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Critical Literature Review on the use of digital educational resources in Chinese for Specific Purposes (CSP)

Topic:

Chinese for Specific Purposes (CSP) Learners' Perceptions on the Use of Digital Educational Resources: A Mixed Method Study

Research questions:

RQ1: How do CSP learners perceive the usefulness and limitations of current digital educational resources (DERs) in CSP? (questionnaire, classroom observation, semi-structured interview)

RQ2: What is CSP Learners' willingness to accept and voluntarily use digital educational resources (DERs) and their influencing factors? (questionnaire, semi-structured interview)

Abstract

An increasing number of studies dealing with digital educational resources (DERs) in International Chinese language education. Nonetheless, there are still gaps in the representative academic literature that underlies research on the use DERs of in the field of Chinese for Specific Purposes (CSP). This paper aims to provide an overview of the status of DERs' construction and application of teaching and learning CSP, and some relative theoretical studies such as Content Language Integrating Learning (CLIL), and Technology Acceptance Model (TAM). Through search by the database of CNKI, Google Scholar, and UWTSD library, the review has identified more than 30 articles from core journals within 15 years. The main findings demonstrate that the studies about the construction and use of DERs in CSP have increased but the quantities are less in total. The paper also highlights some contextual and methodological gaps such as learners' perspectives and demands might be ignored. Besides, current studies in different kinds of DERs such as digital coursebooks, online courses and applications are not balanced. The critical literature review provides a better understanding of DERs in CSP and creates a foundation for future studies.

1. Introduction

In recent years, Chinese for Specific Purposes (CSP) as a relatively new discipline in International Chinese language education has been more focused than ever before. Especially after the significant national economic policy "The Belt and Road" initiated in 2013 by the Chinese government, society needs more diverse talents. In international Chinese language education, CSP, which aims to develop compound Mandarin talents who can master the language as well as professional knowledge, have a new significant strategic objective: to serve the economy and international communication between China and other countries. At that time, how to effectively cultivate high-quality and compound Mandarin talents also became another topic in the area. A series of documents have been issued by the Chinese government to optimize Chinese as a Foreign Language (CFL) education which assists Chinese language learners in overcoming the limitation of time and space and better learning Mandarin (CLEC, 2021). Meanwhile, some researchers gradually focused on the transformation from traditional educational methods to using some Digital Educational Resources (DERs) to enhance teaching and learning effectiveness. Then, a pandemic in 2019 also sped up the kind of transformation process. Currently, most relative research focuses on the DERs construction in International Chinese education while few studies discuss the DERs construction and their uses in CSP, especially based on learners' perceptions. In this study, to reduce potential bias, identify my position as an investigator and be open-minded, skeptical, and carefully consider the works of literature (Machi and McEvoy, 2009). Meanwhile, according to Wallace and Wray (2011), I will critically seek, and choose literature, then critically synopse and analyse the literature and finally construct my review.

1.2 Process of review and Key terms

1.2.1 Process of review

In this study, CNKI, Google Scholar, and UWTSD library were the most significant databases. Based on the research questions, some key terms such as Chinese for Specific Purposes ("专门用途汉语"), International Chinese language education, and digital educational resources are keywords for searching. If necessary, some similar expressions such as Chinese as a foreign language, and digital resources also be flexibly used. Moreover, the types of literature are mainly peer-reviewed

core journals. According to the results of the keywords on these databases, initially count current papers and conclude some high-frequency words to identify popular themes and structure the content in two parts of DERs construction and their use in CSP. However, when conducting searching, there are very few articles overall which may be due to the CSP area being at the very beginning. According to Figure 1 and Figure 2, there are only 116 papers with the key term “Chinese for specific purposes” in CNKI from January 2008 to February 2024. When using the advanced search in titles with “CSP” and “digital resources”, relevant studies are rarely blank in CNKI. However, it is worth noting that there is a fluctuation upward in the publication of CSP within 15 years. For the themes of these 116 papers related to CSP, according to Figure 3, there are 43.10% of papers discuss “teaching” and 27.59% are related to “coursebook”, while only 1.72% of studies focus on the “resources” of CSP. It shows a great research gap in this topic. Nevertheless, because of the particularity of the Chinese language, current literature is limited to Chinese databases and Chinese authors which lacks international context. Therefore, the range of the literature review will not only contain CSP but also from its upper discipline International Chinese language education. In the future, other languages for specific purposes will also be considered to improve the international vision.

