

**MOTIVATION OF SELF-DIRECTED LEARNING FOR CHINESE
ADULT LEARNERS IN ONLINE LEARNING**



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Abstract

This study 1) compared the effect of adults' work experience and gender on the motivation of self-directed adult learners in online learning; 2) investigated adult self-directed learner motivation for online learning. I surveyed the motivations of adult learners in online self-directed learning and compared adult work experience and gender to the motivations of self-directed adult learners in online learning.

The sample size was 415 adult learners with online self-directed learning experiences in Daqing City, Hei Long Jiang, China, as determined by a survey by questionnaire. 1) Different genders and work experiences impact independent learning. 2) In independent learning cognition, whether the problem can be solved through online consultation, whether to attend independent learning classes on time, and whether teachers can fully interact with adult learners in a self-directed learning environment are all critical considerations. t-Tests showed that, under the same working conditions, gender differences cannot affect the situation of self-directed learning. In the case of people of the same sex, those with more than five years of work experience were more likely to study independently than those with less than five years of work experience.

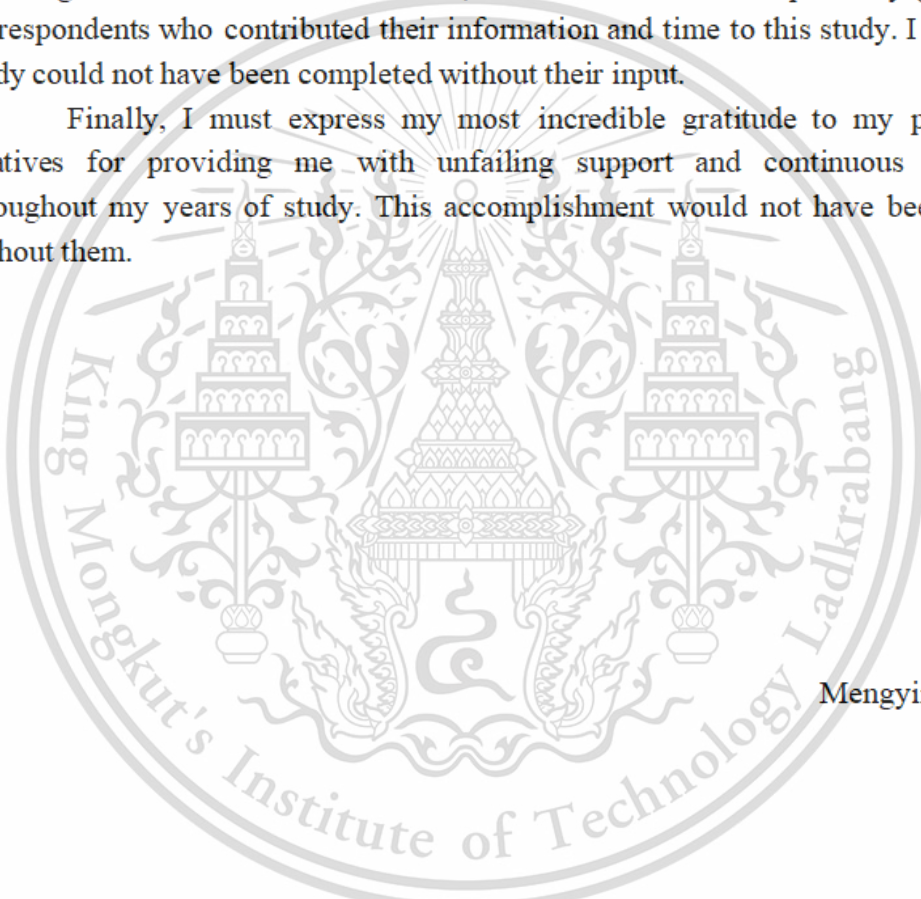
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CHAPTER 1

INTRODUCTION

1.1 Research Background and Problems

Nowadays, the progress of human civilization and the development of the social economy depend on the supply of information and knowledge resources. The social and economic structure is developing in the direction of simplicity and repetition. Human experience, knowledge, and abilities are essential components of national wealth and critical factors of development and production, and they are the first means of production. In the information economy, value increases are realized not through labor but through knowledge. Previously, learning skills could only be obtained through schools or libraries. Now, technology, especially social media, has resulted in a growing expansion of information and knowledge, promoting lifelong learning as education's ultimate goal. People's ways of life, work, learning, and communication have undergone significant changes (Zhang, 2011). More and more employees of enterprises, government officials, school teachers, and social workers will adopt online learning to realize lifelong learning (Wu, 2015). The network, as the carrier, builds all kinds of informal online learning communities; due to constraints including time and place, it has become accepted by adult learners and plays an indispensable role in their learning. For example, it can address space and time constraints by using its resources to increase information exchange, collaboration, and satisfaction with education (Rovai, 2001). People can find like-minded learning partners on the internet and progress together. The shared learning vision can also stimulate their initiative and creativity in learning and enhance their sense of belonging (Tang, 2017). It is conducive to building knowledge and communicating emotions (Dong, 2016); it is also a way for members to grow together and reduce the knowledge gap (Shafipour et al., 2017). The significance and the deep integration of the internet and education have constantly highlighted the value of the adult online learning community. It has become more extensively applied in different professional fields.

Zimmerman (1989) of the social cognition school proposed a research framework for self-directed learning systems. Student learning is self-directed when cognitive and motivational behaviors are actively involved in learning activities. The learning state of self-directed learning can be described by five dimensions: motivation, attitude, learning method, learning plan, and learning environment. Learning time can be arranged, learning results can be predicted, and external learning conditions can be adjusted by stimulating internal motivation and learning methods. Dickinson (1987) believed that self-instruction means that learners are responsible for and execute all learning-related decisions by themselves; that is, learners can recompose the teaching target selection to

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meet the need for individualized learning content, judge the adaptability of learning strategies, and make the corresponding adjustment according to actual conditions to achieve the best learning effect. He thinks that, in self-directed learning, learners can decide their learning attitude and the ability to work self-directedly.

However, adults are unwilling to participate in the online learning community and lack acceptance and use of mobile learning (Bao, 2017). The interaction degree between members was insufficient (Wang, 2017): they found that association coordinators' participation in the e-learning community showed that their motivation for participation mainly included learning new skills and gaining work practice opportunities to strengthen connections with colleagues and careers and reduce isolation due to job functions and geographical location. Dadze-Arthur et al. (2016) stated that the way learners think about their actual knowledge and experience, how much they focus on computer-mediated communication, and how much they participate in courses and projects, can improve their knowledge and social participation in the online learning community.

Adult learners—who are considered adults in the learning process? The main ones here were starting employment and building a home. Adult education is also known as continuing education or lifelong education. Lifelong learning is a familiar concept that particularly emphasizes the practical initiative of individuals to educate themselves and educate themselves in the lifelong learning process to improve and fulfill themselves. Adult education includes various adult education activities and the institutions that provide these activities and put them into action. Adult education is a social and political phenomenon in today's society (Ahmed, 2021). Education is not only implemented in school but also throughout life.

According to Pires (2022), the body of adult education training is on-the-job learning by adults compared to qualified college adult learners; this part of the adults' work lives must survive multiple pressures, etc. Although work provides valuable experience, many adults lack a strong sense for self-directed learning, are unmotivated, and are unaware of the value and purpose of knowledge. Learning at home, combined with adult education, has been regarded as a record of formal school education, and the education process is focussed on obtaining a diploma. Many adults do not have a solid drive to learn on their own and do not have much enthusiasm in an atmosphere like this. Their commitment is poorer, and they ignore the value of learning.

