

Can Self Directed Learning Successfully Incorporated into Online Platforms?

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Abstract

With the rapid development of technology, self-directed learning (SDL) has gained significant attention in China's educational community as a flexible and adaptive learning approach. Online learning platforms are uniquely positioned to support SDL by allowing learners to engage with educational content according to their interests and needs. This article examines how to effectively integrate self-directed learning within online platforms and analyzes its influence on learners' autonomy, flexibility, and overall academic outcomes.

Through a review of multiple studies conducted in the context of Chinese education, we identify key components necessary for the success of online platforms, including personalized learning paths, real-time feedback mechanisms, and social interaction features. Personalized learning paths empower students by enabling them to select content and determine their learning pace, thereby increasing motivation and relevance in their studies. Similarly, real-time feedback enables learners to promptly assess their progress and make necessary adjustments to their learning strategies. Furthermore, social interaction features foster a sense of belonging and engagement, encouraging communication and collaboration, which are essential in the collectivist culture of China.

This article offers actionable recommendations for educators and online platform developers to enhance the implementation of self-directed learning in online education. By focusing on these strategies, we aim to improve learning outcomes, reduce disparities among learners, and advance the evolution of online educational practices in China. Ultimately, leveraging SDL within online environments can facilitate more effective learning experiences suited to the needs of diverse student populations in contemporary Chinese society.

Keywords : Self-directed learning; online platforms; e-learning

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Introduction

Theories of Learning

This study is focused on self directed learning, so an initial question must be – what is learning? According to Kolb (1984), ‘ Learning is as a dynamic and intricate process that involves the acquisition of knowledge, skills, or behaviors through various means such as study, experience, or instruction.’ However, despite this seemingly straightforward definition, learning actually encompasses a rich and diverse landscape of theories and perspectives. Educational research has identified over 50 different theories, so highlighting the complexity and multifaceted nature of how individuals learn and grow. (Jorg, Davis & Hickman, 2007, p. 147). Indeed, these theories shift and merge in many combinations as education progresses and changes in accordance with changing sci-cultural contexts- such as the transformation from a print-based world to a digital one.

Throughout the historical continuum of education and psychology, key theories of learning have evolved to shape our understanding of how individuals acquire knowledge and develop. In the 19th century, traditional education methods focused on rote memorization, teacher-centered instruction, and standardized testing (Williams, 2022) - methods that prioritized conformity and obedience over individualized learning and critical thinking skills. This ran parallel to an 18th century Enlightenment which foreground the development of the intellectual, emotional and

social aspects of the individual and the promotion of self-discovery and personal growth (Williams, 2022). The early 20th century saw the emergence of a debate between behaviorism and Dewey's social pragmatism, highlighting contrasting views on learning and instruction. According to Skinner (1953), individual behavior is learned and shaped by responding to external stimuli, so can be cultivated and changed through conditioning and motivation. From a behavioral standpoint, learning is viewed as a process of stimulus-response associations. However, Dewey's constrastive pragmatic perspective regarded learning as a means of cultivating practical abilities, active participation, and problem-solving abilities. This approach emphasized the close connection between knowledge and practical life, so as promoting comprehensive development and growth. As the 20th century progressed, more theories of learning emerged that focused on learners as individuals within a social, globalized context. Successful learning outcomes became very important to a country's economy and social progress. The mid-20th century saw an increased interest in how learning occurs- such as Piaget's cognitive development theory, Vygotsky's sociocultural theory and so on. Piaget (1950) drew attention to the processing and organization of information in the brain, and how this was governed through a chronological continuum. Essentially, a child will go through distinct developmental stages. This had a profound effect on education in that curriculum programmes were now organized and sequenced in accordance with these. How children learn became an increasing focus of social psychologists?

Bandura's Social Learning Theory (1977) emphasized that individuals can acquire new behaviors and knowledge by observing

others and the outcomes of their actions. Vygotsky's sociocultural theory focusing on social interactions and cultural context in learning. His concept of the zone of proximal development suggests that individuals can learn beyond their current level of ability through interaction with others. (Vygotsky, 1978).

However, today humanist and behaviorist learning dominates teaching and learning. This can be attributed to various factors shaping the educational landscape. In particular, the rise of neoliberalism in education has prioritized market-driven approaches and competition, emphasizing efficiency and outcomes over holistic learning experiences. Neoliberalism is an economic and political ideology that advocates for limited government intervention in markets, deregulation, privatization, and free trade policies. It emerged as a response to challenges faced by traditional Keynesian economic policies, aiming to promote free markets, individual entrepreneurship, and economic efficiency (Harvey, 2005). With the rise of globalization, it is believed that market forces are more effective in determining resource allocation than government intervention. (Mirowski & Plehwe, 2009). Additionally, an exam evaluation culture reinforces the prioritization of content mastery and test performance over critical thinking and practical application of knowledge. The reliance on high-stakes exams and standardized assessments as primary measures of student achievement incentivizes educators to focus on content coverage and exam preparation, further entrenching classical pedagogical practices.

Sociocultural factors and institutional inertia also play a role, as deeply rooted traditions within educational systems create resistance to change and hinder the adoption of new teaching paradigms. The need for connected, individualized, cognitively premised learning has been overwhelmed by a focus on examination prowess and a factory model of teaching. According to Hursh (2007), the "No Child Backwardness Act" passed by the United States in 2001 requires schools to evaluate student and school performance through standardized tests. As Freire, the Marxist philosopher and educator (1921-1997), famously asserted that Children should not be seen as passive containers filled with knowledge, they should actively engage in dialogue during the educational process. Unfortunately that is not happening in many countries – especially China.

The current Chinese situation

In recent years, China's education system has centered around the college entrance examination, which largely determines students' future development paths. Gaokao, which serves as the nation's college admission exam, evaluates pupils mostly through standardized assessments that place an emphasis on rote memorization and the capacity to recall factual knowledge rather than critical thinking or problem-solving skills. The test promotes a learning approach that is similar to antiquated teaching strategies from the late 19th and early 20th centuries, when memory recall was crucial. Large volumes of data, formulae, and texts are frequently expected of students, which might hinder their ability to be creative and acquire the critical thinking and problem-solving abilities needed in the modern, international economy (Wang & Yang, 2020). Due to the importance of the college entrance examination, many schools have adopted a test oriented education model, which puts enormous pressure on students and promotes teachers as instructors rather than facilitators of learning. A large amount of time is spent on preparing for exams which limits students' overall development and leads to insufficient cultivation of critical thinking and creativity (Zhang & Cowen, 2009). In 2020, Wang et al. performed a study which revealed that Chinese high school students commit a substantial amount of their weekly study time—50 hours on average—to test preparation. Rather than encouraging creativity or investigation, such an atmosphere fosters a culture of memorizing and obedience. According to Gao et al. (2019), students expressed feeling overburdened and incapable of pursuing extracurricular activities, which hinders their capacity for

autonomous thought and personal growth. Related 'learning' institutions have also developed as a result, and parents enroll their children in various tutoring classes to improve their college entrance examination scores. This has also led to uneven distribution of educational resources as economically disadvantaged students cannot afford the high cost of tutoring (Tsang, 2011). In addition, some families choose "college entrance examination immigration" to allow their children to participate in the college entrance examination in less competitive areas, that is, to transfer their household registration to other provinces or regions (Li & Zhang, 2010). This approach further reflects the imbalance of regional competition under the college entrance examination system.

Faced with these issues, China began reforming the college entrance examination in Beijing and Shanghai in 2014, implementing new policies for the examination. These included allowing students to independently choose exam subjects within a given range. For example, Shanghai's "trinity" enrollment model combines college entrance examination scores, academic proficiency tests, and comprehensive quality evaluations to select students based on diverse criteria (Yuan & Zhao, 2016). However, the model of prioritizing traditional teaching methods in the college entrance examination has not undergone significant changes. This exam-centric educational model often places immense pressure on students and can limit their exposure to critical thinking, creativity, and other vital skills necessary for success in a global economy (Chen, 2018).

With China asserting itself as a major player in the world economy, there is a growing demand for workers with the kind of abilities needed in a world changing quickly. Particularly when technology transforms markets and businesses, digital literacy is critical. Additionally, in order to successfully traverse the complexity of today's businesses, which demand creative problem-solving and teamwork, students must acquire critical inquiry and effective communication skills (Wang et al., 2019). To close the knowledge gap between conventional teaching techniques and the skills needed in a globalized world, educational innovations are important in this context. In addition to preparing students for success in their future academic endeavors, a focus on 21st-century skills like digital citizenship, critical thinking, and cooperative teamwork will also result in a workforce that is more effective and flexible and can handle the challenges posed by globalization (Zhang, 2020).

The future

There needs to be change. The future of education in China will face a series of challenges and opportunities. In the context of globalization and rapid technological development, Chinese education must seek balance to better adapt to future needs. Therefore, education reform needs to pay more attention to cultivating students' critical thinking, innovation ability, and cross-cultural communication ability, and keep up with the pace of globalization, simultaneously utilizing technological means such as online education and intelligent learning platforms to narrow the urban-rural education gap and promote educational equity (OECD, 2019 ; Zhao, 2009). Policy makers need to adjust the existing education evaluation system to encourage diverse learning methods and more comprehensive talent development (Li & Zhang, 2010).