	Key terms	Volume
Key terms 1	Chinese for specific purposes (专门用途汉语)	116
Key terms 2	International Chinese language, digital resources (国际中文+数字资源)	70
Key terms 3	CSP, digital resources (专门用途汉语+数字资源)	80
Key terms 4	Advanced search in titles: CSP, digital resources (专门用途汉语+数字资源)	0

Figure 1: Volume of papers with different key terms in CNKI

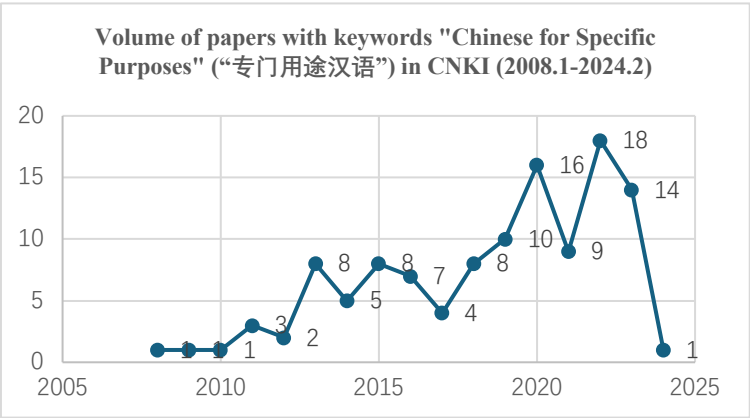

Figure 2: Volume of papers with keywords "Chinese for Specific Purposes" (“专门用途汉语”) in CNKI (2008.1-2024.2)

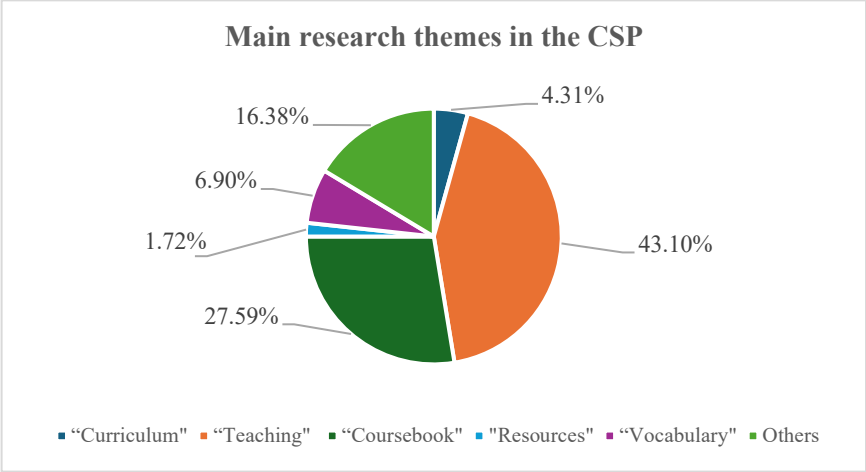

Figure 3: Main research themes in the CSP

1.2.2 Key terms

Chinese for Specific Purposes (CSP)

The systematic study of Chinese for Specific Purposes (CSP) about definitions and types has a short history. Wang (2003) first introduced the term Chinese for Specific Purposes (CSP, “特定目的汉语”）according to his special teaching experience to the princess of Thailand. Teachers had to design a specialized oral Chinese language teaching based on the princess’s “special” needs for diplomatic activities in China. Based on the English for Specific Purposes (ESP), he believed CSP refers to a teaching thought which focuses on student-centred, and teachers aim to pursue a balance between systematic teaching and learners’ demands by analysing learners' conditions and objectives and requirements. During 2003-2010, there were few researchers explored this field in depth. Until 2011, CSP (“专门用途汉语”) was mentioned by Li (2011), and his definition has been commonly accepted in this field. He believes foreign languages for specific purposes were relatively proposed based on lingua francas. Similarly, referring to LSP concepts, CSP was described as the Chinese language used in a specific professional field, scope, and fixed scenario to meet the learner’s diverse needs. Compared to the “CSP is a teaching thought” by Wang (2003), Li (2011) focused on the usage and practice of CSP in different scenarios, and he also first formally introduced specific types such as “Professional Chinese” (“专业汉语") in schooling education and “Industrial Chinese” (“业务汉语") in non-school settings. For example, CSP not only includes “Professional Chinese” closely related to disciplines such as science Chinese, engineering Chinese, and medicine Chinese but also contains “Operational Chinese” used overseas such as business Chinese, tourism Chinese,

diplomatic Chinese, etc.