In adult self-directed learning, self-supervision plays a vital role, closely related to whether they can achieve the expected goal. Self-directed learners regard themselves as the object of consciousness, take the initiative to evaluate the learning plan, control and adjust the learning desire, and finally learn to examine themselves (Han, 2019). Improvement through self-directed learning should represent an upward spiral process, and, in this process, self-supervision ability keeps improving and the learning effect becomes more significant. Adult self-directed learners make comprehensive observations and records of their performance and learning

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development and judge the impact of the target learning content they want, mainly including two points: firstly, self-reflection; people who are good at learning should be able to find their shortcomings and defects through learning and make up for them in time; and secondly, self-summary, that is, to summarize the methods and results of learning to improve progress. The two aspects translate and enhance the progress and problems made in the learning process and then proceed to the next learning step.

To achieve good results in self-directed learning, learners must choose appropriate strategies to achieve their aims. First of all, learners must make their objectives clear. Adult learners need to determine which goals are preferred and which are secondary. Secondly, adult learners must also master the cognitive strategies of self-directed learning, refer to relevant materials according to specific aims, and organize and integrate with the existing knowledge system in advance. Learners use a refined processing strategy to process new and old knowledge as they learn deeply. Internal learning motivation is required to encourage external learning behavior and achieve the goal. Motivating students to concentrate and persevere until the task is completed is beneficial. Again, according to different situations and study characteristics, an adult will choose the best learning strategies. For example, an effective organizational system to integrate old and new knowledge and form a new knowledge structure and effective time management can help adults adjust their progress according to the available time, strengthen their learning motivation, adopt learning strategies suitable for themselves, explore online learning in practice and improve the efficiency of self-directed learning.

Motivation is an essential factor in the development of educational activities. Motivation is not immutable. People must also be aware that motivation always has a social background and that they educate themselves not to satisfy their knowledge but to solve their specific problems.

1.2 Research objectives

There are two main objectives of this study:

- (1) To compare the difference between adult work experience and gender on the motivation of self-directed adult learners in online learning.
- (2) To survey the online learning motivation of adult self-directed learners.

1.3 Research questions

The questions addressed here are:

Q1: Does the motivation of self-directed learning in adults differ with work experiences and gender?

Q2: What is the level of motivation for self-directed learning for adults in online learning?

1.4 Conceptual framework

The independent variable is the self-direction of adult learners' online learning on working expenses, and the dependent variable is motivation. Motivation includes the learning environment, learning processing, and learning perception.

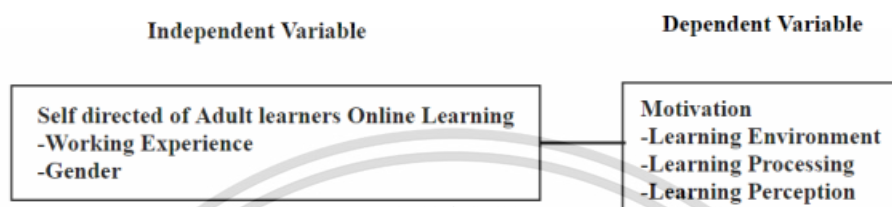


Figure 1.1 Conceptual framework

1.5 Scope of the study

Daqing City, Heilongjiang Province, China, has a total population of 2,781,562 (Baidu Encyclopedia). The research subjects were adult learners with an online self-directed learning experience in Daqing City. According to the proportional stratified random sampling method, the calculated sample size was 415. The subjects were divided into four groups: the first group consisted of men with more than five years of work experience; the second consisted of men with less than five years of work experience; the third group consisted of women with more than five years of work experience; and the fourth consisted of women with up to five years of work experience. Among them, there are 179 people with less than five years of work experience, 236 people with more than five years of work experience, 96 people in the first group, 119 people in the second group, 140 people in the third group, and 60 people in the fourth group.

1.6 Definition of terms

The terms used in this study are defined:

Adult learner: Adult learners are adults in the process of working in life (including employment, quasi-employment, and unemployment).

Motivation: Motivation is the state and process in which an individual sends out energy and impulse to make his or her behavior toward a specific goal and maintains that demeanor for a period of time, which is also a psychological state. It is affected not only by personal factors but also by external factors. The external behavior reflects the motivation as below.

- Learning Environment : The learning environment is the external environment that influences learning and the external condition that encourages learners to actively construct knowledge and enhance abilities.

- Learning Processing: The process of adult learner self-directed, purposeful, planned, and systematic acquisition of knowledge, skills, and behavioral norms.

- Learning Perception : Perceptual learning is the experience-dependent improvement of our capacity to interpret what we perceive as sight, sound, touch, taste, or odor. Unlike shorter-term mechanisms like sensory adaptation or habituation, these alterations are permanent or semi-permanent. Furthermore, these modifications are adaptive rather than purely accidental, which confers advantages like increased sensitivity to weak or confusing inputs.

Self-directed learning: Learning and application may be challenging for some students, especially if the content delivery method should be more engaging, interesting, and structured. Self-directed, or student-directed, learning is one of the oldest and most thorough teaching methods. It gives students a chance to work independently in a way that makes it easier for them to understand the material and helps them get needed information.

The theory of self-directed learning has four main components, each of which plays a vital role in the self-directed learning process. While the following components take place in no particular order, each can be re-assessed throughout learning by the student or teacher to allow for the best delivery and application of educational outcomes. Self-directed learning has four parts: management and monitoring, figuring out what needs to be learned, working with others, and self-evaluation.

Online learning: Online learning is education over the internet. It is often referred to as "e-learning". However, online learning is just one type of "distance learning," the umbrella term for any learning at a distance and not in a traditional classroom.

CHAPTER 2

LITERATURE REVIEW

This chapter reviews the literature and research on self-directed learning motivation for adults in online learning. It is divided into four main areas: (1) adult learners; (2) self-directed learning; (3) online learning and (4) motivation.

2.1 Adult learner theory

The implementation, process, and evaluation of teaching are all about promoting students' better learning. Adults can learn independently. Adults can learn self-directedly. As one of the fundamental theories of adult learning, self-directed learning is one of the essential features of adult learning (Freire, Antunes, & Costa, 2022). It transforms traditional passive understanding into purposeful and active learning with autonomy and independence according to the actual needs of adult learners (Baek, Jang, & Kim, 2022).

Knowles (1975) stated that self-directed learning is "a process initiated by an individual without the help of others to assess his or her own learning needs, form his or her own learning goals, find human and material resources for learning, select appropriate learning strategies, and evaluate learning outcomes" (Ten Brink & Bultitude, 2022). The main characteristic distinguishing adult learners from children and adolescents is that adult learners have strong personality independence, are mature learners with a clear sense of autonomy and strong self-management skills, and therefore learn with apparent freedom (Germini et al., 2022). From the perspective of self-directed learning theory, adults have the ability and conditions of self-selected learning due to their physical and mental maturity and the accumulation of knowledge and practical experience (Ismailov & Laurier, 2022). In terms of learning, this suggests that adults are, in most cases, capable of making and completing learning plans and personally assessing their learning outcomes. They are the proper subjects of learning, and teachers are the guides and assistants for learning. Online learning is often detached from the traditional classroom and requires learners must enter the learning process spontaneously and actively to achieve good results. Self-directed learning theory provides a theoretical and research basis for adult online learning (Daflizar, Indrayadi, & Irwan, 2022).

Maslow's hierarchy of needs theory suggests that people's needs are divided into low, medium, and high levels. Common and medium-level conditions can be satisfied externally, while high-level requirements can only meet people's internal needs. Adult learners are learners with social practice experience. In social practice, they develop the desire to learn to satisfy better their "need for respect" and "need for self-actualization." (Kaharuddin, 2022): through formal learning, we strive to meet the needs of external schools. In lifelong learning, those in online education are

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predominantly adult learners (Mahima & Ginige, 2022). For example, older learners tend to study to satisfy "higher internal needs" and participate in online learning that may be less "convenient" for them, thus meeting needs for respect and self-actualization (Revankar et al., 2022). Therefore, the hierarchy of needs theory strongly supports adult online learning.

