instruction to the era of intelligent learning driven by artificial intelligence.

In this digitized foreign language teaching environment, educators are faced with the dual mandate of enhancing their Pedagogical Content Knowledge (PCK) while concurrently endeavoring to incorporate digital technologies into curriculum development, educational resource creation, and innovative teaching methodologies. This paradigm shift undeniably calls into question the attitudes, psychology, and cognitive paradigms of college English instructors actively engaged in EAP reform, while concurrently presenting a new imperative for the mastery of Technological Pedagogical Content Knowledge (TPACK).

Against this backdrop, the present study adopts the TPACK model as its analytical framework to scrutinize the manifestation of essential TPACK components within the domain of EAP pedagogy in the age of digital intelligence. The study seeks to offer valuable insights to inspire a greater number of college English educators to engage in EAP-oriented curriculum reform and advocate for the integration of digital intelligence technology in the teaching of EAP.

The study aligns with the following research questions:

- (1) What are the challenges faced by EAP instructors in the digital intelligence era, and how do core TPACK elements manifest in their pedagogical practices?
- (2) What practical suggestions can be offered to enhance information literacy within the realm of academic English instruction?"

2. TPACK Framework

The TPACK framework, stemming from the PCK model, was formally introduced by Mishra and Koehler in 2006 as a conceptualization of the essential knowledge for educators to effectively employ technology within specific instructional contexts (Mishra & Koehler, 2006). Since its inception, this framework has been widely embraced as a guiding foundation for research and professional development within the realm of information technology. Eminent scholars, including Niess, have proposed diverse analytical frameworks to elucidate the composition and essence of TPACK. Niess, among others, asserts that TPACK comprises four integral elements: 1) The overarching concept of subject instruction infused with technology, which encompasses teachers' discernment of the purpose and objectives of employing technology in the teaching of specific subjects. 2) Knowledge of subject-specific instructional strategies integrating technology, signifying the proficiency educators possess in utilizing technology to illuminate subject matter and execute pedagogical activities designed to facilitate learners' comprehension of specific subject domains. 3) Competence in subject curricula and educational materials integrating technology, encapsulating educators' cognizance of how information technology impacts curriculum objectives and content, along with the selection of technology and resources for instructional materials. 4) Insight into students' utilization of technology for subject-specific learning, encompassing an understanding of students' learning characteristics within technological environments, identification of potential misconceptions and difficulties, and other relevant factors (Niess, 2005).

The strength of this theoretical framework lies in its holistic and interdisciplinary perspective, which examines the interplay between subject matter, teaching methodologies, and technology. It offers substantial practical guidance and operational utility for the cultivation of educators' TPACK knowledge. Additionally, it's well-suited for closely examining the characteristics and the varying developmental stages of teachers' TPACK knowledge in empirical research, particularly within qualitative research paradigms. This approach is exceptionally well-suited for the analysis of experiential teachers' instructional practices with technology (Niess, 2013), and is also apt for investigating educators' technological integration in teaching (Wei & Hu, 2020). Drawing from the foundations of the TPACK theory, this study investigates the information teaching capabilities of EAP instructors.

3. TPACK Elements Analysis of EAP Teachers in the Era of Digital Intelligence

Employing the TPACK framework, this study examines the content within the domestic literature pertaining to English for Academic Purposes (EAP) from five dimensions: the dominant concept of the integration of digital intelligence technology and EAP; teaching strategy and presentation mode; curriculum and teaching material knowledge; student knowledge; and evaluation knowledge, aiming to extract the TPACK elements of EAP teachers in the digital intelligence era.

3.1 *The Dominant Concept of Integration of Digital Intelligence Technology and EAP Teaching*

EAP courses inherently seek to enhance students' linguistic proficiency, academic competencies, and scholarly literacy. These courses, distinguished by their comprehensive content, information-rich nature, and academic rigor, demand an integration of digital intelligence technology to amplify teaching resources, extend the temporal and spatial dimensions of instruction, and address practical issues such as limited classroom hours. Furthermore, the integration of digital intelligence technology aims to instigate a paradigm shift towards "student-centered structural change" (Zheng, 2019). This approach facilitates multifaceted interactions among students leveraging digital technology, fostering a deeper engagement in the EAP learning process. It empowers students to independently explore and construct knowledge structures, master academic skills, and nurture scholarly literacy within a rich learning environment.