Then, in 2021, the Center for Language Education and Cooperation of China (CLEL) identified the Chinese as non-first language learners can be divided into three groups: child learners 5-12 years old; young learners 12-18 years old; and adult learners over 18 years old who majorly or electively learn the Chinese language in higher education universities or Chinese language educational institutes overseas. CSP as a linguistic professional field majorly faces adult learners. At the same time, the types and content of CSP have become more diverse because of the economic policy “Belt and Road”, the government initiated a new language training program “Chinese Plus” for adult Mandarin learners which can also be contained in CSP (Li, 2023). Specifically, she agrees with Li’s (2011) “Professional Chinese” and emphasizes that it contains pre-university education and degree education. Also, “Operational Chinese” highlights an additional skill in certain occupational areas such as diplomatic Chinese. In addition, “Chinese Plus” can be divided into “Industrial Chinese” (“行业汉语") and “Chinese Plus vocational skills” (“中文+职业技能"), which is also a popular language training program set up with national language institutes such as Confucius institute overseas or vocational colleges in China. However, the sort of “Specific Purposes” seems to be confusing because there are no common standards to justify the components. For example, most CSP training programs are used in different workplaces but how to distinguish the words “professional, operational, industrial, and vocational” and their reliable reasons or theories is a vital issue.

All in all, although the Mandarin expressions of the term “Chinese for Specific Purposes” (CSP) have transferred from “Special objectives” to “Specific purposes”, the definition of CSP, the groups of learners, and the content of CSP have become clearer and more specific. Furthermore, most researchers agree with the three features of CSP. Firstly, for the group of learners, CSP learners are mostly adults. Secondly, CSP is a linguistics field that focuses on the learning of Mandarin and specific professional knowledge, and the relevant specific programs are established overseas such as universities or language institutes. Thirdly, the CSP learners’ practical needs especially in workplaces are another focal point. Based on it, CSP in this study will be defined as a cross-disciplinary linguistic field which integrates the Chinese language and certain academic disciplines

or practical industries, which aims to meet adult Mandarin learners' specific needs.

Digital Educational Resources (DERs) in CSP

Digital educational Resources (DERs) have been frequently mentioned by some researchers recently. Guo, et al. (2021) argued that "digital resources" refer to teaching resources that are digitally processed and can be used on the computer or the internet, which includes online courses, audio-visual materials, electronic teaching plans, digitalized materials, etc. Zeng and Lu (2021) highlighted that "International Chinese digital resources" have two concepts from the broad and the narrow sense. On the one hand, it stresses the various digital forms of educational resources, and they can be processed and applied to serve International Chinese teaching and learning activities. On the other hand, it underlined the use of the medium, which means the teaching resources can be used on computers or other mobile devices to support Chinese teaching and learning activities. Then, Wang and Liang (2022) focus on the teaching resources in CSP. They believed that teaching resources with communicative and functional characteristics which used in certain fields to support CSP learners in improving their communication ability, professional knowledge, and skills. Most researchers believe DERs with different digital forms and functions that can assist educational activities.

However, as a new field, there are rarely studies discussing DERs in International Chinese language education, especially focusing on digital educational resources in CSP. Furthermore, these definitions are just described by a small number of researchers, and there are rarely debates or critiques opinions. Therefore, a common definition of digital education resources in CSP is not clear. In this study, according to the main features of cross-disciplinary and learners' needs of CSP, combined with characteristics of digital resources the "Digital educational resources in CSP" (DERs) will be defined. DERs are teaching and learning resources created or applied with digital technologies, that aim to support adult learners with special needs to acquire the Chinese language as well as specific professional knowledge.

1.3 Research aims and initial research questions

In this study, exploring the use of DERs in CSP from learners' perspective aims to enrich relevant theories, improve the DERs construction, and finally guide the practice of teaching and learning efficiency for CSP practitioners and learners. The first research question examines how CSP learners perceive the usefulness and limitations of current digital educational resources in CSP, which aims to figure out the characteristics and issues of DERs construction. The second question looks in more detail at CSP learners' willingness and influencing factors when using DERs during classroom and self-study, which aims to explore the challenges in teaching and learning processes.

1.4 Summary

Based on the research background, the topic of "Chinese for Specific Purposes (CSP) Learners' Perceptions on the Use of Digital Educational Resources: A Mixed Method Study" is identified. The first section above demonstrates the concept of key terms and briefly introduces the research aims and initial research questions. In the following section, a more detailed review of the key theories, the construction, and the use of DERs in CSP will be illustrated to provide an overview of key literature about the two research questions respectively.