You (2000) pointed out that adaptive learning is the development trend of distance education, analyzed the main characteristics of distance adaptive learning, and put forward strategies to improve adaptive learning (Charbonnier et al., 2022). You found that college-aged adult learners do not adapt to learning motivation, network resources, environment, learning strategies or learning ability and proposed measures to improve college adult learners' learning adaptability in the multimedia network environment (Dolma et al., 2022). In an empirical study on the adaptability of distance learning for primary and secondary school teachers, Wang et al found that the overall adaptability of this group was poor. Learners' online age, learning experience, self-directed learning, collaborative learning, course resources, physiological adaptation, and time assurance affected their adaptability to distance learning (Webb et al., 2022). Chen's research showed that network college adult learners had poor learning adaptability, which was mainly reflected in the psychological aspect. There was a significant correlation between network learning adaptability and non-cognitive factors. The influencing factors included learning style, learning environment, learning concept, and learning organization structure (Ismail et al., 2022).

2.2 Self-directed learning

Self-directed learning theory emerged in the mid-1980s and aimed to understand the cognitive, metacognitive, behavioral, motivational and affective aspects of learning. Self-directed learning theory is an active and constructive process in which learners set goals and then strive to monitor, regulate, and control their cognition, motivation and behavior, based on the characteristics of the goals and the environment (Savage et al., 2022). The theory has become one of educational psychology's most critical research theories and is considered an essential factor for learning success even in the digital age (Durkin, Garbutt, & Carson, 2022). Skaletz-Rogowski et al. (2022) identified six widely known theoretical models for self-directed learning, all with solid theoretical and empirical backgrounds, including Zimmerman's social cognitive model of self-directed learning (Ahmedi, Thaqi, & Mustafa, 2022), Boekaerts' adaptive learning model (Levis, Ludmer, & Shiner, 2022), and Pintrich's generic framework of self-directed learning (Schnieders et al., 2022). Pintrich's generic framework (Ng et al., 2022) was used in this study, because his work addressed the relationship between self-directed learning and motivation for the first time. According to Pintrich's model, the theory of self-directed learning consists of four stages (Kloosterman et al., 2022).

Rogers' view of learning was based on the humanistic perspective, potential technological theory, and self-actualization theory. It emphasized that the student is the center of attention and that the goal of teaching and learning was to realize the human potential for self-directed learning, to learn freedom and self-actualization, and to be characterized by self-directed learning. Therefore, adult learners needed an authentic learning atmosphere, where they are cared for, understood, and listened to, to facilitate mutual learning (Yuan et al., 2022). In this process, adult learners develop learning plans, select learning content, and invest their emotions and intellect in a learning atmosphere that profoundly impacts their lives and behaviors more than in a traditional classroom. In addition, teachers provide adult learners with various learning resources that include not only books, activity spaces, recordings, and other forms, but also human resources (Meganck et al., 2022).

In terms of learning content, adult learners can plan their learning as self-directed individuals, choosing the content and materials that interest them based on their interests and taking responsibility for the consequences of these choices (Bailey, Almusharraf, & Almusharraf, 2022). Rogers argued that in the teaching and learning process, the learner's choice of content of interest motivated the learner to learn under their own direction and thus achieve more efficient learning (Azizi, 2022). In this learning process, the emphasis was on adult learners taking responsibility for the content and learning plan they chose, which differed from the traditional system of teacher authority in teaching (Jones, Fenerci, & Wilkins, 2022). At this point, the teacher's role was to help students achieve these goals, but not to assume primary responsibility for achieving them.

2.3 Online learning

Learning can be divided into formal and non-formal education, with proper education moving both upward and downward, identified, and arranged for adult learners by relevant authorities or others, including through academic and vocational training, continuing education, lectures, presentations, seminars, etc. The focus of this study in the literature (Bailey et al., 2022) was on organized adult interactive learning in formal education. Formal education allows adult learners to quickly fill gaps in knowledge and skills, better integrate into society and the workplace, and gain moral satisfaction, thus satisfying their higher needs (Zubani et al., 2022). Internal learning needs can generate strong internal motivation to learn, which translates into sustained and effective learning actions, ultimately contributing to the sustainability and effectiveness of learning (Kor, Liu, & Kwan, 2022). Rational behavior theory has its roots in social psychology: it can explain and predict a person's behavior. In the context of information technology, it is mainly used to describe the position and behavior of individuals when using new technologies. The model is straightforward and has a clear structure (Salahshori et al., 2022). The rational behavior model made it clear that an individual's beliefs about behavior determine their attitude toward the

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causes of their activity (Philpot et al., 2022; Erga, MapleGrdem, & Alves, 2022). The rational behavior model has been cited in many fields with good results. For example, Zha, Zhang, & Yan (2022) discussed the critical factors influencing the sustained behavior of mobile learning users represented by adult learners (Shahraki et al., 2022); It was pointed out that people's attitudes and subjective norms (social pressure on individuals to accept particular behaviors) affected the expression of their will and, thus, their behavior. Considering the specificity of online learning, this study added external variables, including functional cognition, susceptibility, social effects, and motivational factors; added internal variables - willingness to learn, job expectations, and learning behavior - and removed variables controlled by behavioral beliefs. They analyzed vital variables such as gender and age (Lu, Hong, & Xiao, 2022).

Online learning is the key to integrating all kinds of network learning methods. It is an effective digital learning method, which is conducive to more effective implementation and innovative development. Online learning can be classified as formal, informal or self-directed, based on the degree of control over "learning" by learners and educational institutions (usually non-learners, organizations, and institutions). Before the internet era, the four online learning modes were more self-directed. Learning elements, e.g. learning time, space, and content were also more self-directed, weak, and isolated. Online learning was based on onternet technology, which allowed decentralized online learning methods to be integrated into a single system. Integration of four interactive teaching methods, a link between online teaching elements (learning time, space, etc.), adult learners' ability to provide time-based arrangements, based on their situation in addition to school-based learning time, and learning content that included not only classroom instruction, but also a selection of high-quality digital resources for online training.

2.4 Motivation

This section discusses adult motivation to learn on their own online, including self-directed learning environments, processes and perceptions.

2.4.1 Learning environment

Online learning environments include technology and platforms, content, and interactions, and researchers have optimized online learning environments to improve the effectiveness of each element. Researchers design and develop mobile communication tools against the increasing use of wireless technology based on the ARCS incentive model and collaboration factors (Yao et al., 2022). By analyzing online learning behavior data, Shen et al. constructed an online learning behavior and learning evaluation model for a Chinese MOOC pre-university course (Pires, 2022), which provided a process evaluation basis for building an excellent personalized online learning environment. The quality of online learning resources directly affects the quality of online learning. However, numerous online learning resources have blurred boundaries, and clarifying the connotation, functions, and types of online

learning resources helps to manage and optimize online resources (Ma & Li, 2022). For online interaction, Yang Min et al. used the "description-explanation-explanation" three-dimensional analysis method of critical discourse analysis to study the characteristics of teacher-student and student-student interaction texts in online course forums. They reconstructed the teacher-student interaction relationship (Harefa & Sihombing, 2022).

2.4.2 Learning process

Halyna (2021) found that most adults are informal in the self-directed learning process. Informal learning links to exploring, working, or everyday life (Shahraki et al., 2022). Ordinary Mikhail (2020) studied the main reasons for self-directed learning; he found that in most cases, self-directed learning occurred in unofficial settings, and the learner's freedom was needed. The task of this approach to learning was tantamount to constructing a continuum from informal to formal learning, in which self-directed learning was crucial. (Lu et al., 2022), the head of self-directed education in Ulu, Gyuzinzda (2019), studied individual, co-education programs in social settings and said the concept of non-formal education (Falusi et al., 2022).