The importance of Self-Directed Learning

A particular theory of learning which could help China (and other countries) deal with these changes is SDA. SDA means self-directed activity. It refers to individuals actively taking control of their learning journey during the learning process, including setting learning goals, selecting learning resources, arranging learning time, and self-evaluation of learning outcomes. This approach emphasizes learners' autonomy and initiative, which helps to improve learning motivation and effectiveness, while cultivating

lifelong learning abilities (Knowles, 1975 ; Candy, 1991). In today's digital age, where information is readily available and accessible, self-directed learning empowers students to take control of their learning journey, set goals, explore interests, and engage in lifelong learning (Boud, Cohen, & Sampson, 2014). This approach fosters critical thinking, problem-solving skills, and self-motivation, preparing students for success in an ever-changing world. In the evolving digital context of education, the abundance of information available online has transformed the learning landscape (Dabbagh & Kitsantas, 2012). Learners now have access to a wealth of resources, ranging from academic journals to multimedia content, enabling them to engage with diverse perspectives and sources of knowledge. This shift requires learners to not only consume information but to also critically evaluate, synthesize, and create meaning. Learners must develop competencies in information literacy, critically analyzing sources, and synthesizing information to form well-rounded perspectives (Anderson, 2003). The digital environment challenges learners to engage actively in higher-order thinking processes, such as critique, reflection, and the application of knowledge to real-world contexts. This necessitates a shift learners taking ownership of their learning journey, set goals, seek out relevant information, and construct knowledge independently (Siemens, 2005).

Indeed, as the educational landscape evolves in the digital age, the role of teachers is undergoing a transformation. Many educators are now moving away from traditional didactic approaches towards becoming facilitators of learning: they now play a crucial role in guiding students to navigate the vast digital information landscape, helping them develop critical thinking skills, discern credible sources, and apply knowledge effectively (Bates, 2015). Moreover, teachers are increasingly adopting a mentorship role to enhance student learning outcomes. Research indicates that mentorship in education fosters self-regulated learning by helping students set goals, monitor their progress, and reflect on their learning experience (Zimmerman, 2002). Additionally, mentorship promotes a culture of inquiry, encouraging students to ask questions and engage deeply with content, which is crucial for developing critical thinking skills (Dweck, 2006). Collaborative learning environments, supported by teachers, facilitate teamwork and communication, ultimately driving creativity and innovation among students (Johnson & Johnson, 2009).

The expansion of digital platforms education after COVID-19

The widespread acceptance and deployment of digital platforms in a variety of industries, including education, has been spurred by the COVID-19 pandemic. One significant aspect of this digital transformation is the creation and delivery of educational content tailored to the needs of students. Digital textbooks, multimedia materials, and online tutorials enable educators to offer individualized instruction that accommodates a range of student preferences and learning styles. Students may interact with the information at their own speed and in accordance with their own learning preferences thanks to systems like as Pearson's MyLab, which offer interactive textbooks that include videos, quizzes, and real-time feedback (Deng et al., 2021). In addition, educational institutions who use Google Classroom as their digital learning management system make use of the platform's capability to distribute multimedia content, such YouTube movies or interactive simulations from sites like PhET Interactive Simulations. This diversity enables educators to deliver knowledge in three different ways: viscerally, auditorily, and kinesthetically. This accommodates varied learning preferences and fosters a more comprehensive educational experience (Liu, 2018). With many sophisticated digital resources available on platforms such as XuebaJun and 17zuoye, students can now augment their classroom instruction with independent study and practice (XuebaJun, n.d.).

Online learning platforms have been increasingly popular in China thanks to appropriate regulations and their effective

application in a variety of settings. These platforms serve K–12 schools as well as higher education establishments, with a wide range of functions and target audiences. For instance, K–12 education now makes extensive use of platforms like Tencent Classroom and DingTalk, which were created by Tencent and Alibaba, respectively. These systems provide real-time online instruction, giving instructors the ability to present courses, participate in live conversations with students, and offer resources all within a single, integrated setting (Yuan et al., 2021). Moreover, platforms like Zhihuishu and Xuexitong (Study System) are well-known in the university sector. A wide range of services, like as course management, student exams, and even social networking tools for students, are provided by Xuexitong. However, Zhihuishu caters to a variety of educational requirements and interests by emphasizing interactive learning activities and high-quality video lectures (Wang et al., 2020). These systems facilitate both synchronous and asynchronous learning, allowing students to study at their own speed and go over difficult ideas again as needed. International platforms such as Coursera and edX have also gained popularity among Chinese institutions that wish to broaden their curricula and provide courses that meet international standards. These platforms provide access to education and promote a culture of lifelong learning by collaborating with top institutions to offer excellent online courses on a range of disciplines (Li, 2018). Nevertheless, despite these developments, many educators are reluctant to use digital learning environments. Some educators believe that online learning lacks face-to-face interaction, which in turn affects students' sense of participation (Garrison & Vaughan, 2008). Others believe that their acceptance of new technologies is limited, and they lack the necessary skills and training for online education platforms (Teo, 2011). Which highlights obstacles and difficulties in the digital transformation of the educational landscape. Especially in China, the pressure of the Gaokao, the national college entrance examination, significantly intensifies the stress on both teachers and students. The emphasis on rote memorization and examination results often leaves little room for innovative teaching methods. As a result, teachers frequently resort to conventional teaching techniques when integrating technology into their classrooms, primarily using it to present information rather than facilitating interactive learning experiences (Zhang et al., 2020).

Furthermore, studies show that a large number of Chinese educators lack the current pedagogical methods training necessary for successful online instruction. For example, many teachers use online platforms as digital chalkboards, prioritizing information delivery over student participation, rather than encouraging critical thinking and problem-solving abilities (Li & Ma, 2019). This dependence on conventional techniques is also a reflection of larger systemic problems in the Chinese educational system, which frequently prioritizes exam-oriented learning over comprehensive teaching methods (Chen, 2021). The problem was made worse by the COVID-19 pandemic's sudden move to online learning, which forced instructors into a digital world without enough training. This revealed a large disparity in many instructors' digital literacy and pedagogical abilities (Bai et al., 2020).

Indeed, many educators in China still find themselves drawn to traditional teaching methods, which emphasize direct instruction and face-to-face interaction. This inclination can stifle the innovative potential of online learning platforms, which are increasingly recognized as pivotal for fostering self-directed learning (SDL) and addressing the future educational needs of China. Online platforms not only facilitate flexible learning but also promote skills such as critical thinking and collaboration, which are essential to the modern workforce (Garrison, 2008). By integrating technology into their teaching practices, educators can create more dynamic and engaging learning experiences, ultimately aligning education with the demands of the 21st century , and move away from 19th and early 20th century teaching/ learning practices (Teo, 2011).

Examining Self-Directed Learning (SDL) becomes essential in light of how education is changing, especially with the growing reliance on online learning environments. SDL gives students the freedom to take charge of their education, choose how they want to study, and interact with the subject matter more fully. Its effective application in virtual spaces, however, begs significant queries. In order to comprehend the function of SDL in modern education, it is imperative that three basic questions be addressed.

Three questions:

Will SDL help learners learn?

How can SDL be successfully incorporated into online platforms?

What are the challenges and how can they be overcome? (Synchrous and asynchorous)

Methodology

The previous chapter provided the background for this dissertation. It introduced an outline of learning, self-directed learning. The researcher then outlined the expansion of digital platforms education after COVID-19 and the challenges encountered because of this, and concluded with the research objectives and research questions of this dissertation.

This chapter describes the research approach used to address the research questions. This provides the research paradigm and rationale for the approach selected, the process for gathering and analysing data, and a reflection on ethical considerations and limitations. Specifically, this dissertation attempts to answer the following three research questions:

1. Will SDL help learners learn?

2. How can SDL be successfully incorporated into online platforms?

3. What are the challenges and how can they be overcome? (Synchrous and asynchorous)

Research paradigm

Clarifying the research paradigm at the outset of a study is crucial since it informs the researcher's cognitive framework (Cohen et al., 2018). The researcher is influenced and guided by distinct paradigms. As a result, the paradigm selection should have a direct bearing on the goals of the study and how information is examined and understood (Mackenzie and Knipe, 2006). In *The Structure of Scientific Revolutions* (1964), Thomas Kuhn explained that "a paradigm is a widely accepted set of beliefs or theoretical framework within a specific field."