2. Literature Review

2.1 Introduction

The importance of DERs in International Chinese Education is noticed in the field. Zeng and Lu (2021) believe that the development of DERs for International Chinese language education is inevitable because of educational informationalization in the digital age. Qu and Ding (2023) distinguished "educational informationalization" and "digital transformation", and reviewed the history of the digital transformation of International Chinese language education which went through three periods: computer-assisted Chinese language teaching and learning (1980s-2000s); educational informationalization with the emergency of digital teaching resources and online platforms construction (2000s-2020s); and digitalization with the involvement of big data, cloud computing, Artificial intelligence (AI) and effects of the pandemic (2020s-now). During the period of digitalization, some researchers emphasized the functions of DERs such as auxiliary instruction

(Peng, 2022), which assist in improving teaching and learning effectiveness (Song, Zhang and Liang, 2023). Besides, some researchers focused on the significance from other or deeper perspectives. Guo, et al., (2021) emphasized the cultural communication significance of digital resources. Specifically, digital resources can create more channels to spread Chinese language knowledge as well as Chinese culture. Song, Zhang and Liang (2023) believed the core objective of "digitalization" is to establish an international Chinese education "Digital Ecosystem" which closely combines information systems during the teaching processes of pre-class, in-class, post-class, and post-learning stages. In short, most researchers agree with the importance of DERs in International Chinese Language Education from a broader horizon. As a part of the branching field of international Chinese language education, studying DERs in CSP education is also very important.

Most of the researchers have a positive attitude towards the DERs' developing trends because of its increasing essentiality while several authors expressed their concerns about it. Song, Zhang and Liang (2023) argue that with the end of the pandemic, teaching will go back to the traditional classroom, therefore the development of the construction and usage of digital resources is temporary, and the development of DERs will slow the pace down. It is obvious that digital elements are involved everywhere, which is an inevitable trend. But, as some of the authors are worried about, how to improve the quality and effectiveness of DERs in CSP educational practices for Mandarin learners rather than just pursuing numerical growth may be the next critical aim.

CSP is a cross-discipline second language education. The research topic about how modern technological educational resources can be effectively used for CSP learners involved two kinds of "integration": the integration of the Chinese language and specific professional knowledge through DERs, the integration of the DERs-involved learning environment and adult L2 learner's acquisition features. Therefore, the theory of Content Language Integrating learning (CLIL) which emphasises the first "integration" might be used to analyse the DERs' features in CSP for learners. Besides, referring to CSP learners' willingness to accept DERs, another acceptance model of the Technology Acceptance Model (TAM) was widely used, which can be related to the second "integration". In this part, the CLIL and TAM will be introduced in detail. Moreover, more core papers will be critically reviewed related to two research questions as follows.

2.2 Key Theories

2.2.1 Content Language Integrating Learning (CLIL)

Content Language Integrating Learning (CLIL) is an educational method that focuses on acquisition of both subject matter as well as language skills (Coyle, Hood, and Marsh, 2010). They focus on the creation of materials and tasks for the CLIL classroom. They noted that learners' motivation and student-centred learning needs should be carefully considered when evaluating or creating educational materials. Sampelolo, et al (2023) introduced CLIL into English for Specific Purposes. They tried to use the 4D model as a typical DER to develop the content understanding, and they believed that CLIL could provide immersive and interactive language learning experiences for ESP learners. Sun (2023) introduced the concept of CLIL into International Chinese language education. They integrate Coyle's (2007)' 4Cs framework that contains content, communication, cognition and culture to guide the teaching practice in a Confucius classroom in an Italian high school where conduct CLIL program. In this case, the author proposed that teaching content is based on various subjects rather than language-centred classes. Additionally, the core of CLIL mode is to encourage participants to communicate with each other in authentic social environments. For cognition, CLIL drives students to consider issues in Mandarin to structure their process of thinking. Meanwhile, it also affects learners to widely understand the culture and values behind the language. Overall, CLIL as a linguistic education theory integrate content and language skills learning was widely used in English as foreign language education, several researchers tried to conduct it in CFL classroom in recent years. But nearly none of the research explored the integration of CLIL and CSP.

Therefore, this study attempt to explore DREs nowadays in CSP from learners' perspective aims to deeply knows CSP learners' motivation and their learning needs, so that to modify and create more appropriate educational materials. The development of CLIL-based CSP materials supported by technologies can not only enhance the interaction to improve the learning experience and knowledge understanding in content, communication, cognition, and culture for CSP learners, but also might affects CSP instructors' teaching process.

2.2.2 Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) is a theory about individuals' willingness to accept technology since the 1980s in the field of psychology. It contains three factors: perceived ease of use, perceived usefulness, and attitude towards using. It has been widely used in the educational context recently to explore and explain the intentions of learners towards using e-learning technology (Granić, A. and Marangunić, 2019). Li and Liang (2023) constructed an acceptance model of digital resources for online International Chinese language teachers based on TAM and Expectation Confirmation Theory (ECT) with five elements: ease of use, usefulness, awareness of voluntary usage, satisfaction with usage, and intention to continue usage. In this study, how CSP learners' willingness towards current DERs is a crucial research question. It aims to find out the existing issues of the creation and application of DERs in CSP. In general, TAM is an appropriate theoretical framework from different dimensions to explore CSP learners' demands and views of DERs influencing elements. The findings aim to inspire in DERs construction for resource designers, as well as enhance the effectiveness of teaching and learning for CSP instructors and learners. It is interesting to expand the TAM theory with other dimensions such as voluntary usage in CFL education by some quantitative test methods, however, the new framework needs to appeal to survive contact with more practice. In this study, TAM will be one of the most critical theoretical frameworks for designing questionnaires and exploring the CSP learners' acceptance of DERs. Nevertheless, the three dimensions of TAM might be limited, some other elements such as voluntary usage will be considered as well.