Cooperative learning often out the idiosyncratic or personal choices of unique learners depending on their knowledge of course that seeks the answer without social media involvement. Once collaborative learning is part of the learning process, there will be another kind of collective behavior. To reach the goal of schooling, individuals and factors of collaborative learning must work cooperatively. Learners decide whether or not to communicate based on discrete traits (for example, those confident with the specified comfort and add media factors will feel a sense of trust). Whether a learner chooses individual or cooperative learning depends on how motivated they are and how vivid their learning goals are.

Luo (2019) pointed out three principal factors influencing learning: confidence, motivation, and previous learning experience of an online course. Luo et al. conducted a study on the cause and goal in 2016 and found no significant difference between these two factors in learning influence (Jia et al., 2022). In the same year, Chen (2019) studied the learning process in MOOC online courses and explored how different learning motivations affected self-directed learning behaviors (Chen, 2019). Motivation and goal setting was potent drivers of the learning process. In the same way, people interested in learning could also be genuinely motivated. Informal learning provided opportunities for this passion for learning and motivation built on a non-vocational interest in education. So for a non-vocational course. How do adult learners motivate to have an intrinsic motivation for learning?

2.4.3 Learning Perception

Yang and Zhou (2019) believed that learning perception was an individual's subjective evaluation of whether he could complete a specific task. Self-efficacy affects an individual's ability to perform a particular task and degree of participation. Online learning was frequently linked to "personal autonomy," as learners required

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individual autonomy while devoting themselves to their studies. Adult learners are more challenging to find and solve problems than in the classroom, and they are more likely to give up as a result, so online self-directed learning self-efficacy ensures that adult learners can continue the critical influencing factors; Korhonen(2019) analyzed the relationship between college adult learners' self-efficacy and their English self-directed learning ability and found a significant positive correlation between self-efficacy and their English self-directed learning ability (Kor et al., 2022). Zhang (2017) stated that teachers should help adult learners develop a sense of self-efficacy and be willing to learn so that their interest in self-directed learning stays strong over time (Salahshori et al., 2022).

Kor et al. (2022) and Stan (2017) pointed out that, among the eight principles of the constructivist learning theory of Simons (ref needed), one of them believed that learning was the process of establishing connections with specific nodes and information resources. Learning styles limited the application of adult self-directed learning and teacher guidance strategies. Therefore, combining the two was better realized by analyzing the differences in cognitive styles among diverse learners. Learning Differences: Domain dependents rely on their knowledge structure to analyze and solve problems. They have detached solid learning abilities but have low social sensitivity and social skills and are not good at communicating and cooperating with others. However, external factors often affected field-dependent people, so they had exhausted self-directed learning abilities, preferred collective learning, and hoped to get real-time feedback. In addition, field-dependent people were good at learning and remembering materials containing social content. However, field-self-directed learners preferred abstract theoretical learning materials rather than specific knowledge, and their generalization degree was higher than that of field-dependent learners.

The learning motivation of adult learners was a type of impulse power triggered by external and internal stimuli. In this theory, more attention is focused on the reinforcement of adult education, including external and internal support. External support refers to the learning environment and learning process, while internal reinforcement refers to learning perception. For example, adult learners' learning confidence was enhanced after experiencing the joy of learning success, thus enhancing their motivation.

2.5 Gender and work experience influence on adult learner self-directed learning motivation

Research on adult learning motivation showed that it was influenced by many factors, one being gender. For example, Dakenwald, in his book "Adult Education: The Basis of Practice" analyzed the reasons for adults to participate in educational activities and pointed out that "among the reading learners, men emphasized more than women the reasons for learning related to occupation, while

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women emphasized more the reasons for learning related to self-improvement, satisfying curiosity, religion, and escaping from the routine of a boring life" (Darkenwald & Merriam, 1986, pp. 177–178).

Professor Zhimin Gao (1997) also pointed out in his article "A Review of Foreign Research on Adult Learning motivation" that some foreign researchers consider gender an essential factor influencing adult learning motivation. These researchers found that "escape or stimulation," "social service," and "cognitive interest" was higher in women than in men.

Liu Chunsong (2005), an associate professor at the Institute of Educational Sciences of the Hunan Institute of Technology, found significant gender differences in college adult learners' learning motivation when they conducted a study on their motivation. Their study found that female adult learners had significantly higher levels of social orientation, fear of failure, and small group orientation, motivation than male adult learners, and considerably lower levels of personal achievement motivation than male adult learners. (Liu et al., 2005)

In the article "Investigation of English Learning Motivation of Science Minority Adult Learners in Xinjiang Normal University: Types of Learning Motivation and Differences between Male and Female Adult Learners," Wu Xia and Guliza Calif investigated the English learning motivation of male and female minority adult learners. They found differences in intrinsic interest motivation, achievement motivation, learning environment motivation, going abroad inspiration, social responsibility motivation, and personal development motivation. The reasons for the inherent interest, achievement, learning environment, going abroad, social responsibility, and personal development were all stronger in girls than boys. In comparison, motivation for information media was more significant in boys than in girls. Girls' passion for learning is more abstract and idealistic (to enjoy English, to experience culture abroad, to be a symbol of education, to live up to their parent's expectations, to improve the quality of our nation, et al.). In contrast, boys' motivation is very concrete and realistic (to go abroad to get an education and find a job, learn computers, consult professional materials, understand international politics, economy, and technology, et al.). (Wu & Guliza, 2004)

Huang Fushun (1992) introduced in detail the foreign research results on motivation orientation and gender in his book "Adult Learning Motivation: Discussion on the Motivation Orientation of Adult Participation in Continuing Education" and found that the results of foreign research on the relationship between gender and participation motivation orientation are not consistent. He thinks this may be due to differences in research methods, tools, and sample characteristics. Through the research of questionnaire survey, there are some differences between men and women in the motivation of participation. In addition, in the study using REP as the measurement tool, there is also a slight gender difference. However, studies using the Education Participation Scale, or EPS, have produced mixed results, with some finding differences between men and women and others finding no significant

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differences. Huang Fushun thinks that the actual situation of differences in gender and motivational orientation needs to be talked about more.

Employees are adults but span a wide range of ages, from late youth to middle age, when they are physically and mentally mature. At the same time, adult life and work experiences are more prosperous, and their understanding of society is also more profound; their knowledge of life, work, society, and school is fundamentally different.

Since most adults have established families and are engaged in work and various social activities, they assume various social family roles and responsibilities, which enable them to accumulate substantial life experience, social experience, and professional knowledge and skills. At the same time, due to the differences in adult personalities, the different degrees of influence of social factors, and other reasons, the adult experience shows the characteristics of individuality and diversification. Generally speaking, this existing knowledge and experience provide the basis and support for adults to continue learning. This critical feature makes them different from ordinary learners and directly affects the effective development of adult learning activities. Adults' rich direct experience during life is valuable in their learning process. Adults' learning needs, learning interests, learning motivation, and learning content selection are, to a large extent, based on their own experiences as the basis and premise for quickly selecting and recombining new knowledge. The rich experience of adults is not only helpful for adults to mobilize the accumulated experience in the past to stimulate association, comparison, thinking, and other psychological processes to accept and understand the current new knowledge and skills, improve the learning effect, and increase efficiency, but also can be used by employees to learn from each other and explore together. However, when the deviation between the new knowledge and skills and the existing knowledge, skills, and experience is extensive, it will hinder adults' practical acceptance of this new knowledge and skills to a certain extent and reduce the learning effect and efficiency. (Jiang & Xue, 2012, p. 195)

Existing experience is the basis for new knowledge assimilation and reorganization and is an essential resource for adult learners.

2.6 Current situation and investigation analysis

The leading institutions of e-learning are distance education research centers and educational information technology colleges, mainly distributed in economically developed cities. In less developed third-tier cities, the economic development level of regional differences in online learning, based on an information technology study of impact, is significant. Beijing Normal University, which has a wide range of cooperation, such as with radio and TV universities, is at the heart of the online learning research institutions. In contrast, the research institutions of colleges and universities in central and eastern China are relatively self-directed. They need more

cooperation with the two research centers in North and South China. They have yet to form extensive and in-depth collaborations with the leading online learning research centers and demonstrate partnership characteristics. They have yet to create a national cooperative network.