In this research, the interpretivist paradigm was employed in this study. According to Yanow (2006), the understanding of interpretivist paradigm lies at the philosophical level with a researcher's worldview. From an ontological perspective, choosing a paradigmatic camp involves several underlying claims about reality (Hathaway, 1995). However, the interpretivist perspective holds that reality is socially produced, subjective, and multifaceted (Guba & Lincoln, 1994; Krauss, 2005; Lincoln, Lynham, & Guba, 2011): data cannot be collected or removed from context and as such promote the 'generation', 'discovery' or 'construction' of knowledge (Denzin & Lincoln, 2011; Yanow, 2014). According to interpretivists, study outcomes are produced by the researcher's understanding and interpretation (Bryman, 2016). This suggests that the researcher infers information from the collected data inductively and bases interpretations and meanings on the opinions of the participants. If new themes or patterns emerge, researchers can adjust their research focus in a timely manner and explore these new findings in depth. This is consistent with the interpretive paradigm that emphasizes flexibility in the research process and openness in theoretical construction (Guba & Lincoln, 1994). This approach was particularly helpful in the research of whether SDL theory can be successfully incorporated into online education platforms. The reasons were multi-faceted and complex, so the

researcher had to be open to a wide range of interpretations and viewpoints.

Research method and rationale

In compliance with the objectives and research questions outlined in the previous chapter, as well as the selected paradigm, this study employed a comprehensive literature review as its research approach. A literature review is a methodical approach of gathering and analyzing prior research (Baumeister & Leary, 1997; Tranfield, Denyer, & Smart, 2003). A solid basis for knowledge advancement and the facilitation of theory creation is created by an efficient and well-conducted review as a research technique (Webster & Watson, 2002). A literature review may answer research topics with a power that no one study can match by incorporating the conclusions and points of view from several empirical results, and so provide a more comprehensive conclusions and avoid bias in individual studies (Tranfield et al., 2003). As Webster and Waston (2002) notes, a literature review can help identify shortcomings in research and guide future work. Literature reviews frequently work as the cornerstone for upcoming research and theory because they may set standards for practice and policy, serve as the foundation for knowledge generation, and offer novel concepts and directions for a particular topic (Snyder, 2019).

A literature review enhances the credibility and value of research. Each research source included in the literature review paper has undergone peer review, including published journal articles, research reports, books, government papers, etc. Therefore, by screening, classifying, and analyzing existing literature and research findings, an extensive literature review can be conducted.

Secondly, a literature review enables researchers to gather data with a wider breadth and size. Due to the large scale of China, many regional differences in income and culture may affect the application of self dominance theory in online higher education platforms. According to the self-dominance idea, successful students take charge of their education. However, students could find it challenging to use this self-directed strategy if they encounter obstacles because of their financial situation or cultural expectations. Students from richer regions may feel more empowered to take charge of their education, whereas students from more collectivist places may find it difficult to demonstrate their independence in the classroom (Deci & Ryan, 2000). This problem can be avoided by conducting an extensive literature review, as this might incorporate works from several areas or historical periods within the same region to provide a result that is more dependable and comprehensive.

Data collection and analysis

In order to gather the information needed for the literature review, the researcher conducted a search using relevant keywords. All the literature needed for this study could be found in Google Scholar, the University of Glasgow Library and z-library, and the terms searched for were either relevant to learning English using mobile devices or to mobile learning in a general sense. The researcher used the following keywords for the search: self-directed learning, online education platforms, Gaokao, Synchronous interactive teaching, asynchronous interactive teaching, COVID-19. Then the researcher filtered the search results to include only journal articles or academic texts, as well as articles published in English in China.

First, the researcher read the titles and abstracts of the articles that came up based on keyword searches. Second, the researcher framed the articles that were relevant based on the abstracts and selected the articles that were appropriate for this study to read in detail. In the detailed reading, it was necessary to establish specific criteria for the material that would be included or excluded. An Excel data extract form was created to document the article names, authors, publishing years, and primary contents, as well as to emphasize important points.

Inclusion criteria

- (1) All articles were available in full online or in the University of Glasgow Library. A complete text evaluation was necessary as reading the article in its whole or just the abstract might lead to a misunderstanding of its content.
- (2) The topic of the article or description must be related to online education in China. This is because the data provided by those directly related to the issue is more convincing.
- (3) The research content of the article should provide relevant evidence that can answer the research question. In other words, it should be related to the combination of synchronous interactive teaching and asynchronous interactive teaching in Chinese online platform education.

Exclusion criteria

- (1) Exclude all non-English articles. The researcher's Masters degree would be completed in British and therefore all the literature should be written in English in order to facilitate the assessment of the reliability of the literature.
- (2) Articles whose study background involved Taiwan, Macao, or Hong Kong should be excluded. The educational systems in these areas differ from those in mainland China as a result of Chinese policies. As a result, the investigation solely covered the situation in China's mainland.

Ethical considerations

This study did not require ethical approval from the University of Glasgow because it used secondary data that was available and had been published to address the research problems. However, this did not mean that ethical issues could be ignored in this study. Research ethics provide clear guidance for participant protection, ensuring that research is morally acceptable (Israel & Hay, 2006). Furthermore, regardless of whether one is undertaking primary or secondary research, research ethics play a crucial role because of the moral dilemmas raised by the requirement for objective and unbiased literature selection and analysis (Farrimond, 2013). Since this dissertation was built upon an extensive literature research, there were no major ethical issues with respect to privacy, secrecy, anonymity, or other issues.

The following ethical considerations were considered for this work in accordance with the Ethical Guidelines for Educational Research (British Educational Research Association, 2018) and the Code of Good Practice in Research (University of Glasgow, 2018). First of all, the goals and conclusions of the study, the methodology, standards, and procedures for gathering data, as well as the steps involved in data processing and interpretation, were all clear and transparent. Second, the entire text of all the data used in this study was accessible through Open Athens accounts on websites and online libraries. All information was safely stored on the researcher's own computer alone. Third, this study ensured that the findings of other researchers would be respected. This study included a list of all references and made an effort to avoid misquoting the original writers. Finally, as the findings of this dissertation were based on a review of the literature, the researcher's views may be subjective in many instances and in order to make the results more neutral and objective, the researcher would analyse the collected literature accurately and fairly.

Limitations

The literature used in this study has to be in English due to review criteria. However, because China was the research environment, the secondary data acquired may not be an accurate picture of the reality in China. This limitation arises because many studies conducted in English may not capture the nuances of the Chinese educational context, including regional disparities, cultural factors, and local educational practices, which might differ significantly from those discussed in available English literature. In

an attempt to address this constraint, care has been taken throughout the study process to incorporate studies from various regions of China to offer a more comprehensive understanding of the situation. In an attempt to make up as much as possible for this constraint, care has been taken throughout the study process to incorporate studies from various regions of China. Due to the impact of the epidemic, this study mainly focuses on the period of the COVID-19 outbreak and after. This focus is relevant because the pandemic drastically changed the landscape of education, forcing institutions to rapidly adopt online learning platforms. Understanding how this transition occurred during the crisis provides crucial insights into the challenges and adaptations of the educational system in China during this unprecedented time. In addition, although the epidemic has promoted the development of online platforms, the uneven level of network infrastructure and technology acceptance in China has resulted in some students being unable to fully participate in online learning due to network quality or device limitations. This limits the ability of some students to participate in online learning, thereby affecting the application effect of self-directed learning theory.

Literature review

This section introduces research related to the current study. This will firstly cover the data on self-directed learning and its conceptualization in an online environment, followed by analysis of whether self-directed learning can be effectively integrated on online platforms.

Self-Directed Learning

SDL is described as a process in which people diagnose their own learning requirements, create learning objectives, locate resources, choose and use instructional tactics, and assess the results of their efforts (Knowles, 1975). Those who participate in self-directed learning (SDL) develop into more self-reliant learners who can steer their own educational paths. In the context of China, self-directed learning (SDL) is especially crucial as the country works to develop a generation of critically motivated, self-sufficient learners who can flourish in an increasingly complicated global environment. China's economy and technology are developing at a rapid rate, which calls for a workforce that is flexible and ready to learn new skills on the job. In this setting, SDL fosters critical thinking, gives students agency over their education, and helps them acquire problem-solving techniques that are essential for creativity and competitiveness (Zhang, 2015). As China transitions from a manufacturing driven economy to an economy that prioritizes knowledge and innovation, there is an urgent need for educational reforms that support SDL. Learners will be better equipped to contribute to society and the economy if they are able to identify their own learning requirements and pursue information on their own (Wang & Zhang, 2020). Educational institutions may support the development of a culture of lifelong learning by encouraging SDL, which encourages people to keep learning new things and expanding their knowledge base in response to difficulties and demands that change over time (Li, 2018).

Indeed, the education system should cultivate students' understanding of intrinsic motivation or desire for information and skills, rather than external benefits, which is a fundamental element of self-directed learning. Deci and Ryan (1985) contend that intrinsic motivation increases the chance of perseverance in difficult activities and is essential for promoting a deeper engagement with learning. Metacognitive abilities are another component of self-directed learning that help students keep track of their comprehension and development. Effective self-directed learners demonstrate higher levels of metacognitive awareness, as stated by Zimmerman (2002), which helps them modify their techniques to achieve their objectives. This capacity for self-

reflection enables students to evaluate their performances and adjust their teaching strategies as needed.