2.3 Construction of DERs in CSP

2.3.1 DERs in international Chinese language education and CSP: an overview

Many studies showed that DERs in CFL have increased in quantity recently. For one thing, the DERs have increased in total. Until 2021, Guo, et al., (2021) counted current digital teaching resources in International Chinese language education. There are 3,679 series of digital coursebooks, 485 MOOC courses in 11 MOOC platforms, 4,700 micro courses from 4 main micro competitions, 400 Chinese language websites, and 272 mobile applications. It is contributed by the government and enterprises supporting, and the development of technology. For another, Mandarin learners have increased. Until 2023, there were 5.7 million learners who had subscribed to Chinese teaching

channels on YouTube, and 6 million learners subscribed to “Chinese Plus” platforms. (Song, Zhang and Liang, 2023), (Guo, et al., 2021). Most researchers acknowledged that the DERs in CFL developed quickly during these years. In CSP, Liang and Liu (2024) took “Chinese Plus Vocational education”, a special field in CSP, as an example, and concluded the achievements of CSP teaching resources in quantity and various types. Besides, some researchers focus on the teaching of CSP, for instance, Bai and Han (2020) analyzed the teaching status of CSP at Confucius Institute under the background of the “Belt and Road” initiative and pointed out the lack of CSP courses, coursebooks, and teachers. Although DERs in International Chinese language education have developed a lot, pitifully, few studies discussed how to integrate DERs and CSP courses from a systematic and comprehensive perspective.

In addition, the types of DERs in international Chinese language education vary with different classification criteria. According to the Teaching Resource Development for International Chinese Language Education Action Plan (2021-2025) (CLEC, 2021), the CLEL identified the constructing framework of International Chinese language education with three levels of groups of people, content and types, and media forms. Firstly, the content of DERs in International Chinese language education includes comprehensive skills, special skills, language elements, Chinese plus vocational skills, culture and national context, readings, and reference books. Moreover, the media forms contain paper coursebooks with multimodal supporting materials, digital materials, digital coursebooks, online courses, software applications and so on. Except for official documents, some researchers also classify the different types of DERs. Zeng and Lu (2021) and Peng (2022) all based on the national educational document “Technical Specifications for the Construction of Educational Resources” (CELTS-41.1) and put forward several sections of DERs. To be more specific, Peng (2022) concluded 8 types with different themes of DERs. (1) linguistic knowledge such as phonics, vocabulary, grammar, Chinese characters, and culture; (2) coursebooks; (3) curriculums; (4) multimodal materials such as pictures, audio, video, and games; (5) Chinese interlanguage corpus; (6) the examination database system; (7) case library; (8) digital library. He classified the typical DERs based on the functions of language and highlighted several comprehensive teaching platforms with the website forms. Zeng and Lu (2021) illustrated the DERs in eight sections from different organizing patterns such as digital textbooks, multimodal materials, online corpus, online tests,

educational websites, educational software, literature materials, and teaching tools. Besides, they also classify the DERs with wider criteria from content, applicable objectives, media forms, application scenarios, producers, and functional positions. They all demonstrated the specific types of DERs, and most of them agreed with the diversity of DERs in CFL based on both teachers and learners. For example, some DERs can be easily accessed in public such as digital textbooks, multimodal materials, and other online courses, while some DERs mainly used for practitioners to teach or study such as corpus.

Additionally, Guo, et al., (2021) classified digital resources into three types based on the website of the Global Chinese Language Communication dynamic database which is built by "Global Village" International Chinese Education Research Team (2019): (1) digital textbooks; (2) online courses such as MOOC and micro courses; (3) digital applications such as websites and mobile applications. However, the issue is that it is not easy to distinguish the boundaries of different DERs. For instance, digital textbooks are inseparable from some digital online platforms, which also include a variety of auxiliary multimodal DERs such as video or audio. Besides, the use of digital mobile applications is also inseparable from digital online platforms. But it can be rationally inferred that these DERs might classified with different focuses which means digital coursebooks are developed around paper textbooks, and corresponding assisted digital resources are also developed based on them. Also, online courses mainly focus on diverse courses while digital applications indicate teaching and learning tools. According to the aim of the study, learners' roles are stressed so that the DERs for learners will be paid attention to. Therefore, the typical DERs in CSP such as digital coursebooks, online courses, and digital applications which may be found by learners will be focused on, while some online corpus for practitioners will not highly be demonstrated. Relative studies will be critically analysed in detail to find out the status of using DERs as follows.