Simultaneously, integrating technology into course delivery to create a new EAP instructional environment characterized by a harmonious amalgamation of "normal online classroom, ubiquitous autonomous learning, and intelligent organization and management" (Kim et al., 2013). In addition to these overarching principles, EAP educators must select specific digital intelligence techniques aligned with their pedagogical objectives. For example, utilizing the robust corpus technology's search capabilities, EAP instructors should endeavor to integrate it into the curriculum to establish an independent, exploratory, and discovery-based learning platform, facilitating students' autonomous problem-solving (Chai et al., 2013).

3.2 Teaching Strategy and Presentation Form Knowledge of EAP Teaching Integrated with Digital Intelligence Technology

In the context of advancing pedagogical models such as blended learning and the flipped classroom, educators must strategically allocate course content and learning objectives. EAP educators, in their pursuit of instruction integrated with digital intelligence technology, must emphasize classroom-based instruction while harnessing online platforms and mobile learning devices to guide students in their self-directed, open-ended acquisition of EAP knowledge and skills (Ye, 2020).

3.3 Knowledge of Courses and Teaching Materials in EAP Teaching Integrated with Digital Intelligence Technology

In this era of digital intelligence, traditional EAP textbooks are increasingly supplemented with educators' self-compiled lecture materials and a diverse array of online resources. This shift reflects the transition from the narrow confines of printed textbooks to a broader perspective that encompasses an extensive array of educational resources. Centre to this transformation is the significant role played by digital resources, including online course platforms, mobile learning tools, QR codes, and other interactive mediums, which facilitate the presentation of multimodal resources. Consequently, this engenders a three-dimensional educational resource system that accommodates students' individualized requirements.

EAP instruction, in the digital intelligence age, places an emphasis on fostering student autonomy in the selection of instructional materials. Educators encourage students to contribute content related to the subject matter, thereby alleviating the limitations arising from the English teachers' specific disciplinary backgrounds. The ultimate objective is to facilitate a collaborative learning process wherein students and educators jointly engage in resource development and co-create course content (Zhang, 2019).

3.4 Student Knowledge in EAP Teaching Integrated with Digital Intelligence Technology

Despite contemporary college students' familiarity with digital intelligence technology, the incorporation of digital technologies into the instructional landscape may still pose psychological and technical challenges. For instance, ubiquitous learning environments may overwhelm students with choices in managing learning resources and content. Additionally, the absence of interpersonal interactions and direct supervision in online settings can also reduce students' motivation to fulfill digital learning tasks.

To address these challenges, educators should provide timely support and strategic guidance on cognitive aspects, learning methodologies, collaborative practices, and other facets of online learning (Liu & Liu, 2020). Conversely, the implementation of intelligent teaching systems offers a means by which educators can gain insight into students' learning processes and needs with greater precision, diagnose their grasp of instructional material accurately, and subsequently tailor in-person teaching content and activity design to optimize the learning experience.

4. Research Methods

Due to the fact that TPACK has the characteristics of situational, implicit, and personalized teacher knowledge, making it difficult to perceive and present, as well as the complexity caused by the dynamic interaction of the three major elements of discipline, technology, and teaching methods, this study adopts the method of multiple case studies to conduct a detailed analysis of TPACK knowledge of EAP teachers.

The study involved 6 EAP teachers, referred to as T1 through T6, who were selected as participants. These educators possessed varying degrees of experience in leveraging technological tools to support their teaching endeavors, catering to college English learners hailing from diverse professional backgrounds. The courses they offered encompassed EAP listening, speaking, reading, and writing. Essential demographic information about the research participants is presented in Table 1.