The first three institutions are the Bcreateng average university department of education, the Beijing regular university, the remote education research center, and the Central China standard institute of information technology. The number of colleges and universities affiliated with Beijing Normal University demonstrates that Beijing Normal University, the most influential in the study of online learning, is the core of the online learning research institutions. The second group is the regular universities in central China, such as Shantou Radio and Television University, South China Normal University, East China Normal University, and other educational IT research institutions. At least ten articles have been published by these universities, which are a strong influence.

In theoretical research, except for summary and reflection, literature on all topics is evenly distributed, among which literature review is the most important. Specific contents include research on teaching interaction theory, research on the status quo of online learning assessment in China, research on social existence, and analysis of the status quo of the adaptive learning platform involving multiple elements of online learning (Jayawardena, 2020). Social presence is an essential factor in online learning. Scholars (Al-Marroof, Alhumaid, & Salloum, 2020) made a review this study, clarifying its origin and development connotation, measuring methods of influencing factors and research hotspots. Online instructional design research is conducive to the development of learning science, instructional science, and evaluation science (Ismailov & Laurier, 2022). Zhong Zhixian's discussion on the definition and significance of online learning clarified the scope of online learning research (Khan et al., 2020).

The distribution of empirical research literature mainly focuses on learners and the learning process. Few studies from teachers' perspectives indicate that online learning is more learner-centered and puts higher requirements on learners' self-regulation abilities in self-directed learning (Ahmed, 2021). The research on online learners mainly focuses on analyzing learning, motivation, and behavior. Wang Yingyan et al. Define and analyze the incentive mechanism of online learners and propose effective incentive measures based on the internal factors that stimulate learners' learning motivation (Chen, Yang, & Shi, 2020). Hu Yiling et al. Established a data mechanism and produced an analysis model of online learning behavior. They built an excellent tool framework for online learning behavior analysis (Yang, 2020).

2.7 Motivation and the importance of self-directed learning for adult learners in online learning

The term "performance" refers to online learning outcomes for learners' combined learning behavior and attitude. Presently, the domestic study of online learning performance influence factors is divided into online self-directed learning performance and blended learning performance. Online self-directed learning performance was the major influencing factor for online learning resource access, social behavior patterns, and video organization. The influencing factors of blended learning performance, such as online course presence and self-regulated learning ability, mainly involve three levels: teacher, student, and online course. The teacher level primarily reflects the teacher's attitude towards blended teaching, teaching preparation, and the online course application mode. Student level specifically includes adult learners' willingness to use online courses, tasks, technology matching degree, learning style, learning background, dynamic personality, and online learning behaviors. The main components of the online course level are the speaker, teachers, curriculum teaching assistant, platform function, design of online learning performance, influence factors on international research, and performance of blended learning situations. Learning research is relatively small and mainly involves the following aspects: first, learners' psychological characteristics, such as online learning emotion (Zhang, 2020), and adult learners' online presence (Giannakoulopoulos, Kouretsis, & Limniati, 2019). Online learning attention (Zhang & Zhang, 2020); Secondly, online video resources and use factors such as teachers appearing in online videos (Siddiqui & Khan, 2020) and the length and frequency of learners' access to online resources related to classroom content (Thorpe & Alsuwayed, 2019), speech capture, picture-in-picture video design (Omotosho et al., 2019), et al. Finally, interpersonal interaction factors such as online feedback, contribute to linear peer guidance (Park, Lee, & Park, 2019). The use of peer feedback systems in online learning group structure and online group learning discovered that blended learning performance is the focus of domestic learners (Hromkovic & Lacher, 2019).

In contrast, self-directed online learning is a hot topic in the international study of online learning performance. Based on the research on the influence of learning behavior on learning performance, more and more scholars at home and abroad have paid attention to the deep-seated influencing factors behind online learning behavior. Cognitive neuroscience is the latest trend to explore online learning behaviors' influence on learning performance (Huppe, 2019). The research of scholars from Taiwan and Hong Kong on the influencing factors of online learning performance from a cognitive neuroscience perspective has a prominent international influence. It is essential for relevant domestic research (Korkofingas & Macri, 2019). Compared with domestic research, foreign scholars pay more attention to the in-depth cognitive analysis of online learning based on eye movement technology, which has significant reference value for studying online learning performance in China.

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2.8 Strategies for improving adult learners' motivation for self-directed learning in online learning

Relevance emphasizes the characteristics of distributed, abundant, and rapidly updated information and believes that knowledge can exist in an external environment other than the human brain. Therefore, learners must actively acquire valuable information to meet their needs and solve the problem of relevance. Frontier keywords such as adaptive learning show that online learning needs a personalized design and depends on learners' initiative. The network status of connections learners can reflect their learning situation (Kim, Song, & Choi, 2019). Online learning technology becomes intelligent and provides diversified learning resources for learners. This advancement raises the bar for the learner, who requires learner autonomy awareness to identify and express requirements and can meet the demand for adaptive learning, which is also focused on learners' self-directed learning. With the advancement of intelligent technology, many researchers are developing adaptive learning systems and innovative technology to adapt to their students' differences.

Online learning engagement refers to the active state of learners in online activities, including behavioral, cognitive, and emotional engagement. Behavioral engagement refers to learners' attention, efforts, and adherence to the input level; Cognitive learning refers to learners dealing with complex situations using cognitive strategies; And emotional engagement refers to learners in the process of the moving task. Currently, the emotional-Masonic study of online learning as centralism manifests itself in the following respects: First, extensive data from measurement research was used. For example, Scholars conducted an in-depth analysis of online video learning engagement using big data from MOOC video features and adult learners' jump behaviors (Halim, Latifah, & Lubis, 2019) based on data recorded in the learning management system. Li Shuang constructed an evaluation model of distance learners' learning engagement (Ismailov & Laurier, 2022), et al. Second, research on the influencing factors and promotion strategies of online learning engagement, in which the self-determination theory is central, shows that proactive personality, online learning, emotion, and external learning, motivation have a positive predictive effect on online learning engagement (Cho & Rha, 2019); Finally, studies on learning optimal based on online learning engagement, such as Ma Zhiqiang's online learning behavior model based on learning engagement theory (Han, 2019), Based on the perspective of learning engagement, Zhijun Wang proposed a hierarchical model and design strategy for mobile learning resources (Wang & Ju, 2019); International research on online learning input is mainly reflected in the following aspects: First, the influence factors or mediation research on online learning input, such as the reflective thinking-promoting approach, is conducive to enhancing adult learners' learning design achievements and reflective thinking in the pre-class stage of flipped teaching based on online courses, but it also enhances adult learners' participation in the pre-class stage. Gamification attracts adult learners to digital

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learning systems and enhances interaction and anticipation. Adult learners' engagement can be increased when they have a clear goal and a strong sense of ease, use, and usefulness in playing games. Learners' immersive experience and satisfaction of psychological needs fully mediate the influence of social interaction on learning participation. Teachers' perceptions of task value positively predict learning engagement and motivational powers in virtual learning communities. Secondly, real-time monitoring research of online learning engagement based on big data, such as the real-time collection and analysis of online learning interaction, video playback options, video lectures, watching time, and learning behavior, can understand the online learning engagement of learners (Lu & Li, 2019). Finally, research on the influence of online learning engagement on learning effects, such as the structure of learning engagement learning groups and other design factors of online forums, has an important impact on learners' deep learning (Zhang, 2019).