2.3.2 Digital Textbooks in CSP

Some of the researchers focus on the development of digital coursebook construction in International Chinese language education. Li (2023) pointed out that textbooks of CFL have transferred into a new form deeply integrated with technology and language education and characterized by integration, coalesce, interactivity and developmentality. The new-form textbooks

include traditional paper textbooks and a series of assisted digital resources such as video, audio, animation, PowerPoint, online courses, and digital platforms, etc. Du and Liu (2023) transferred the expression of “digital textbooks” but “smart textbooks”. They believed smart textbooks are new forms of coursebooks with intelligent technologies which aim to improve the efficiency of teaching and learning. Particularly, they held that smart coursebooks not only contain paper textbooks but also diverse digital platforms. In addition, they pointed out that the issues of smart textbooks include uneven development levels at home and abroad, uneven types, and differences in educational technology. Besides, Du and Liu (2023), and Zhu (2024) all highlighted the digital transformation of coursebooks based on the Artificial Intelligence era. It is obvious that the forms and content of textbooks have changed with digital features nowadays, and it may be also improved in the future with the development of AI.

At the same time, some researchers focus on the coursebooks of CSP. Jiang (2022) paid attention to CSP coursebooks in early childhood education among Southeast Asian students in China. She highlighted three significant elements that should be involved in coursebooks such as improving systematics and normalization of professional knowledge “early education”, increasing authentic cases with “vocational features”, and comparing cross-cultures between China and Southeast Asian countries. Li (2023) explored the teaching of medical Chinese based on linguistic elements and coursebooks compared to general Chinese. He believed the core of medical Chinese is Chinese language learning, therefore the materials should be closely linked with general Chinese. He held that linguistic skills of listening, speaking, reading, and writing in medical Chinese will be acquired at an intermediate level of general Chinese. Also, he stressed that vocabulary is one of the most important elements which shows the professionalism of CSP, and it can be taught inspired by traditional general Chinese teaching methods. Some authors noticed the construction of coursebooks for CSP, and they both stressed the teaching materials should be designed based on CSP features in specific disciplines and certain areas. Meanwhile, some researchers argued some issues of CSP coursebooks. Wang and Liang (2022) proposed three major issues of CSP teaching resources, for example, a single type of CSP teaching materials, a lack of branded teaching materials, and a lack of materials for CSP learners at the primary level overseas. However, although several studies are focusing on the coursebooks of CSP, the current relevant research is too little in total let alone the

digital coursebooks, assisted digital materials and their usage. In other words, the study in this field is at the very beginning.

2.3.3 Online Courses in CSP

Some of the researchers believed online courses were established based on some online educational platforms. Chen (2024) took an online educational platform LingoAce as an example and described the developing mode of online Chinese courses by enterprises of International Chinese language education which integrated livestream classes, digital textbooks, digital learning materials and personalized teaching. Similarly, Peng (2022) believed online courses can be collected based on comprehensive teaching platforms which gathered a large number of resources. He underlined that online platforms could overcome the weakness of fragmentation and separability of DERs to some extent. In particular, he took the website "Chinese Plus" as an example, and noted that varies with different ages, for example, the series of MOOC classes of "Chinese Plus Vocational Education" for CSP learners can be found in a certain section. The authors above both mentioned some online Chinese language platforms.

Apart from some online courses as educational materials presented on online platforms, some other online courses initiated by schools also gained traction. Su and Fu (2023) look at online Mandarin courses for Laotian university learners who majored in professional Chinese during the special period of COVID-19. They summarized some precious experiences of conducting online collaborative courses and emphasized the importance of DERs. Guo (2022) took Chinese sales promoters as an example to design online CSP courses in the service industry based on demand analysis theory. He concluded that audiences of online courses for sales are mainly beginners. He also believed teaching content should focus on listening and speaking which help learners acquire knowledge which is urgently used. Meanwhile, the curriculum design should follow the function-task teaching syllabus to meet the communicative needs. In conclusion, some online courses are recorded materials by teachers which can be found on public online educational websites, and some other online interactive live courses may be conducted by practitioners on a variety of online platforms. Therefore, referring to the field of CSP, these two typical online courses of DERs should also be considered. More importantly, it again highlights the importance of exploring learners'

demands and subject characteristics in different areas of CSP, which may help to create more targeted DERs.