The EAP courses scrutinized in this research predominantly fell into two categories: EAP listening and speaking, and EAP reading and writing. The listening and speaking courses concentrated on nurturing students' abilities in comprehending lectures, refine their abilities in academic presentations, and cultivating competencies in in-person academic discourse. Consequently, these courses featured a heightened emphasis on speaking and listening interactions, both inside and outside the classroom. This educational approach necessitated a greater level of student engagement, requiring active participation and a heightened initiative in oral communication. Conversely, reading and writing courses centered on more individualized learning, with educators relying more extensively on technology to deliver instructional materials and evaluate students' reading and writing assignments. Additionally, peer evaluations were periodically conducted within the context of these courses.

The primary data source encompassed semi-structured interviews with each teacher, each lasting approximately one hour. These interviews were complemented by classroom observations, lesson plans, and teaching reflection diaries. The design of the interview outline was rooted in Niess's TPACK framework, encompassing themes related to the evolution of the technology integration process, the current state of technology utilization in EAP instruction, the instructors' insights, dilemmas, challenges, expectations, and recommendations, among other pertinent aspects. In the ensuing phase of data analysis, the Nvivo 12 software was employed to initially code the data from each case, aligning with Niess's TPACK four-dimensional analytical framework. Subsequently, a comparative analysis between cases was conducted to extract salient themes relevant to the scope of this study.

Table 1. Basic Information of the Research Participants

Teacher	Gender	Degree	Length of Teaching	Type of courses	Students' majors
T1	Female	PhD	10	EAP reading & writing	Computer Science
T2	Female	Master	6	EAP listening & speaking	Power engineering
T3	Male	PhD	12	EAP listening & speaking	Physics and Mathematics
T4	Female	Master	9	EAP reading, listening & speaking	Communication Engineering
T5	Female	PhD Candidate	13	EAP listening & speaking	Finance
T6	Male	Master	15	EAP listening & speaking	Optoelectronic Information Engineering

5. Results

Following Niess's theoretical framework, the characteristics of TPACK among EAP teachers are examined and discussed across four distinct dimensions: the overall concept of integrating information technology with EAP teaching, the teaching strategy and presentation knowledge of EAP teaching integrated with information technology, the curriculum and material knowledge of EAP teaching integrated with information technology, and the student knowledge of EAP teaching integrated with information technology.

5.1 The Overall Concept of Integrating Information Technology with EAP Teaching

This dimension mainly examines teachers' views and understanding of the integration goals of information technology and disciplines, mainly answering questions such as whether to integrate information technology in subject teaching and what advantages information technology can bring to subject teaching. In this study, the interviewed teachers have both similarities and differences in their overall understanding of the integration of information technology and EAP teaching due to various complex internal and external factors. See Table 2.

In the context of integrating information technology within the realm of English for Academic Purposes (EAP) instruction, educators widely concur on its indispensable role. Information technology is recognized for its pivotal contribution to EAP teaching, acknowledged for its ability to stimulate students' intrinsic interest in learning, capture and maintain their engagement within the classroom, help to clearly and effectively share teaching materials, enrich the collection of teaching materials and resources, and foster English language learning opportunities that far exceed the capabilities of conventional pedagogical techniques. Providing English learning opportunities that traditional teaching methods cannot match (such as convenient listening training and massive audiovisual and oral materials) and creating extracurricular teaching and communication platforms, are indispensable and important components of modern English teaching. However, teachers have also expressed that information technology should be in an auxiliary position in English teaching, with the main role of "assisting teachers in achieving classroom teaching design" (T6), and should not be overly dependent, otherwise it will "dominate" (T1), affecting teacher-student interaction and learning effectiveness.