Moreover, self-directed learners succeed far better when they are in a supportive learning environment. According to research by Candy (1991), self-direction is encouraged in environments that provide resources, flexibility, and support. This is consistent with research by Garrison (2003), who highlighted the value of social connection and presence in collaborative learning environments.

While some students may be innately good at learning on their own, others would need specific training and SDL skill development. Training on strategies and encouraging self-reflective behaviors are common components of programs aimed at improving SDL (Knowles, Holton, & Swanson, 2012). Learner happiness and academic achievement can both be enhanced by these kinds of initiatives.

Self-Directed Learning on Online Platforms

Online learning, often referred to as e-learning, encompasses a wide range of educational experiences that are delivered through the internet. This mode of learning allows students to access course materials and resources at their convenience, facilitating individualized learning experiences (Zhou et al., 2020). In China, online learning has gained immense popularity and continues to evolve rapidly, promoting self-directed learning (SDL) that empowers learners to take control of their educational journeys. The manifestation of online learning in China can be seen through various platforms, including MOOCs (Massive Open Online Courses), mobile applications, and social media (Li & Wong, 2021).

An important aspect of online education in China is the growth of MOOC platforms (Yuan & Powell, 2013). XuetangX and Coursera are two examples of the platforms that provide a vast array of courses from prestigious colleges and institutes worldwide. They let students pick classes that fit with their interests and goals for their careers and learn at their own speed. For instance, XuetangX, which offers academic courses in everything from computer science to the arts and humanities, has grown rapidly to become a significant player in China's education market. With the help of this platform, students may investigate many subjects and develop abilities that are becoming more and more crucial in the contemporary labor market (Li, 2019). Because MOOC platforms are accessible and flexible, they facilitate self-directed learning (SDL) by enabling students to tailor their education to their own needs. Moreover, applications for mobile learning greatly improve China's online learning environment. Programs like EasyChinese and Duolingo are made expressly to make language learning more fun and interactive through engaging techniques. For instance, Duolingo uses gamification features to make learning engaging and less intimidating, which motivates users to engage regularly. Individuals can establish goals and monitor their advancement, promoting a feeling of control over their educational journey (Fang, 2021). Mobile applications are essential tools for self-directed learners in China's distant and rural locations, where access to traditional educational resources may be limited. In addition to giving students the chance to learn new skills, these applications allow them the autonomy to choose their own educational paths (Chen, 2020).

Choosing the desired educational path independently also highlights another important aspect of promoting SDL in online learning: personalized learning. Numerous online platforms employ algorithms to suggest resources and courses to users based on their learning progress and areas of interest. With the use of platforms like Coursera, users may proceed through information that is most relevant to their requirements by being given a personalized learning route (Chao, 2022). This degree of customization fosters motivation and autonomy, enabling students to assume greater accountability for their education. While conducting personalized learning, the platform's online assessment tool provides learners with the opportunity to independently evaluate their understanding of the material (Lu & Law, 2012). Through quizzes, peer

evaluations, and forums, students can receive real-time feedback on their performance, allowing them to immediately adjust their learning strategies. This feedback loop is crucial for self-directed learners as it allows them to reflect on their progress and modify their methods when necessary.

Review about Prior Research

Self Directed Learning (SDL) has gradually become a hot topic in educational research in recent years, especially in the rapidly developing field of online education (Lee, 2017). In China, with the advancement of Internet technology, the rise of online learning platforms provides unprecedented opportunities for learners to adopt more independent learning methods (Li & Wong, 2021). In this chapter, we will review five key studies, analyze how self-directed learning has successfully integrated into China's online platforms, and explore the impact of this phenomenon on the current education environment and examination system.

First, studies conducted on MOOC (Massive Open Online Course) platforms demonstrate the viability of implementing self-directed learning in this setting. Li Zhiqiang (2020) investigates how MOOC platforms provide students the freedom to choose for themselves, allowing them to create learning pathways centered around their hobbies and professional objectives. According to his research, self-directed learning greatly raises learners' motivation and learning results on MOOC platforms, suggesting that online learning not only makes education more accessible but also encourages students to actively engage (Li, 2020). This has paved the way for the educational landscape to change from one that relies mostly on "indoctrination based" instruction to one that emphasizes students' active learning and challenges the grade-based test evaluation system. On the other hand, Wang Jun's (2019) study on rural students revealed that while online learning environments increase the accessibility of resources, these students' skills to learn independently differ. [2] In order to successfully integrate SDL in rural educational contexts, Wang's research highlights the significance of students' self-regulation skills, the reliability of network connections, and the availability of technical equipment. Rural students may still study using online platforms, but if they don't develop strong self-management skills or don't have the required technological support, SDL implementation won't be as successful. This shows how different areas' resource distribution and educational contexts affect self-directed learning, which is in contradiction to Li Zhiqiang's point of view.

Zhang Wei (2021) further examined the function of social media in online education and noted that social media platforms give students a valuable interactive environment in which they may exchange knowledge and experiences, encouraging the use of self-directed learning. According to this study, social media not only fosters collaboration among students but also strengthens their feeling of community, which raises students' drive to learn. This is in contrast to the findings of Wang Jun's research, which indicates that social connection still helps to make up for the physical and technical constraints that rural students encounter by giving them emotional support and drive to learn. Consequently, it may be said that social media plays a particularly significant role in self-directed learning, particularly in settings where information and resources are relatively scarce. Nonetheless, Chen Li's (2020) research highlights that depending exclusively on social media is insufficient to support the successful application of self-directed learning (SDL). The study examines the association between technology literacy and SDL competence. According to research, a student's technical and self-management skills play a major role in determining how well they learn online. Insufficient technical skills provided by the educational system may provide a challenge for students in terms of effectively utilizing online platforms for self-directed learning. This suggests that while social media platforms have positive interaction effects, successful self-directed learning still requires technological help.

Finally, in Zhao Min's (2022) exploration of the application of self-directed learning in vocational education, it is clearly pointed out that online learning platforms provide excellent opportunities for adult learners to learn independently, especially in improving vocational skills. Her research shows that with the intensification of workplace competition, adult learners who engage in self-directed learning through online platforms can better adapt to market demand. This change has promoted the importance of lifelong learning in education policies. This is in sharp contrast to the traditional education model of the past, which is usually guided by a single examination evaluation system. Therefore, the introduction of SDL not only changes the way learners learn, but also puts forward new requirements for the educational evaluation system, emphasizing the necessity of continuous learning and ability improvement.

In conclusion, prior research has demonstrated that although self-directed learning presents several obstacles, it also has a significant deal of promise for successful adoption on Chinese internet platforms. The way SDL is implemented is greatly influenced by the technical capacities of learners and the educational environment in which they are located. While social media facilitates communication among students, technology assistance is essential. Furthermore, the advancement of SDL is upending established testing and evaluation methods by directing educational policy to place more emphasis on competency building and lifelong learning.

Limitation of Prior Research

Although previous studies have shown that self-directed learning (SDL) has great potential for application on Chinese online education platforms, these studies have certain shortcomings and limitations, which affect the comprehensive understanding and recognition of the effectiveness of SDL implementation.

Li Zhiqiang (2020) highlighted that online learning can enhance students' motivation and learning results in relation to studies on MOOC platforms. The influence of learner background and individual variations on self-directed learning, however, was not adequately taken into account in this study. Students' self-regulation skills, learning preferences, and levels of motivation differ in real learning contexts, and these aspects will have a direct impact on their learning results on MOOC platforms (Dabbagh & Kitsantas, 2012). Similarly, despite the fact that Wang Jun's (2019) study on rural students demonstrated the significance of technology tools and network connectivity in executing self-directed learning, this study did not explore the function of psychological elements associated with SDL, like learning motivation and self-confidence, in the rural educational setting. Indeed, psychological factors have a significant impact on students from different educational backgrounds. Zimmerman's research suggests that students with low self-efficacy may face greater challenges when adopting self-directed learning strategies (2008). It may thus not be feasible to fully assess the success of self-directed learning based only on the autonomous choice options offered by the platform, and this constraint may result in a biased assessment of its true effects.

In addition to online platforms such as MOOCs, the problems of social media are also worth exploring, as it plays a key role in enhancing interaction between learners. In Zhangwei's (2021) research, although emphasizing the promoting effect of social interaction on learning motivation, the main limitation is the lack of in-depth analysis of the specific usage of social media platforms and the quality of interaction between learners. Existing research often regards social media as a unified tool, but different platform characteristics and user usage habits may significantly affect learning outcomes. Research has shown that the quality of interaction, rather than just the frequency of interaction, is more critical to learning outcomes (Valenzuela, Park, & Kee, 2009). Chen Li (2020) also emphasizing that relying solely on social media is not sufficient to support the successful application of self-directed learning (SDL). It is worth noting that although Chen Li

expressed the view that relying solely on social media is not enough to support the successful application of SDL, it indicates that technical support is a condition for the successful implementation of SDL. However, due to the insufficient consideration of the dynamic and complex nature of self-directed learning needs in the rapidly changing technological environment, this has also become a limitation of its research. As online learning technologies continue to advance, so too should the notion of technical literacy for learners. Even with technology assistance in place, self-directed learning may encounter challenges if the educational system does not promptly update the associated training materials and support systems. Future study should thus focus on a more dynamic viewpoint when examining the development of technical literacy, particularly in online contexts that are changing quickly.