Based on a summary of the above research findings, it is clear that to improve learners' online self-directed learning performance, even more, the main ways to get adult learners more interested in online learning are:

First of all, in the course introduction process, the online course introduction standards that meet the talent cultivation needs of the university are formulated to ensure an accurate match between the introduced online course goals and the talent cultivation goals of the university, enhance the pertinence and practicability of online courses in talent cultivation, and improve adult learners' online self-directed learning motivation and sense of gain (Chen et al., 2019). The integration of online open courses and talent training programs in Chinese universities still needs to be improved, mainly due to the need for more innovative norms, standards, policies, and institutional guarantees. So, colleges and universities, based on their needs for training talent, come up with possible criteria for determining the quality of teaching in an online course.

Secondly, in the course selection process, we should improve the guiding mechanism for adult learners' course selection, promote the seamless connection between online course content supply and adult learners' development needs, activate the internal motivation of learning, and make online courses powerful support for adult learners' personalized development. Adult learners need more depth of demand for online courses and their development, ultimately completing the course selection blindly and mechanically, resulting in some bizarre phenomena that are common, such as Most of the methods I choose being based on the title of the course. After two or three weeks of study, I found that the course content differed from my initial understanding, which was different from what I needed. I would only choose online courses voluntarily if the school had a mandatory document requirement. Choosing to take online courses to comply with the school's course selection requirements, finally passing (60 points), and earning a Deciding It et al. have dramatically weakened adult learners' internal motivation and learning engagement in online courses (Huang & Zhang, 2018). Therefore, in the process of course selection, it is suggested that

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colleges and universities, while strengthening adult learners' awareness of course selection responsibility, establish and improve the guidance mechanism for adult learners' course selection based on the tutorial system so that adult learners can rationally choose online courses based on their own development needs and improve adult learners' internal motivation and learning input in self-directed online learning (Wu, 2016).

Finally, in the curriculum implementation, optimize the learning space, promote the exchange of offline and online discussion together, enhance the sense of belonging and emotional engagement in online study, and form the quality of an online learning culture. Learning spaces are one of the critical technologies to promote the development of higher education reform and are the basis for the application of online courses in colleges and universities. Depth of soil Colleges and universities should revise their current learning space design concept (Wu, 2016) to support adult learners' online self-directed learning as guidance, for adult learners' self-directed learning group collaboration to create a good learning environment, and to promote the formation and development of an offline learning community. Based on the construction of an offline learning community, promote the establishment of an online learning community for adult learners, strengthen the frequency and depth of adult learners' online interaction, enrich adult learners' positive emotions in online learning, enhance adult learners' behavioral and cognitive investment in online self-directed learning, and improve online self-directed learning performance (Liu, 2020).

In summary, according to the author, since the publication of academic articles on online learning, with the rapid development of information technology and the Internet, China's online learning research has entered a fast lane. From the perspective of publishing institutions, online learning research has become a relatively stable field with a relatively secure research platform and core author group. However, the cooperation between different regions is weak, and the hot topics of online learning include online learning theory and online learning environments with significant regional differences. Based on the status and needs of online learning research, the frontiers of online learning analysis and personalized research include online deep learning and active personalized learning. In the future, online learning should pay more attention to the following areas of research and exploration:

One is the study of learners' subjectivity to online learning and how their self-management abilities are in high demand, such as time management, resource management, emotion management, stress management, et al. Adult learners' learning goal plans need to be more apparent due to a lack of teachers on-site, difficulty focusing, being easily distracted, indulging in the network et al., or loneliness, such as experiencing problems during the learning process. The ability of learners to correctly deal with the relationship between humans and machines in the man-machine ecology, as well as to recognize and play with its subjectivity, is crucial to the further development of personalized adaptive learning.

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Second, interactive online learning activities are meant to look into the space and time separation of online learning and create a field; emotional communication between teachers and adult learners to peers and the lack of communication, necessary thinking collision, and the learning process show that learners do not have access to the campus of collective learning life and cannot influence each other. Online learning activities need more attention to peer interactions between teachers and adult learners. Online learning activities are the material basis of learning. However, the existing studies on online learning activity design mainly focus on strategy and learning activities. There needs to be more research on iterative design. The existing studies on online learning interaction mainly focus on analyzing the influence of the status quo and interaction degree on learning results.

Third, while existing research has included all aspects of online learning, more research on learning evaluation is needed. Early online learning evaluation research is mostly about principles, lacking practice and data support. With the support of big data, some researchers conducted learning analysis through data mining and tried to establish a comprehensive evaluation model. However, there are few relevant research achievements and insufficient application popularity, which makes it challenging to meet the needs of scientific evaluation of the rapidly developing scale of online learning, which has more learning evidence (online learning data) than traditional classroom teaching. The rational use of data-based learning evaluation can effectively improve the scientific nature of learning evaluation.

2.9 Related work

2.9.1 Related Studies in China

Wu Jianling (2006) believes that learning motivation can be divided into cognitive and behavioral types. Ausubel divides learning motivation into three types: cognitive drive, self-improvement drive, and subsidiary drive. The motivation for adults to participate in network learning can be divided into four types: interest in knowledge, career development, social service, and external expectations.

Chen Ju (2012) believes that employees' motivation to learn in the workplace reflects their demand for learning: their satisfaction with the practicality of learning content and the way of learning. The reason for workplace learning will be vital if the content is relevant to the job and the learning method is satisfactory; otherwise, it will be weak.

Chen Weiping (2010), in his master's degree thesis, studies, skilled teachers and learning motivation in the workplace. Two primary schools in Shanghai were investigated, analyzed, and selected for a case study analysis to find the main problems of skilled teachers, workplace learning, motivation, and proven internal and external factors affecting workplace learning motivation; Improving strategies are put forward, such as creating a warm working atmosphere, planning teachers' professional development tracks, constructing multiple incentive mechanisms, providing various

opportunities for demonstration, et al., numerous ways to improve the learning motivation of skilled teachers in the workplace.

Wang Ying (2006) investigated and developed a learning motivation scale for adult learners in an online education institute. The research concluded that adult online learning motivation could be divided into three dimensions: cognitive drive, self-improvement drive, and subsidiary drive. The learning motivation of human online learners mainly tends to be mental drive and self-improvement drive, and the learning motivation of males is lower than that of females. The learning motivation of married learners is lower than that of unmarried learners. The learners' learning motivation in areas with good economic conditions is higher than those in economically poor regions.

The study by Xiong Meifeng (2011) found no significant difference in the learning motivation of medical staff regarding gender. Regarding family factors, there was a substantial difference in the learning motivation of medical staff in terms of age, marital status, and educational background. In terms of unit factors, there are differences in learning motivation among people with different educational backgrounds and incomes. Regarding social aspects, people with different incomes have different learning motivations. Regarding personal factors, people of different ages, positions, and revenues have different learning motivations.

2.9.2 Related Studies in Other

Morris (2014) pointed out that MOOCs can provide a high-quality learning experience for all learners and satisfy all learning needs. MOOC platforms need to understand learners before course construction. Teachers need to collect learners' previous learning experiences, learning modes, social preferences, learning processes, and other relevant information before the course design to conduct a good survey. Before attempting to intervene with adult learners with different learning goals, reading adult learners' intentions is essential. Therefore, personalized learning based on the characteristics of adult learners is very worthy of research direction.

Researchers have studied MOOCs across wide-ranging disciplines such as the social sciences, technology, arts, and humanities. Different fields have distinct characteristics and thought patterns. In applied disciplines, student-instructor interaction was more expected than in disciplines like math, according to Wei and Taecharungorj (2022).

BillK (2001) demonstrated that the adult learners' outlook on life values, education, gender, and background factors such as the distance from the courses significantly affected motivation. To a certain extent, the network learns from the ingredients, mainly through the specific self-directed control of adults. The purpose of learning is to promote career development or become more competitive.