While a consensus among educators prevails regarding the status and function of information technology within the domain of English instruction, there are significant variations in their approaches to its practical application. A prevailing sentiment among the majority of instructors indicates dissatisfaction with the existing circumstances,

thereby prompting proactive investigations into novel methodologies for integrating technology. For example, T2 compares himself to a constantly trying "novice" and strives to explore a computer-assisted teaching approach that both he and his students enjoy. T6 expresses that he is "a person who is particularly interested in electronic products" and "always wants to try and learn if there are new products and developments", Therefore, she is willing to invest time and energy in researching educational technology and thinking about how to integrate technology into English teaching. However, some teachers are satisfied with the basic use of technology and do not spend more time and energy pursuing teaching innovation through technology integration. For example, T3 believes that it is sufficient to use some basic techniques in EAP teaching, without being too flashy or pursuing breakthroughs, as foreign language teachers have "no professional background" and "technical bottlenecks determine that they cannot break through". In summary, as shown in relevant research (Schmidt et al., 2009), teachers have varying degrees of understanding and identification with the application of information technology in English teaching, reflecting the individuality and differences in the overall concept of integrating information technology with EAP teaching. This is closely related to factors such as teachers' time and energy, understanding and investment in teaching, interest and knowledge in technology, and the impact of teaching situations.

Table 2. Teachers' Reflection on Integration of Information Technology with EAP Teaching

Theme (References)	Nodes (References)	Data	Files	References	
Integration of information technology in general (34)	Positive (17)	Stimulating students' learning	5	5	
		Attracting students' attention	3	3	
		Enriching and Enhancing teaching	5	6	
		Creating extracurricular platforms	2	3	
Neutral/negative (17)	Neutral/negative (17)	Auxiliary assistance to teaching	9	10	
		Not be overly dependent	4	4	
		Affecting learning effectiveness	3	3	
The role of information technology in teaching (30)	Positive (12)	Interested in electronic products	5	5	
		Actively explore new technology	6	7	
	Neutral /negative (18)	Neutral /negative (18)	Satisfied with the use of technology	6	6
			Do not spend more time and energy pursuing teaching innovation	5	6
			language teachers have no technology background	2	2
Technical bottlenecks cannot be broken through	3	4			

5.2 Teaching Strategy and Presentation Form Knowledge of EAP Teaching Integrated with Digital Intelligence Technology

This dimension mainly examines the teaching knowledge that teachers possess in using technology for teaching, namely, how to effectively use information technology in teaching and how to present teaching content. See Table 3.

The majority of teachers in this study perceive their grasp of information technology to be at the basic to intermediate level, with the exception of T6, who exhibits a slightly more advanced understanding of technology, owing to their consistent exploration of novel technological advancements. Nevertheless, as they age, they increasingly recognize their inability to keep pace with the cutting edge of technological progress. This observation underscores the relatively modest technical proficiency of foreign language educators, thereby exerting a consequential impact on their overall Technological Pedagogical Content Knowledge (TPACK) competence (Tondeur et al., 2017).

Since the majority of the teachers interviewed did not undergo specialized technology training or engage in computer-assisted foreign language teaching programs, their proficiency in utilizing technology in EAP instruction remains rudimentary. Their primary objectives revolve around fulfilling fundamental teaching needs, such as internet-based information retrieval for pedagogical purposes, downloading and playing audio and video

materials, crafting PowerPoint presentations for instructional content delivery, and disseminating teaching resources through communication platforms such as QQ, WeChat, and email.

Notably, many educators, while employing technology for essential teaching tasks, exhibit a proactive inclination towards exploring innovative methods of technology integration, such as leveraging online teaching platforms and engaging in video production. Furthermore, some teachers venture into pioneering teaching approaches that seamlessly blend English, technology, and students' academic backgrounds. For instance, T2 assigns video production and EAP writing assignments to students majoring in computer science, while T3 tailors electronic reading materials to align with individual students' professional pursuits. However, it is apparent that only a small fraction of teaching activities truly embraces a deep integration of modern technology within the realm of EAP subject instruction. Instead, the prevalent practice tends to involve a superficial use of technology for rudimentary teaching functions, representing an enhancement and refinement of existing teaching models, rather than the formulation of a new instructional paradigm or a fundamental overhaul of the relationship between EAP teaching and information technology.