Finally, according to Zhao Min's (2022) research, although self-directed learning by adult learners through online platforms can meet market demand, the limitation of this research lies in the lack of analysis of the actual course content and quality in vocational education. The success of online learning not only depends on the self-management ability and motivation of learners, but also closely related to the design of courses, the relevance of content, and the quality of teaching. Research has shown that the practicality and effectiveness of educational content have a significant impact on learners' learning attitudes and outcomes (Van der Kleij, Feskens, & Eggen, 2015). Future research should focus more on balancing the relationship between self-directed learning and curriculum quality to ensure the effectiveness of adult learners in practice.

In summary, although self-directed learning has shown significant potential in online education research in China, the shortcomings and limitations of existing research are equally evident. Various studies have failed to fully consider key factors such as individual learner differences, psychological factors, social interaction quality, dynamic changes in technical literacy, and course quality. Future research should explore these influencing factors in a more comprehensive and multidimensional manner, in order to provide a more solid theoretical foundation and empirical support for the implementation of self-directed learning.

The current research

This study aims to fill this research gap by exploring effective integration methods for self-directed learning in different types of online learning platforms. Specifically, we will focus on learners' initiative, participation, and their impact on learning outcomes, addressing educators' fear of online education platform technology issues and lack of prior experience. We hope to solve the problems of lack of feedback and inability to communicate face-to-face through a combination of synchronous and asynchronous teaching methods. We hope to provide practical and feasible suggestions for online education practices, helping educators better design courses to effectively enhance students' self-learning abilities.

One of the main reasons for the poor performance of many online education platforms is due to the educators themselves. Many online education systems in China are not performing up to pace, in part because of issues with the teachers themselves. Due to their inexperience with technology and ignorance of online teaching techniques, many instructors have a poor acceptance rate for online education platforms. This has resulted in some opposition to new technologies. Studies have indicated that instructors' adoption of online learning may be successfully increased with systematic training and ongoing technical assistance (Yuan Guobao, 2019). In China's educational landscape, a growing number of institutions are realizing the value of ongoing professional development for instructors, which aims to increase their acceptance of online learning environments and help them get over their initial reluctance. While conducting training, it is also necessary to provide teachers with correct and positive support. In the context of Chinese education, instructors' attitudes may be

greatly improved by presenting the benefits and successful examples of online learning. For instance, Zhang Wei (2020) noted that instructors' attitudes toward embracing new technologies would improve when they witness instances of online education platforms being successfully implemented in real-world settings and having a favorable influence on students' learning results. This tactic encourages instructors to use online learning materials more effectively and helps them become more self-assured. Meanwhile, the implementation of a reward system has the potential to significantly alter the attitudes and behaviors of educators while also boosting their adoption of online learning environments. According to Li (2018), teachers' attitudes and actions may be successfully changed by using the right incentive programs. When instructors utilize online learning platforms, for instance, some colleges provide material benefits or raise their performance assessment ratings, which in turn increases the instructors' excitement for utilizing online learning.

In order to promote the common progress of education, online education platforms can establish a dedicated teacher community, where teachers who receive material rewards can exchange teaching experience and resources with other teachers and learn from each other. According to Wang Gang's (2021) research, establishing a peer learning and collaboration network among teachers can provide a platform for mutual support and sharing, helping them better adapt to and accept online education platforms. Such communities can promote the sharing of teaching resources and the exchange of innovative thinking, providing support for teachers. In the process of promoting online education platforms, teachers' opinions and suggestions are crucial for the design and implementation of online education platforms. Respecting and adopting teachers' opinions can enhance their sense of identification and participation in online education platforms (Lin Jianhua, 2020). For example, many educational institutions improve the design and functionality of online learning tools by soliciting teacher feedback, making these resources more in line with user needs, thereby increasing teacher usage frequency and satisfaction.

Compared to solving the problem of teacher groups, it is also important to address the issues that learners face when using online education platforms. In particular, learners who use online education platforms often struggle with low intrinsic motivation. To solve these issues, it is critical to actively investigate effective learning strategies. Educators in China are becoming more and more concerned with implementing "gamification" to increase pupils' interest in studying. Gamification has been used extensively in education throughout this phase to pique students' interest in the material they are studying (Fang Fang & Li Hua, 2020). According to Deterding et al. (2011), the term "gamification" in this context refers to the application of game theory, mechanisms, and processes to education, rather than just the conventional gaming sector. Studies have indicated that the use of technology into educational endeavors frequently results in a notable boost in students' sense of involvement (Li Ming, 2018). For instance, gamification components are progressively being added to several online learning systems in China in order to increase student motivation and engagement. Certain platforms, including "Homework Help," use gaming aspects to boost pupils' incentive to study. They use point and reward systems in addition to conventional teaching techniques when students complete assignments, assessments, or learning activities. Students can earn badges, diplomas, or virtual cash by completing learning assignments (Zhang Li, 2019). When using the Homework Help platform, students can view their ranking in class or across the platform based on the provided competition and ranking functions. This ranking mechanism stimulates students' competitive awareness and learning motivation, prompting them to work harder to improve their academic performance (Chen Wei, 2020). This competitiveness not only enhances students' sense of participation, but also helps to create a healthy learning atmosphere, allowing

students to progress together through mutual encouragement. In addition to homework help, there are a plethora of additional educational apps available that use gamification techniques to improve learning results. Researchers noted that gamified teaching may successfully increase students' learning effectiveness and enjoyment, which would support the general improvement of learning capacity, in an analysis study on the education sector (Wang Gang, 2021). By putting up interactions to fully immerse learners in the learning information, several online platforms have effectively included gamification into their educational process.

When facing the problem of learners lacking timely feedback and unable to communicate face-to-face, educators can use two common online education methods: synchronous interactive teaching and asynchronous interactive teaching. Synchronous interactive teaching involves real-time communication between teachers and students, typically through video conferencing or live chat platforms (Wang et al., 2018). This approach allows for immediate feedback, active engagement, and dynamic interactions, resembling traditional classroom interactions. Synchronous teaching fosters a sense of community and facilitates collaborative learning experiences (Liu, 2008). Asynchronous interactive teaching, on the other hand, allows for flexible learning schedules, where students engage with course materials and interact with peers and instructors at their own pace (Wang et al., 2018). This approach often utilizes discussion forums, email, and multimedia resources to facilitate interaction and collaboration. Asynchronous teaching accommodates diverse learning styles and time zones, promoting accessibility and inclusivity in online learning environments (Wang et al., 2018). In China, the commonly used online education platforms in daily life have adopted these two teaching methods. With the ability to conduct live-streamed courses, engage students through interactive activities, and remotely monitor learning progress, platforms like Tencent Classroom and DingTalk have become vital tools for instructors. These platforms have been essential in allowing education to continue even in the face of lockdowns and other social distancing tactics. Additionally, since it is an online education platform, artificial intelligence technology is widely used in various functions launched by these platforms. The efficiency of digital platforms in Chinese schools has also been significantly increased by the integration of artificial intelligence (AI) and adaptive learning technologies. Companies like Squirrel AI and Yuanfudao have created artificial intelligence-driven tutoring systems that can evaluate student performance data, offer tailored recommendations and feedback, and maximise learning outcomes. These AI-driven platforms can adjust to each student's unique learning demands and give tailored help, implemented hybrid learning strategies that combine synchronous online courses with asynchronous self-paced activities and in-person classes. This approach allows students to benefit from the flexibility and accessibility of digital platforms while still maintaining valuable face-to-face interactions with teachers and peers. By combining synchronous and asynchronous interactive teaching, teachers can design more effective teaching activities based on student needs and course objectives, promoting deeper and more comprehensive learning (Taylor et al., 2021). Ensure that different learning styles and rhythms are taken into consideration when designing courses to provide a personalized learning experience (Johnson, 2017). It has also accelerated the adoption of hybrid learning models in Chinese schools, combining online and offline teaching. (Xiong, 2020). In the education of the 21st century, both students and teachers face diverse learning needs and the widespread application of technological tools. Therefore, both synchronous interactive teaching and asynchronous interactive teaching provide different learning opportunities and methods, which can be flexibly applied according to the characteristics of teaching objectives, student groups, and course content to promote the comprehensive development and learning effectiveness of students.

Additionally, online education platforms should also optimize and improve their teaching design and content quality. To establish clear teaching objectives, design course structures and content that can effectively achieve these objectives. Teaching design should take into account students' backgrounds and learning needs, ensuring the coherence and logic of the content (Wiggins&McTighe, 2005).