Genevieve Armson and Alma Whiteley (2010) argue that there is a wealth of learning in the workplace, including some self-organizing learning activities that are self-organized and build learning communities based on common goals. The leader may only understand or realize this once they reflect. Assume enterprise managers are

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aware of this and encourage employees to engage in free learning activities and participate in their learning, as well as provide them with learning guidance, formal training, and learning resources. In that case, it will be more conducive to stimulating the motivation of employees to learn in the workplace. Therefore, interactive learning and encouragement between managers and employees are essential in promoting employees' workplace learning.

Through several comparative experimental studies, Amanda Sterling and Peter Boxall (2013) found that employees would be strongly motivated to learn in the workplace, and their work efficiency would be significantly improved if they were left alone by grassroots leaders and given specific free space. However, the low professionalism of employees will also restrict their motivation to learn in the workplace. Therefore, the Taylor-style management mode strengthens the control of workflow, which could be more conducive to the learning of employees at the workplace. To effectively improve production efficiency, promote employees' education, and stimulate their motivation to learn in the workplace, enterprises must grant certain freedoms to employees, change the organizational mode of work, and strengthen the training and management promotion of grassroots leaders. At the same time, it is necessary to realize that employees' understanding of the importance of learning is not static but dynamic.

Cunningham (1998) emphasized the social interaction of workplace learning from the perspective of interpersonal communication and interaction and believed that workplace learning is a series of informal interactions when one person tries to help another, which can be understood more as the interaction between experts and novices. Mentoring plays a vital role in the process of learning in the workplace. Of course, learners will learn better if they can construct knowledge around problems and relate it closely to their previous work experience.

Sun Joo and Wenhao David (2013) believe that for adult learners who participate in online higher education, their learning motivation is affected by gender, age, and experience: gender difference affects the internal cause of adult learners. Age affects the long-term or short-term external learning motivation of adult learners.

CHAPTER 3

RESEARCH METHODOLOGY

This chapter describes: (1) the study design; (2) the participants; (3) the research instruments; (4) the procedure; (5) the data collection; and (6) the data analysis.

3.1 Study design

The purpose of this study was to investigate the motivations of adult learners for online self-directed learning.

The questionnaire has three parts.

- I. Adult learners fill in the blanks of each item with gender, age, Job title, experience, and marital status include this essential information.
- II. Using a Likert scale to investigate adult learners' online self-directed learning
- III. Opinions of respondents.

3.2 Participants

Daqing City, Heilongjiang Province, China, has a total population of 2,781,562 (Baidu Encyclopedia). Adult learners with experience in online self-directed learning in Daqing City experiences research subjects.

The formula for determining the sample size is as follows:

$$N = \frac{Z_{\alpha/2}^2 p(1-p)}{E^2}$$

$$N = 1.962^2 / (4 * 0.04812) = 415$$

N refers to the determined sample size, and the confidence interval is selected as 99%, so the corresponding value of $Z_{\alpha/2}$ is 1.96. When the value of p cannot be determined, the maximum possible value of p (1-p) is used instead. The actual p (1-p), according to the characteristics of the function, is known that the maximum value of p (1-p) is 0.25, and E is the margin of error. This investigation sets the survey range as 4.81%. Therefore, according to the proportional stratified random sampling method, the calculated sample size is 416. The subjects were divided into four groups; the first group consisted of men with more than five years of work experience, the second group consisted of men without five years of work experience, the third group consisted of women with more than five years of work experience, The fourth group consisted of women with no work experience and five years of work experience.

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3.3 Research Instruments

The questionnaire has three parts. The first part was the background information of the investigators, the second part was the motivation questionnaire of adult learners, and the third part was an open question.

3.3.1 Questionnaire survey

This study is based on adult learners' online self-directed learning motivation at home and abroad. According to the results of the survey, a questionnaire was designed, which includes three parts: the first part is the basic information of the adult learners (gender, age, job, et al.); The second part is the main content of the questionnaire, including the motivation of adult learners' online self-directed learning. I discovered that this self-directed environment necessitates knowledge, processing, and comprehension. The perceptions were comprehensive measurement dimensions summarized by foreign researchers after much practice. Likert scale water was used to investigate adult learners' self-directed learning motivation online. The questionnaire adopts a 5-point scoring system, requiring subjects to give a single choice of answers to the survey questions.

This section consisted of a closed questionnaire survey using a Likert scale. Participants were asked to rate how much they agreed with each statement on a scale of 1 to 5. As follows:

- 5 = strongly consistent
- 4 = consistent
- 3 = general
- 2 = inconsistent
- 1 = strongly inconsistent

By calculating the average score of the questionnaire, the relative average score of each question was obtained. The corresponding questionnaire level of the average segment was explained as follows:

- 4.50-5.00 = strongly agree
- 3.50-4.49 = agree
- 2.50-3.49 = undecided
- 1.50-2.49 = disagree
- 1.00-1.49 = strongly disagree

3.3.2 IOC satisfaction questionnaire validation

In this study, two adult education professors and two education technology experts were invited to test the consistency and validity of the content using a Coherence Index (IOC)..

Evaluation criteria are used to check the consistency of objectives and test items,

As follows:

- +1 = The test items are considered consistent with the objectives.

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0 = Whether the test item is consistent with the objective is considered neutral.

-1 = The test item is considered inconsistent with the target.

For acceptable data, the overall mean score for the project Objective Consistency (IOC) indicator was greater than 0.5.

From the IOC table, we can see that most problems are consistent with the theme of self-directed learning motivation among adult learners in online learning.

The respondents to the questionnaire were 30 employees of Daqing City with online self-directed learning experiences, but they were not the samples of this study. After the questionnaire was tested, Cronbach's alpha method was adopted, and the coefficient formula calculated the reliability index of the results.

Table 3.1 The reliability analysis

Cronbach's coefficient	Number of items
.985	45

We conducted a reliability analysis on 30 cases, as shown in Table 3.1. It can be seen from the data that the coefficient value $0.985 > 0.7$ indicates that the consistency of the overall questionnaire is good.

3.4 Procedure

The anonymous survey asked respondents to fill out the questionnaire online. It took about 30 minutes to answer all the questions. Promote the survey on social media by sharing direct links to online surveys. Work with social media influencers to help spread the word and offer participants a random lottery to encourage them to participate.

3.5 Data collection

Respondents filled out an online questionnaire. After all the questionnaires are collected, the data will be entered into the database, and four samplings will be carried out, with 100 samples drawn each time. We will use coded forms such as A1 and A2 to protect each respondent's privacy.

3.6 Data Analysis

An independent sample t-test analyzes the relationship between categorical and quantitative data. The T-test is used in this study to more efficiently and accurately explore the identity of gender and work experience in self-directed learning.

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Quantitative results obtained from the closed questions of the questionnaire were used to determine any significant differences by calculating the mean and standard deviation (SD) of the scores. Through content analysis, the quantitative results of the open-ended questions in the survey show what motivates adults to learn online.



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CHAPTER 4

RESULTS

4.1 Introduction

This chapter presents the discovery and discussion of data collected and analyzed according to the detailed process in Chapter 3 to answer the following questions:

(1) To compare the difference between adult work experience and gender on the motivation of self-directed adult learners in online learning.

(2) To survey the online learning motivation of adult self-directed learners.

For the findings of the above research questions, the following techniques were used to collect data and conduct quantitative and qualitative analysis.

4.2 Analysis of Factors Affecting Participants' self-directed Learning

4.2.1 Learning environment: Most students live and study at school far away from their parents, so the immediate learning environment for students is the campus learning environment. The school's reading room and library are the primary resources for students to learn independently, so the immediate learning environment for students is the campus learning environment. The school's reading room and library are the primary resources for students to learn independently. Teachers and students become their main learning partners. Therefore, the learning environment variables include three measurement items: For students, self-discipline is weak. In addition to guiding their learning, the role of teachers is mainly to supervise the teaching of middle school students. The education they conduct is primarily the education of basic knowledge. They have a strong sense of self-discipline. Therefore, teachers mainly play a guiding role in their learning process, communicate with them, and give them appropriate guidance. At the same time, school education needs to emphasize the application of knowledge to cultivate students' independent learning and creativity.