Table 3. Teaching Strategy and Presentation Form Knowledge of EAP Teachers

Theme (References)	Nodes (References)	Data	Files	References	
Teaching strategy and knowledge (39)	Used (31)	Using the internet to query teaching related information	9	9	
		Downloading and playing videos, audios	4	5	
		Creating PowerPoint presentations to present teaching contents	7	7	
		Sharing teaching materials through communication tools such as QQ, WeChat, and email	6	7	
		Using teaching platforms or networks	2	3	
	Explored (8)	Creating online teaching platforms	1	1	
		Video production	4	4	
		Providing content specific listening/reading materials	3	3	
	Attitude towards strategy and knowledge (22)	Positive (8)	Actively seeking and selecting resources suitable for one's own teaching	3	5
			Gradually expanding from basic functions to trying some complex educational technologies	3	3
Neutral /negative (14)		Primary to intermediate level of information knowledge and literacy	4	4	
		Hardly keeping up with the forefront of technological development	5	6	
		No systemic training	2	2	
No strong and lasting external support	2	2			

By examining the historical progression of educators' involvement with information technology in EAP teaching, one can discern a gradual evolution of their Technological Pedagogical Content Knowledge (TPACK). This development unfolds from the initial utilization of pre-existing curriculum materials to the development of customized teaching courseware. It progresses from passive reliance on multimedia resources accompanying textbooks to the active pursuit and curation of resources aligned with local instructional contexts. This journey extends beyond rudimentary functions, such as employing online search engines and playing multimedia content,

to the experimentation with somewhat more intricate educational technologies, including online teaching platforms and video production.

Throughout this continuous process of exploration and experimentation, teachers continually enhance their ability to understand, manage, and assess information technology. This underscores that the development of TPACK knowledge among educators constitutes an ongoing, dynamic, and pragmatic long-term endeavor. Within the scope of this study, this development unfolds as a relatively isolated and gradual journey, predominantly reliant on teachers' independent exploration, insights, and collegial exchanges, without a substantial and enduring external support system.

5.3 Knowledge of Courses and Teaching Materials in EAP Teaching Integrated with Digital Intelligence Technology

This dimension primarily assesses teachers' competence in the integration of information technology with EAP teaching and course materials. It encompasses aspects such as the influence of information technology on course objectives and content, as well as the identification of suitable technical resources for integration as course materials. Refer to Table 4 for further details.

Regarding curriculum objectives and content, teachers have, for the most part, augmented and supplemented the existing textual information, video, and audio resources in line with the prescribed curriculum outline and textbook content. This enrichment serves to broaden the original curriculum's scope. However, it's worth noting that the introduction of information technology has not resulted in significant alterations or comprehensive reforms to the core curriculum.

In terms of course materials, teachers have exhibited a relatively confined and uniform utilization of information technology. This usage primarily encompasses digital textbooks, multimedia resources, and online platforms. In addition, some teachers, such as T1 and T2, have ventured into employing foreign online teaching platforms, while T5 has even encouraged students to create basic online communication spaces. Nevertheless, due to divergences in cognitive capabilities between teachers and students, as well as practical constraints such as technical equipment, the efficacy of these endeavors has not reached its full potential.

This observation highlights that teachers may encounter several challenges when attempting to integrate relatively sophisticated educational technologies with traditional teaching resources. Resolving this issue necessitates increased personal commitment from educators, as well as increased external support. During the interviews, many teachers voiced apprehensions about an overreliance on electronic materials and online platforms supplied by textbooks. It is evident that when harnessing modern technology to enhance course content and materials, teachers must possess a discerning understanding of its proper use. This awareness is vital in order to prevent the unintentional substitution of traditional textbook-based instruction with new technological methods, thus forfeiting the advantages that information technology can offer to EAP teaching.

Table 4. Knowledge of Courses and Teaching Materials of EAP Teachers

Theme (References)	Nodes (References)	Data	Files	References
Knowledge of course and teaching materials (28)	Familiar (14)	Slightly expanded and supplemented relevant text information and video and audio resources	5	5
		Digital textbooks	3	3
		Multimedia resources	3	4
		Teaching platforms/networks	2	2
	Unfamiliar (14)	Not significantly adjusting or reforming the original curriculum	9	10
		Using foreign online teaching platforms	2	2
		Designing and building simple online communication spaces	2	2

5.4 Student Knowledge in EAP Teaching Integrated with Digital Intelligence Technology

This dimension primarily evaluates teachers' comprehension of the extent to which information technology can enhance students' grasp and acquisition of subject matter. This includes aspects like the intricacies of student learning within a technological setting, potential misconceptions, and challenges they may encounter. For detailed insights, please refer to Table 5.