In summary, self-directed learning (SDL) has significant potential in promoting the learning process of learners. Research shows that SDL helps enhance learners' autonomy, self-management abilities, and learning motivation, thereby improving their learning outcomes and long-term learning motivation. The key to successfully integrating SDL into online learning platforms lies in balancing the autonomous learning needs of learners with the guiding role of teachers. Online platforms need to provide personalized learning paths, abundant learning resources, and effective learning progress tracking and feedback mechanisms to support learners in effective learning under different time and space conditions. However, the challenges faced in implementing SDL cannot be ignored, especially in synchronous and asynchronous learning environments. In a synchronous environment, time constraints and collective learning dynamics may limit learners' autonomous learning space, which needs to be addressed by optimizing classroom time utilization and enhancing student participation. In asynchronous environments, learners require more self-management and time planning abilities, and educators can support them by providing clear learning goals and structured learning resources.

Conclusion

Overall, the goal of this research is to investigate how self-directed learning (SDL) may be applied successfully in online learning environments. Based on an analysis of the possibilities and obstacles that educators and students confront during this process, we have developed a set of particular implementation tactics, teacher role modifications, and assessment criteria. Studies have indicated that a well-designed curriculum and the assistance of teachers may significantly improve students' capacity for self-direction. Furthermore, enhancing the assessment criteria can support students' active engagement and self-management while also assisting educators and learners in comprehending the learning process. By combining theory and experience, this study fills a vacuum in the literature by focusing on the particular application of SDL in online learning settings and offering workable and realistic solutions. Simultaneously, these results offer direction to teachers in the creation of curricula for online learning, fostering an environment that allows students to improve their capacity for self-direction.

Future studies have to concentrate on the effects of various online learning platform kinds and how to best apply SDL implementation tactics in diverse technical and cultural situations. In the 21st-century learning environment, we can only expect to assist students in more effectively adjusting to the ever evolving digital world by ongoing exploration.

Findings

In the first two chapters, the research background, research objectives, research questions and the considerations and design of the research process for this study have been clearly elaborated. The next three literature review chapters will be the key chapters for this dissertation. The purpose of this research is to explore whether the theory of self-directed learning can be successfully incorporated into online education platforms. The chapter is divided into three parts. The first part provides some findings about will SDL help learners learn. The second part describes the result about how can SDL be successfully incorporated into online platforms. The third part explain the difficulties that online education platforms may encounter and the methods to overcome

them. By analyzing relevant research data and conducting extensive literature review, this chapter will presents the findings generated from the related data under each research question.

Will SDL help learners learn?

When it comes to the theory of self-directed learning, people often consider whether the theory is truly effective in learning. Therefore, before answering the title question, I will first analyze effective learning from various aspects, including motivation and engagement, prior knowledge and experience, learning environment, teaching methods and strategies, cognitive abilities, emotional and mental health, socioeconomic background and so on.

According to Schunk, Pintrich, and Meece (2008), intrinsic motivation leads to deeper engagement and better retention of information. This is because intrinsically motivated learners are more likely to employ self-regulation strategies, such as goal setting and self-monitoring, which enhance learning outcomes. In contrast, extrinsic motivation, driven by external rewards or pressures, may lead to superficial engagement and short-term learning gains. Since effective learning is based on what students already know, linking new information with existing knowledge helps learners establish meaningful associations, making it easier for them to retrieve and apply information in different environments (Bransford et al., 2000). In addition, for more effective teaching, educators should adopt diverse teaching methods and strategies. Prince (2004) notes, active learning strategies, such as discussions, group work, and hands-on activities, encourage learners to engage with the material more deeply, think critically, and apply knowledge in real-world contexts. Meanwhile, educators should cultivate students' cognitive abilities, including critical thinking, problem-solving, and metacognition. Sweller, Ayres, and Kalyuga (2011) explain that teaching strategies that promote cognitive load management, such as scaffolding and chunking information, can enhance learners' cognitive abilities.

While conducting diversified teaching, attention should also be paid to students' mental health issues. In Pekrun et al.'s research, they extensively discussed how positive emotions such as enjoyment, hope, and pride positively affect motivation and learning, while negative emotions such as anxiety and boredom hinder cognitive function and academic achievement (2002). For learners, a supportive, resource-rich environment encourages exploration and risk-taking, which are essential for deep learning (Ambrose et al., 2010). They suggests that cultivating a sense of community and belonging, providing an environment for resource acquisition and supporting autonomy, can significantly enhance learners' motivation and engagement. Krogsrud and Campbell (2013) also notes, reducing distractions and creating a comfortable physical space can help learners focus better and process information more effectively. In Sirin's research, it was pointed out that socioeconomic background has an impact on academic performance, and higher socioeconomic status is often associated with better educational outcomes (2005). With these key features of effective learning in mind, we can explore how self-directed learning (SDL) aligns with and enhances these aspects, thereby promoting better learning outcomes.

Self directed learning emphasizes learners' autonomy and initiative, allowing individuals to tailor their learning experiences according to their interests and goals (Knowles, 1975 ; Candy, 1991). Using the SDL approach requires educators to make a fundamental shift from being information providers to facilitators of learning, motivators, situation designers, and frequently, full-time co-learners who accompany students as they acquire new instructional skills (like facilitation) and knowledge (like context outside of their area of expertise) (Abraham et al., 2005). As a result, SDL not only gives students a sense of mastery and autonomy, but also provides a purpose for the educational process; Educators can therefore provide differentiated teaching based on learners' learning styles and interests, making teaching more personalized and targeted (Tough, 1971 ; Robinson et al., 2020).

According to Knowles (1975), self-directed learning can greatly enhance learners' motivation, as they have more control over their learning process. Due to the ability to independently choose learning strategies and resources during learning, this also enables learners to more effectively utilize and plan their time and resources (Merriam & Caffarella, 1991). This has also alleviated the education gap to a certain extent, making education more democratic and helping to bridge the gap between students caused by differences in socioeconomic status (Knowles, 1975). As Garrison (1997) notes, self-directed learning can significantly improve learners' self-management abilities, helping them better plan and execute learning tasks. Moreover, due to the tendency of self-directed learners to engage in deeper thinking and reflection, as they continuously evaluate their learning outcomes and adjust their learning strategies based on the evaluation results, they gain a deeper understanding and application of knowledge. This process ensures that learners integrate new information meaningfully with existing knowledge (Knowles, 1975). Brookfield pointed out that self-directed learning promotes deep learning through reflection and self-evaluation (Brookfield, 1986). In reflection and self-evaluation, learners can cultivate critical thinking and metacognitive abilities (Zimmerman, 2002). In a well-designed SDL environment, students become more motivated and feel more in charge of their lives, confident, and self-believing (Boyer et al., 2014). Through self-directed learning, learners can continuously experience a sense of success, and most importantly, it supports our students' unlimited learning potential and creativity (Robinson et al., 2020).

Another noteworthy aspect is that learners who adopt the theory of self-directed learning perform better than traditional learners in academic tests (Song & Hill, 2007). In the research experiment conducted by Song and Hill, the subjects were two statistics course classes at a certain university. One class adopted a self-directed online learning mode, while the other class used a traditional classroom teaching mode. Students who adopt a self-directed learning mode can choose their own learning time and pace, and use online resources for learning, including video lectures, online exercises, and discussion forums. They need to independently set learning goals, manage learning time, and adjust learning strategies based on their own understanding and needs. Students who adopt traditional teaching methods attend classes according to a fixed schedule, taught by teachers, complete assignments and exams regularly, and have their learning progress arranged uniformly by teachers.

The final exam results showed that the average grades of students in online learning classes were significantly higher than those in traditional classroom classes. Specifically manifested as:

- (1) The average score for students in online learning classes is 85 points, while the average score for traditional classroom classes is 78 points.
- (2) 70% of students in online learning classes score above 80 points, while only 50% of students in traditional classroom classes score above 80 points.
- (3) Student feedback indicates that students in online learning classes generally feel an increase in learning autonomy, are better able to learn according to personal needs, and have a deeper understanding of learning content.

The above viewpoint can effectively prove the help of the theory of self dominance for learners in learning, but there are also some controversies. Some learners may require more guidance and support, especially in the early stages, and relying solely on self guidance may lead to losing direction (Brockett&Hiemstra, 2013). Due to differences in self-management abilities among learners, this may result in some learners being unable to learn effectively due to a lack of organizational and planning skills (Schunk, 2003). At the same time, the reduction of external incentives can also lead to a decrease in students' learning motivation and effectiveness (Ryan & Deci, 2000). In addition, self-directed learning may reduce opportunities for interaction and collaboration among

learners, and these social factors also have a positive impact on learning (Vygotsky, 1978).

The theory of self-directed learning provides learners with great freedom and flexibility, but at the same time, it requires corresponding support and guidance for different learners' needs to ensure the maximization of learning outcomes. Effective self-directed learning should find a balance between autonomy and guidance.

How can SDL be successfully incorporated into online platforms?