2.3.4 Digital Applications in CSP

Most publications about digital applications are master dissertations, they applied one of the mobile applications in different language lessons and tested its effectiveness such as investigating the use of mobile applications in Business Chinese classes overseas (Zhu, 2023), etc. These papers mostly explored the use of digital applications rather than their construction. Only several researchers discussed the construction of digital applications. Xing and Liang (2023) are inspired by digital products such as digital applications development at Goethe College which is the national German learning and educational facility. They investigated and analysed the strengths of mobile applications and suggested that the construction of digital products for International Chinese language education should show professionalism, making product design interesting, pursuing personalization and emphasising user experience. It is enlightening to compare different digital products in different language learning. For CSP, other languages for specific purposes have more experience with a longer history, therefore, their achievements are worth reference. So far, the studies about the establishment of digital applications targeting CSP learners are less in general.

2.4 Use of DERs in CSP

2.4.1 Roles of CSP Practitioners

Most of the discussions about the use of DERs in International Chinese language education were specific teaching practices of DERs, which aim to enhance the effectiveness of teaching for practitioners. For example, Zhao and Huang (2024) explored the use of Google Forms in online international Chinese classrooms in order to give more examples of solving the difficulties of interaction during online courses with some useful digital applications. Chen, Ran and Chen (2023) indicated the strategies of L2 Chinese online educational games such as Unity, Virtual Reality, and Augmented Reality. They believed that the online educational game could simulate the authentic social-cultural context and build an immersion environment for learners, particularly the cooperative modes inside may increase the interactions for learners. With ChatGPT as an artificial

intelligence (AI) application emerging, there are more challenges and opportunities for International Chinese language education. Some researchers applied AI to the area. For example, Li and Xin (2023) conducted a practice of TCSL interpretation with the support of ChatGPT. Guo and Xie (2024) tried to use ChatGPT in the process of teaching design for Chinese characters. All in all, regarding the use of DERs, some researchers studied how to design online courses based on certain platforms, and some researchers focused on the teaching practice of digital applications. However, the studies about digital textbooks are mostly about construction rather than their usage. Moreover, the advent of AI has driven more research in this area, but current studies stayed in the ideation stage while there is little practical research. It should be noted that current studies about the use of AI applications in CSP education are almost blank.

For the views of practitioners about accepting DERs, some researchers tried to collect their perceptions. Li and Liang (2023) investigated 473 online Chinese as foreign language (CFL) teachers' willingness to accept DERs and their influencing factors. They constructed a new theoretical framework of the Online CFL Teachers Acceptance model based on the Technology Acceptance Model (TAM) and Expectation Confirmation Theory (ECT). They found that the overall acceptance of DERs among online CFL teachers is favorable with a high awareness of voluntary use. Based on the findings, they highlighted that it is necessary to strengthen teachers' digital literacy and establish an "ease of use" and "usefulness" of DERs, and finally to build an inclusive and fair disciplinary digital ecosystem. Besides, being affected by AI, CFL teachers are facing transformation pressures from general Mandarin teachers to vocational Mandarin teachers (Gu, 2023). According to the research above, some authors started to focus on the educational participants' willingness to accept the DERs, and AI elements also have stressed compound teachers should be trained to cultivate CSP talents in the future.

2.4.2 Roles of CSP Learners

Meanwhile, some researchers have considered learners' roles in international Chinese language education. Zheng and Ye (2024) stood at the international Chinese L2 learners' perspective to explore their perceived social support (PSS) in smart education. They compared learners' PSS in

online and classroom learning and revealed that international Chinese L2 learners were lack of support from partners, and the support from online communities was lower than other elements. According to the results, they emphasised the significance of improving interaction among learners online and offline, emotional support from practitioners, and platform construction through online interaction modes and communication channels. As for CSP learners, Guo (2022) identified that online students in the service industry are most beginners. However, some other authors have different ideas. Li's (2023) findings indicated that Medical Chinese learners are mainly learners who are at intermediate proficiency. The differences show that CSP learners are at different language levels, but their objectives are similar: to improve their language skills and their professional knowledge such as sales or medicine. However, it does not mean it is unnecessary to study the group of CSP learners in service Chinese education with higher Mandarin levels or study the Medical Chinese learners who are beginners. It justified that there are research contextual gaps in the use of DERs by CSP learners with different Chinese language levels.

Peng (2022) also indicated that some existing DERs are helpful but less known by others therefore, the use of DERs is insufficient. Some of the researchers raised some issues and started to notice the use of DERs. Most researchers probed how to use DERs in CSP from practitioners' perspectives to optimize teaching methods. The literature above shows that some researchers no longer just focus on teachers' roles in the use of DERs, but for the CSP area, the rare authors explored the use of DERs based on CSP learners' perspectives.