This study has revealed that the component of TPACK knowledge related to students constitutes the weakest facet within the surveyed teachers' TPACK knowledge framework. A predominant focus among most educators is on how to utilize technology as a tool for teaching, emphasizing the "teaching" aspect, rather than guiding students in "learning" with technology. There is a notable absence of comprehensive encouragement and guidance for students to harness modern technology for self-directed learning outside of class. Furthermore, teachers generally exhibit a limited familiarity with the current landscape, distinctive attributes, and potential challenges students may encounter when using modern technology for English learning.

For instance, T1 concedes that they possess no understanding of the information technologies available to students for English learning. T3 holds the belief that even if they were to provide this information to students, it would not motivate them to independently employ these technologies for learning after class. Hence, T3 refrains from imparting such information during teaching. Other teachers, when occasionally mentioning certain English learning resources like language learning websites or oral listening practice software, do not consistently regard guiding and supervising students in the use of technology for English learning as a prominent component of the English curriculum throughout the teaching process.

Furthermore, teachers often lack familiarity with students' attitudes and learning preferences when it comes to information technology. One of the significant reasons why some teachers fell short of achieving the expected outcomes while experimenting with the previously mentioned online teaching platforms is their failure to anticipate the potential challenges students might encounter during the utilization of these platforms. This includes an understanding of students' learning habits and technical preferences.

For instance, when T2 introduced students to a foreign online teaching platform, they observed that students experienced notable anxiety, primarily arising from technical issues such as difficulties in internet access and the successful submission of homework. As a result, students did not actively engage in English discussions on the teaching website, as initially anticipated by the teacher. T2 believes that the primary issue resides in the fact that "students may prefer to engage in activities they personally enjoy after class, rather than those mandated by the teacher."

In essence, several teachers who ventured into the realm of online teaching platforms discovered that their initial objectives were not fully realized due to an inadequate understanding of their students' needs and preferences. Encouraging students to genuinely embrace the educational technology environment chosen by teachers requires more comprehensive guidance and thoughtful design.

The research findings concerning student knowledge suggest that it may represent a relatively underdeveloped and overlooked aspect within the teacher's TPACK knowledge framework. It is imperative that future teacher education and training give due attention to the dimension related to students in the teacher's TPACK, thus ensuring the holistic advancement of the teacher's TPACK knowledge structure.

Table 5. Student Knowledge in EAP Teaching Integrated with Digital Intelligence Technology

Theme (References)	Nodes (References)	Data	Files	References
Reasons for lack of student knowledge (39)	Lack of awareness of guiding students to learn with technology (31)	Few guidance to students to use modern technology for autonomous learning	4	4
		Not familiar with the difficulties of students using modern technology	3	3
		no understanding of the information technologies that students can use in EAP learning	3	4
	Unfamiliar with students' attitudes and learning preferences towards information technology (10)	Attaching no importance to students' use of technology for learning	6	7
		Underestimate students' reluctance	4	4
		Unaware of students' learning habits	4	4
		Unaware of students' technical preferences	3	3
Students preference to learn things they like to do after class	1	1		

6. Discussion

This study carries specific implications for the education and professional growth of EAP teachers in the context of the information technology environment.

6.1 Improve EAP Teacher Education and Training Courses

Emphasizing the content of TPACK within subject teaching methods is vital to facilitate teachers' proficiency in integrating information technology with EAP teaching. This entails the mastery of methods and strategies encompassing EAP classroom design that incorporates technology, the adoption of multimodal teaching approaches, utilization of online teaching platforms, establishment of comprehensive teaching resource repositories, and the ability to search and evaluate information resources. Furthermore, it involves proficiency in utilizing EAP teaching software and network resources, among other components. Throughout this process, it becomes imperative to refine various dimensions of TPACK knowledge, ensuring that teachers attain a correct and comprehensive understanding of its essence. This equips them with the capability to effectively employ modern technology in conducting EAP teaching encompassing knowledge and skills, cross-cultural communication, and other essential aspects of the curriculum.