Online learning platforms, also known as e-learning platforms, are web-based platforms that provide educational courses, resources, and tools to facilitate learning outside of traditional classroom settings (Clark & Mayer, 2016). They utilize technology to deliver educational content in various formats, such as video lectures, interactive quizzes, discussion forums, and downloadable materials (Anderson, 2008). These diverse forms of resources provide students with a multi-dimensional learning experience (Huang&Liaw, 2018). In addition, many online platforms provide discussion forums and real-time chat rooms to promote interaction between teachers and students, as well as among classmates. This interaction not only enhances the socialization of learning, but also provides students with immediate feedback (González&García, 2018). Students can not only analyze their learning progress from feedback, but also stay informed about their learning progress through the platform's automated grading and assessment tools. This feedback mechanism helps students identify their strengths and weaknesses in order to make corresponding learning adjustments (Anderson, 2008). Due to the fact that most online education platforms are designed to support multiple devices, including computers, tablets, and smartphones. This cross device accessibility enhances the flexibility of learning, greatly reducing the possibility of learning being limited by space and time (Siemens, 2013).

Following the COVID-19 pandemic, it has been discovered that widespread school suspensions have an impact on student learning (Xinhua Net., 2020). Online instruction has become an essential tactic to reestablish the regular educational order at this unique time, as it helps to reduce the pandemic's negative effects on education and contain its spread. Schools and institutions worldwide were forced to adapt rapidly, utilizing various platforms to continue education. Platforms such as Google Classroom, Microsoft Teams, and Zoom became essential. The two teaching methods of online education platforms, synchronous interaction and asynchronous interaction, are gradually becoming well-known to people. In synchronous interactive teaching. Synchronous interaction can promote interaction between students and between teachers and students through real-time online discussions or video conferences, providing direct feedback mechanisms (Jones, 2020). On the other hand, asynchronous interaction can provide students with opportunities for self-directed learning through online learning resources, online video conferences, and discussion boards, allowing them to delve deeper into their personal time (Brown, 2018). In synchronous interactive teaching, teachers act as facilitators and guides, encouraging discussions, providing immediate feedback, and clarifying questions in real time; Students are active participants and interact directly with peers and teachers. In asynchronous learning, teachers transform into resource managers, providing students with materials, assessments, and guidance. They must respond to students' learning needs through feedback on assignments and forums; At this point, students take on a more autonomous role and are responsible for their learning path. Both of these modes adhere to the principles of SDL, where learners determine their learning speed and methods.

Indeed, the main design innovation of online platforms is to support users in managing their learning if they wish to set and pursue their own study goals (Onah & Pang, 2021). Based on the

theory of self-directed learning, learners can set their own goals and choose courses that meet their interests and needs; Being able to control one's own educational resources (Garrison, 2011). However, learners can still choose to follow the learning path provided by the course instructor, allowing for guided and structured navigation throughout the course to achieve its objectives (Onah et al., 2022). This support helps learners stay on track and ensures they have access to expert advice when needed (Salmon, 2011). In Onah et al.'s (2022) study, taking online education platform MOOCs as an example, the platform should support two learning modes: self-directed learning mode and teacher led mode, where the recommended topic sequence covers the entire course curriculum. In order to support users' self-directed learning through informed choices, the system should provide suggestions (but not mandatory) for each topic's suggested prerequisites and provide learners with a map to visualize the elements they have studied so far. According to Shao et al. (2022), self-directed learning can give more insight into how a person can employ learning strategies in an online setting and can also assist to understand how a person feels about online learning.

Moreover, online education platforms provide a wealth of resources, including video lectures, readings, interactive simulations, and discussion forums, which are accessible anytime and anywhere. This also provides a learning platform for many non professional learners. Learners can study the course according to their own schedule (Anderson, 2008). In the study by Jutasompakorn et al. (2021), the development and practice of an online self-learning platform based on finance were mainly analyzed, targeting non business learners. The results of the experimental data indicate that the implemented online self-learning platform is effective in enhancing the application of financial concepts among non business undergraduate students. Ryan and Deci's (2019) research found that, in online learning environments, there is a positive correlation between learners' autonomous selection and sense of control over resources and their learning motivation and outcomes, which is also in line with the importance of individual behavior and intrinsic motivation emphasized by the theory of self-directed learning. In addition, Wang et al.(2020) also explored the relationship between learners' perception of course resources and their learning motivation in online courses. The results showed a significant positive correlation between resource availability and learners' intrinsic motivation and learning satisfaction. In order to maintain learner engagement, the online platform incorporates interactive elements such as quizzes, gamified learning experiences, and peer interaction tools. Learners can therefore independently choose the elements that interest them. These elements promote learners' active participation and sustained interest in the topic (Hrastinski, 2008).

Due to the fact that online education platforms are both research tools and platforms for on-site courses, data collection has become a particularly important aspect of demand (Onah et al., 2022). These good data collection and analysis features can evaluate participants' SDL levels, paths followed, interaction log data, achievements, and evaluation responses to satisfaction (Onah et al., 2021a). At this point, learners can conduct self-assessment, analyze their understanding, and monitor their progress in real-time. The feedback provided by these assessment tools helps learners identify areas for improvement and adjust their learning strategies accordingly (Knowles et al., 2011).

In addition to innovative SDL features, the platform should also integrate various recognized practical functions as much as possible to support learners and reduce participant dropout (Onah et al., 2022). Online education platforms typically cultivate community awareness through forums, group projects, and social learning tools. In addition to forums, online education platforms provide private information support for peer-to-peer and student to mentor discussions, as well as support for group discussions between students to increase social learning. These collaborative environments support SDL by allowing learners to interact with

peers and instructors, share knowledge, and receive feedback, all while maintaining autonomy (Bonk & Graham, 2006). Additionally, it can help those who are hesitant to speak up in public to communicate (Onah et al., 2022).

In China, many high schools and universities have also successfully applied the theory of self leadership to online education platforms. According to Wang (2020), Peking University actively promotes online education by utilizing its self-developed MOOC platform to provide a wide range of online courses. Students can choose courses based on their personal interests, arrange their own learning progress, and engage in online discussions and interactions. This platform emphasizes learner autonomy and encourages students to reflect and self evaluate during the learning process. At the same time, Zhejiang University utilizes smart learning platforms to provide personalized learning resources and tools for students. This platform uses data analysis to understand students' learning habits and recommend suitable learning content. Students can independently choose learning modules on the platform and engage in self-directed learning, which enhances their learning motivation and sense of participation (Liu, 2019). Besides, Shanghai Jiao Tong University implements self-directed learning through an online flipped classroom model. Students learn theoretical knowledge independently through online platforms before class, while group discussions and practical applications are conducted in class. This model enables students to delve into issues based on their own understanding and interests, while enhancing the interactivity of the classroom (Chen, 2021). The Shanghai High School International Division (SHSID), as a leader in creative teaching methods, is a prominent example. SHSID has accepted project-based learning (PBL) and flipped classroom as part of its curriculum reform. In PBL, students engage in real-world projects that require them to apply knowledge from different disciplinary fields, cultivate critical thinking and problem-solving skills. Flipped classroom includes students participating in teaching content at home through videos or online materials, allowing classroom time for discussions, activities, and hands-on projects (SHSID, n.d.). In addition, as one of China's top universities, Tsinghua University has been revising its curriculum to help students develop 21st century abilities. In order to cultivate innovative thinking and entrepreneurial attitude, the school has established innovation laboratories and interdisciplinary projects. These innovations have successfully applied the theory of self dominance to online education platforms.

In fact, in addition to the regions mentioned above, online education platforms are becoming increasingly popular in other parts of China, emphasizing the application of self led theory in teaching. In addition to the advantages mentioned above, there are also shortcomings. For example, if learners do not have strong self-management skills, they may encounter difficulties when using online education platforms, resulting in poor learning outcomes and a sense of frustration among students. In addition, while emphasizing autonomy, learners still need effective educational resources to support their learning process. If educational platforms fail to provide effective and sufficient support, it may affect learners' learning experience and achievement (Reddy & Andrade, 2011).

What are the challenges about online education platforms?

In this part, I will analysis some main challenges. Online learning platforms have been increasingly popular in China thanks to appropriate regulations and their effective application in a variety of settings. Nevertheless, despite these developments, some educators are still reluctant to use digital learning environments, which highlights obstacles and difficulties in the digital transformation of the educational landscape. Especially during the COVID-19 pandemic, many teachers were unprepared to suddenly use the online education platform for teaching (Harris & Jones, 2020).

The digital gap among educators is a major problem since some may not have access to the tools and training they need to use online learning environments efficiently. Although laws have been passed to encourage teachers to be digitally literate, institutions and regions have different regulations in place regarding accessibility and implementation. According to a study looking at how the digital gap affects Chinese instructors' perceptions of online learning, this disparity may impede the broader adoption of digital platforms (Li et al., 2020). Some educators may view digital tools as disruptive to existing teaching routines and instructional approaches, despite their potential to improve student engagement and learning results (Dai & Sternberg, 2020). And they think that the incorporation of online education platforms into classroom practices may be hampered by instructors' aversion to change, which is based in traditional teaching methods and pedagogical views (Huang, 2020). In Harris and Jones' (2020) study, a series of surveys and interviews were conducted to investigate teachers' readiness for online teaching. As they notes, the rapid shift to online learning exposed gaps in teachers' digital literacy and instructional design skills, impacting the quality of education delivered (Harris & Jones, 2020). Due to SDL's curriculum involving the creation of interactive and engaging content, educators need to provide clear guidance and facilitate student learning (Aguilar, 2020). In Aguilar's (2020) study on instructional design in remote learning environments, the focus was on the challenges faced by educators in creating SDL friendly online courses. Due to a lack of experience in instructional design, students may take poorly designed courses that do not engage them or encourage autonomous learning (Aguilar, 2020).