2.5 Summary

Even though some work has been conducted in the last several years, there is still great potential for research in this area. Firstly, there is a lack of relevant theoretical studies about DERs in CSP. Most theories in CSP are originally from language for specific purposes, especially in English. Although some of the research results can be used to guide the development of CSP, there still probably exists inapplicable issues because of differences between Mandarin and English, for example, the special Chinese characters. Secondly, an increasing number of studies notice how International Chinese language education has integrated DERs. In this paper, CLIL and TAM were classical theories to guide the research, but there is still little discussion about theory in this area. Besides, when

conducting searching, most of the application-related research comes from master's theses, and it may be because most of the authors are frontline teachers who can provide much practical experience and advice on the use of DERs. Meanwhile, there is not much discussion about practice in core journals. All in all, the research gaps of DERs in CSP both exist in theories and practice.

In recent years, the discussion about the construction and use of DERs in International Chinese language education has increased a lot. However, most of the current studies discussed how to construct digital educational resources rather than the usage of these materials. In addition, many studies about CSP education are from practitioners' perspectives to improve teachers' teaching effectiveness, while there is a lack of studies on CSP Learners' views on the usage of digital resources based on the CSP learners' needs to improve learning efficiency. For the methodological gap, compared to more qualitative research methods, more quantitative research methods can also be explored to improve the validity and reliability of the study. To fill the gaps in CSP, firstly it is necessary to systematically sort out what DERs in diverse CSP disciplines are available, especially to learners such as digital textbooks, online courses, mobile applications, etc. Then, based on CLIL theory, investigate the CSP learners' views on these current DERs to explore the usefulness and limitations of DERs in CSP based on learners' practical demands, such as CSP learners' working industry demands based on regional differences, learners' Mandarin proficiency etc. Thirdly, referring to TAM theory, investigate CSP learners' willingness to accept and voluntarily use DERs in CSP and find out the possible subjective and objective influencing factors.

In this project, a more systematic study of DERs construction and application will be investigated not only based on the practitioners' view but also focuses on CSP learners' perceptions. Further, a mixed-method research design will be conducted using quantitative and qualitative research tools to provide a more comprehensive perspective. According to the review of these studies, the two research questions are revised as follows:

RQ1: ~~What is~~ **How do CSP learners perceive** the ~~features~~ **usefulness** and ~~issues~~ **limitations** of current digital educational resources (DERs) in CSP?

RQ2: What is CSP Learners' willingness to ~~use~~ **accept and voluntarily use** digital educational resources (DERs) and their influencing factors?

For the first question, after reviewing the literature, it is better to revise the research angles and underline the role of CSP learners. Besides, the expression of “features” and “issues” are replaced by “usefulness” and “limitations”. For the second question, the study aims to not only explore the acceptance of CSP learners to DERs but also their willingness to voluntarily use DERs.

Conclusion

This review offers a critical overview of the current state of research efforts on the construction and use of digital educational resources in Chinese for Specific Purposes (CSP). Nevertheless, the database is limited to the Chinese context and Chinese for specific purposes, which lack international context. In the future, some different versions of other languages for specific purposes will also be compared and critically analysed. In this case, typical DERs are created by official institutes, some other digital resources used in class did not been mentioned too much. Besides, the study of theories is also limited, more advanced theories especially in this AI era may be ignored in this paper. Therefore, a more critical literature review on this area will be conducted in the future.

References

	Key readings	Theme	Summary of themes
RQ 1	Current Situation and Prospect of International Chinese Education Digital Resources Construction	Digital Resources	Construction of DERs in CSP In this section, some studies with DERs in International Chinese language education were discussed, and some typical DERs such as digital textbooks, online courses, applications, and their construction in CSP also be explored.
	Deep Cognition of the Digital Resources Construction for International Chinese Language Education	Digital Resources	
	Review of International Chinese Language Education Teaching Resource Libraries in China (2000-2022)	Teaching Resource	
	International Chinese Smart Textbooks and Their Development	Smart Textbooks	
	Design of Online Chinese Course in Service Industry Based on Demand Analysis Theory —Take Chinese for Sales Promoters as an Example	Online courses	
	The Implication of Digital Products Development at the Goethe-Institute for the Development of International Chinese Education	Digital Products	
RQ2	'Teachers' Willingness to Accept Digital Resources and Its Influencing Factors -- A Survey Based on 473 Online CFL Teachers	CFL Teachers	Use of DERs in CSP\ From the perspectives of both teachers and learners to understand the use of DERs in CSP.
	The Research on Social Support for Online Learning of International Chinese L2 Learners in the Context of Smart Education	Chinese L2 Learners	
	Application Analysis and Construction Strategy of Online Educational Game Classroom in International Chinese Education	Online classroom	

Figure 4: Core literature lists

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