6.2 Cultivate Foreign Language Teachers' Awareness of Independent Professional Development and Stimulate EAP Teachers' Enthusiasm for Technology Integration and Teaching Innovation

This study has revealed that the incorporation of information technology into EAP teaching is typically a spontaneous, individual choice made by teachers, largely devoid of support from external evaluation systems and incentive mechanisms. Consequently, teachers' willingness to invest time and effort in delving into TPACK theory and practice depends greatly on their awareness of professional development and career aspirations. In light of this, guiding teachers to gain a comprehensive appreciation of the benefits associated with integrating technology into EAP teaching, enhancing their self-efficacy in technology integration, and igniting their enthusiasm for pursuing teaching excellence through technology integration represent intrinsic factors that can stimulate the development of TPACK among EAP educators.

6.3 Construct an EAP Teacher Professional Learning Community to Promote Communication and Sharing of TPACK

TPACK represents an emerging and highly pertinent area of focus within education and pedagogy, characterized by its intricate theoretical and practical dimensions. Establishing a teacher-learning community geared towards facilitating information exchange and resource sharing proves instrumental in harnessing collective knowledge and resources to tackle the challenges and issues individual educators may confront during practical exploration.

Simultaneously, initiatives like demonstration and observation classes, as well as collaborative research projects, play a pivotal role in fostering the advancement of TPACK across all community members. These activities serve as effective mechanisms to propel the development of TPACK among EAP teachers, ultimately benefiting both the teachers and their students.

6.4 Establish a Guarantee Mechanism for the Development of TPACK for EAP Teachers

Teachers' information technology knowledge is often relatively weak, and strong and sustained educational technology support is a strong guarantee to help EAP teachers achieve technological integration. Specifically, it includes establishing teaching service institutions, strengthening cooperation between foreign language teachers and educational technology departments, organizing educational technology exchanges and learning activities, and institutionalizing regular support and guarantees are powerful external conditions to ensure the continuous and in-depth development of TPACK for EAP teachers.

6.5 Limitations

The limitations of this study can be delineated as follows. Firstly, it is important to note that this research primarily falls within the realm of foundational and theoretical exploration, thus, it may not offer a comprehensive portrayal or practical analysis of factors related to the competence of English for Academic Purposes (EAP) teachers. Moreover, the scope of the questionnaires employed in this study might not encompass all relevant facets of the subject matter. Additionally, it is worth mentioning that the sample of participants in the survey may not be entirely representative, and the selection of universities and colleges could be more refined. Finally, this study does not delve into recognizing and addressing the distinctions between various types of EAP courses, such as listening and speaking versus reading and writing courses. It is crucial to recognize the significance of these distinctions in optimizing the integration of technology for each specific context. The broader implications of this study should be tailored to suit the unique requirements of these different EAP courses, ultimately promoting improved EAP education within an information technology environment.

7. Conclusion

Within the current global landscape marked by the dynamic evolution of educational technology, the profound integration of information technology and curricula has become an unavoidable trend in the development of EAP curriculum. Furthermore, it constitutes a significant focus in the ongoing reform of foreign language teaching in Chinese universities. In this context, teachers play a crucial role in these educational transformations, as only educators equipped with the requisite knowledge and innovative pedagogical concepts can effectively achieve the ultimate objectives of teaching reform. Consequently, the enhancement of TPACK among EAP teachers carries significant practical implications for advancing the deep-rooted assimilation of information technology and curricula. Commencing with an exploration of the TPACK of frontline EAP educators, this study delineates the key characteristics of TPACK exhibited by these teachers and offers corresponding strategies for their development. The research findings hold promising prospects for nurturing the professional growth of EAP teachers in the digital age while promoting the comprehensive integration of information technology into EAP course instruction.

Acknowledgments

This research received funding from the Project of World Language and Culture (WYZL2022SH0012) of the China Center for Language Planning and Policy Studies.

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