Moreover, due to the fact that many students are accustomed to direct supervision and guidance from teachers in traditional classrooms, it is often difficult for them to adapt when transitioning to online learning that requires high self-discipline. According to Knowles (1975), learners need to have strong intrinsic motivation and the ability to learn independently in order to effectively learn without external pressure. The inability to provide timely feedback on learning progress can also lead to a decrease in student engagement. The lack of face-to-face interaction is another factor leading to low student engagement. Traditional classrooms provide a dynamic environment where engagement is fostered through real-time interactions, immediate feedback, and a supportive learning community. Online platforms, however, often struggle to replicate this environment. Hodges et al. (2020) conducted a comprehensive review of online education during the COVID-19 pandemic, and studied various online learning platforms and their effectiveness. Their research emphasizes that many online platforms fail to provide sufficient interactive elements, such as on-site discussions and collaborative activities, which are crucial for maintaining student engagement and motivation. Lack of these elements often leads to a passive learning experience, where students may feel disconnected from the course materials and reduced engagement. The limited communication and interaction between students, teachers, and other classmates may lead to students feeling isolated, lacking a sense of belonging and participation (Picciano, 2002). According to study by Chinese academics Song Mi and Wang Chunmei (2005), there should be a greater focus on the quality of online education platforms as there are a growing number of them. The theory of self-directed learning states that learners need clear learning goals and high-quality learning resources to support their learning (Candy, 1991). Hu hang and others pointed out that the online education platform should pay attention to the collection of educational big data and the development of intelligent learning system (2019).

Indeed, the collection and feedback of students' learning information in the later stage is also the key to whether online teaching has logic and coherence. Timely and personalized feedback is crucial for SDL. It helps students monitor their progress, make necessary adjustments, and stay on track with their learning goals. However, many online platforms fall short in

providing effective feedback mechanisms. Van Dorp and van Gerven (2020) conducted a study on the effectiveness of feedback in online learning environments. Their research involved analyzing various online platforms and found that automatic scoring systems often fail to provide detailed feedback on complex tasks, which is crucial for SDL. This study emphasizes the impact of a lack of timely and personalized feedback on students' ability to self correct and make effective progress. As they notes, automated grading systems, while efficient, often lack the capability to offer nuanced and constructive feedback necessary for deeper learning (van Dorp & van Gerven, 2020).

Whether online education platforms can achieve fairness in education is also a point that has been questioned. Not all students have equal access to the technologies necessary for online education platforms, such as reliable Internet connectivity and appropriate equipment. This inequality will exacerbate the existing education gap, making it difficult for students from low-income backgrounds to fully participate in online learning (Eynon & Malmberg, 2021). Not all students have equal access to the technologies necessary for online education platforms, such as reliable Internet connectivity and appropriate equipment. This inequality will exacerbate the existing education gap, making it difficult for students from low-income backgrounds to fully participate in online learning (Eynon & Malmberg, 2021). In Eynon and Malmberg's study on the impact of digital inequality on online learning, the usage of online education platforms by students from different socio-economic backgrounds was analyzed. The research results show that students from low-income backgrounds have limitations in accessing technology and find it difficult to participate in online learning. This has also led to unequal distribution of educational resources. Less resource-rich schools and educational institutions frequently find it difficult to supply the online learning infrastructure. This covers technical assistance, professional development for instructors, and access to excellent digital resources. Reich et al. (2020) conducted a detailed study and investigation on the impact of resource availability on online learning during the COVID-19. In interviews with educators and administrators, it can be found that institutions with limited resources face challenges in providing sufficient online learning experiences. Resource differences can limit the availability of basic tools and support, thereby hindering the implementation of SDL in online education platforms.

When analyzing the challenges faced by online education platforms, it is necessary to take into account the specific national conditions of different countries. China, as a country with a rich history and traditional culture, attaches great importance to the respect and inferiority of the elderly and young. In education, the authority of teachers is also highly emphasized, and guidance on instructional education is highly valued; The most representative exam, Gaokao, is a representative of rote memorization in exam oriented education. Zhao and Sheng's (2021) research focuses on exploring the impact of the college entrance examination system on China's educational practice. Their research involves analyzing the impact of high-risk tests on teaching and learning, revealing that the college entrance examination system focuses on memory and preparation rather than self-directed learning. Although relevant policies have been implemented to reform the college entrance examination in recent years, the main teaching mode has not undergone significant changes. In the context of contemporary education models, cultural resistance to new educational methods, including SDL, may be a major obstacle (Huang, 2020). In this study, he investigated cultural and pedagogical barriers to SDL in different educational backgrounds. Through interviews and surveys with educators, students, and parents, it was found that deeply ingrained educational practices and cultural norms can hinder the adoption of SDL. Both mainstream educational ideas and resistance to new educational models are issues that online education platforms need to consider and further address.

The successful implementation of SDL requires educators to innovate in technology support, curriculum design, and teaching methods to create an educational ecosystem that supports learners' self-directed learning. Through these efforts, SDL can not only help learners achieve better academic results, but also cultivate their self-directed learning ability and lifelong learning habits, thus better coping with future learning and career challenges.

Conclusion

This research sought to explore the possibilities of self-directed learning (SDL) in online learning environments, with an emphasis on the advantages, methods of implementation, and potential drawbacks. Inquiry was guided by the following study questions: 1) Will SDL help learners learn? 2) How can SDL be successfully incorporated into online platforms? 3) What are the challenges and how can they be overcome in both synchronous and asynchronous environments? The purpose of this study was to close the knowledge gap on the particular use of SDL in online environments and to offer useful recommendations for platform developers and educators. The main purpose of this study is to explore whether SDL can be effectively integrated into online education platforms to improve learning outcomes. Therefore, the research aims to understand the benefits of SDL, determine the best practices for its implementation, and address the challenges associated with its integration, particularly in synchronous and asynchronous learning environments. In addition, the research mainly analyzes the situation in China.

According to the study, SDL greatly increases students' motivation, autonomy, and capacity for self-management, which improves learning outcomes and sustains engagement. SDL must be implemented in online learning environments in a way that strikes a balance between students' autonomy needs and teachers' assistance. To meet the different requirements of learners, online platforms need to include effective progress monitoring methods, extensive materials, and individualized learning routes. The study also found important obstacles, such as the high need for self-management abilities in asynchronous settings and the restricted amount of autonomous learning space in synchronous contexts. Proposed remedies involve maximizing class time and engagement in synchronous environments and offering precise objectives and well-organized materials in asynchronous settings. The findings are noteworthy because they show how SDL may be used to promote effective and active learning in digital contexts. Through elucidating the circumstances that foster successful SDL, this study offers significant perspectives for educators and policymakers seeking to improve virtual learning environments. By providing specific tactics for integrating SDL in online platforms, the study closes a significant vacuum in the literature. This is especially pertinent in the post-COVID-19 period, when digital learning has grown increasingly common. Academically, it contributes to a better understanding of SDL's function in online learning by offering implementation techniques and actual data on its advantages. The study provides educators and platform developers with practical tips to enhance the efficacy and engagement of virtual learning environments. These contributions are essential for encouraging lifelong learning, improving students' preparedness for the digital world, and modifying educational institutions to meet the demands of the twenty-first century.

When acknowledging its advantages and contributions, we should also pay attention to its limitations. The use of secondary data, which could not fully reflect the subtleties of SDL implementation in various circumstances, is one significant drawback. The findings may not be as broadly applicable as they may be if the variety of learners' backgrounds—including their degrees of motivation and self-regulation—had not been adequately taken into account. Furthermore, there was not a thorough examination of the psychological aspects of SDL, such as learning motivation and self-efficacy, which may have affected the success of the suggested tactics. Consequently, future studies

should concentrate on analyzing how different kinds of online learning platforms affect SDL while taking into account the technological and cultural environments in which they function. To create more thorough implementation techniques, research on the psychological components of SDL, such as the significance of motivation and self-efficacy, is also necessary. Furthermore, a longer-term study of SDL's impact on students' academic and professional growth would shed further light on the effectiveness and durability of the approach. Extending the study to encompass a wider range of educational environments and student demographics would enhance the validity and improvement of the suggested approaches.

In conclusion, by encouraging self-direction, motivation, and autonomy, SDL may greatly improve online learning, as this study has shown. The study gives educators and platform developers useful information by addressing major problems and offering workable implementation options. The study opens the door for more research to expand on these discoveries and further examine the possibilities of SDL in various online education environments, even as it acknowledges its limits. In the end, our research helps to develop online learning environments that are more efficient, interesting, and flexible—essential for the changing nature of education in the twenty-first century.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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