4.2.2 Learning process: Learning itself is a process, and human nature is social. From birth, everyone gradually shifts from spontaneous behavior to learning and continuously learns to be social. Learning is a never-ending process, especially in today's society. Whether it is a direct or indirect life experience, it is impossible to learn quickly, so learning is a process. Learning is a specific planned activity in terms of learning itself. From the perspective of the connotation of learning activities, the learning process includes changes in the learner's internal state and external behavior.

4.2.3 Learning perception: "Learning resources" in a broad sense are the general term for a series of things that provide learning, support learning, and promote learning, including elements such as people, media, strategies, methods, and

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environmental conditions; "Learning resources" in a narrow sense refer to learning content and learning materials. This paper chooses the limited meaning of "learning resources." Independent learning resources in the ubiquitous learning environment take various forms, including short and rich content. Mobile terminals differ in screen size, resolution, terminal computing power, memory capacity, and input settings. Therefore, the learning resources should be navigable, the menu should be simple, and the learning content should be fragmented. The presentation form fully embodies multimedia elements, including text, sound, animation, audio, video, and self-directed learning resources in a ubiquitous learning environment based on cloud computing and context-aware technologies. Selectable multimedia formats include text, pictures, animation, audio, and video.

4.3 Basic Demographic Statistics of Participants

Participants' gender, educational background, marital status, work experience, and how often they had used online self-directed learning were recorded.

Table 4.1 Have you ever experienced online learning?

			(n = 415)
Have you ever experienced online self-directed learning?	Frequency	Percentage	
Yes	415	100	
No	0	0	
Total	415	100	

From Table 4.1, 415 out of 415 participants (100%) received online learning.

Table 4.2 Gender, work experience and background

				(n = 415)
Item	Type	Frequency	Percentage	
Gender	Male	215	52	
	Female	200	48	
Work experiences	Less than or equal to 5 years	179	43	
	over 5 years	236	57	
Education background	Junior college and below	110	27	
	Undergraduate	183	44	
	Master and above	122	29	

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From Table 4.2, 215 (52%) of the 415 participants were men, and the remaining 200 (48%) were women. Among the educational backgrounds, there are 183 undergraduates (44%), followed by 122 (29%) with a master's degree or above, and the lowest degree (27%) with a university degree or below. A minority (43%) of 479 had less than five years of work experience, while the remaining 236 (57%) had more than five years of work experience.

4.4 Analysis of the Questionnaire

4.4.1 Analysis of Learning Environment

When participants participate in online learning, their learning environment is essential to self-directed learning. Generally, participants learn through mobile phones, computers, or tablets. They use these devices to access different online platforms for relevant knowledge, and environmental factors, such as networks, instruments, or media, may affect the learning situation. Therefore, the survey of participants' satisfaction with their learning environment will help us better understand their self-directed learning. We can see this in Table 4.3.

Table 4.3 Learning Environment

Items	\bar{x}	S.D.	Level of Agreement
1.While online self-directedly learning, your Internet speed is stable.	4.33	0.774	Agree
2.While online self-directedly learning, the learning platform runs very stable.	4.34	0.757	Agree
3.While online self-directedly learning, the audio of your class is very clear.	4.39	0.743	Agree
4.While online self-directedly learning, the teacher pays attention to the questions asked by the students.	4.30	0.791	Agree
5.While online self-directedly learning, the picture of your class is very clear.	4.39	0.734	Agree
6.While online self-directedly learning, the teacher has a lot of patience with you.	4.37	0.737	Agree

Table 4.3 (Continued)

Items	\bar{x}	S.D.	Level of Agreement
7.While online self-directedly learning, Be very clear about the purpose of the teacher's teaching, (e.g., the purpose of certain teaching activities taken by the teacher in the class.)	4.39	0.766	Agree
8.While online self-directedly learning,your learning will be facilitated by the online teaching method.	4.39	0.720	Agree
9.While online self-directedly learning,positive interaction between teachers and students.	4.40	0.732	Agree
10.While online self-directedly learning, the learning platform has an effective feedback mechanism.	4.29	0.811	Agree
11.While online self-directedly learning, the content of the learning resources helps a lot.	4.36	0.801	Agree
12.While online self-directedly learning, the learning platform is rich and comprehensive in resources.	4.37	0.733	Agree
13.While online self-directedly learning,the surroundings are very conducive to learning.	4.36	0.747	Agree
14.You will also continue to be online self-directedly to learn later.	4.39	0.743	Agree
15.Online self-directedly learning is found the learning experience is very good.	4.42	0.711	Agree

From the data in the table, we can know the participants' satisfaction with the factors of the learning environment in self-directed learning. For the expression 15 questions:" Online self-directedly learning is found the learning experience is excellent.", the satisfaction score was the highest, with a score of 4.42. For the expression nine questions:" While online self-directedly learning, positive interaction between teachers and students.", the satisfaction score is higher, with a score of 4.40. For the expression seven questions:" While online self-directedly learning, Be very clear about the purpose of the teacher's teaching," the satisfaction score is higher, with a score of 4.393. We can analyze that understanding the teacher's purpose, teacher-student interaction, and online learning experience are the most concerning

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problems for learners. Learners can effectively promote self-directed learning if these three problems can be solved.

However, participants expressed dissatisfaction with the statement "10. While online self-directedly learning, the learning platform has an effective feedback mechanism." (Average score is 4.29), "4. While participating in online self-directed learning, the teacher pays attention to the questions asked by the adult learners" (Average score is 4.30), 1. While online self-directedly learning, the Internet speed is stable. "(Average score is 4.33) had relatively low satisfaction level. does not mean that Internet speed, teachers' attention to adult learners' problems, and the feedback mechanism of learning platforms are not important to self-directed learning. These factors are also indispensable to self-directed learning. The overall average of participants' perceived identification level in self-directed learning is 4.37, which is at an Agree level.

4.4.2 Analysis of Learning Process

When participants participate in online learning, the learning process is an essential factor in self-directed learning. Generally, participants learn through interactions with teachers, making learning objectives, or searching for resources through the platform. They learn through these methods. However, environmental factors, such as teachers' conditions, goal setting, or the quantity or quality of platform resources, may affect their learning. Therefore, the participant's satisfaction with the learning process is investigated, which will help us better understand the self-directed learning of the participants. We can see this in Table 4.4.

Table 4.4 Learning Process

				(n = 415)
Items	\bar{x}	S.D.	Level of Agreement	
1.While online self-directedly learning,are you able to access your classes on time.	4.45	0.696	Strongly Agree	
2.While online self-directedly learning, define your learning goals.	4.40	0.692	Agree	
3.While online self-directedly learning, develop a specific study plan.	4.40	0.738	Agree	
4.While online self-directedly learning, you have to take notes carefully.	4.40	0.728	Agree	

Table 4.4 (Continued)

Items	\bar{x}	S.D.	Level of Agreement
5. While online self-directedly learning, you are able to complete your assignments after class on time.	4.39	0.74	Agree
7.While online self-directedly learning,you are able to adapt your study method as you go along.	4.41	0.7	Agree
8.While online self-directedly learning,you will do post-class review.	4.41	0.746	Agree
9.While online self-directedly learning, you can clearly understand the confusion you encounter.	4.36	0.742	Agree
10.While online self-directedly learning, You are able to adjust your learning strategies and implement remedial measures in response to emerging confusion.	4.41	0.73	Agree
11.While online self-directedly learning, You will communicate with your study partners.	4.36	0.767	Agree
12.While online self-directedly learning, you will actively interact with teachers.	4.33	0.757	Agree
13.While online self-directedly learning, you will be more focused than when you study offline.	4.36	0.821	Agree
14.While online self-directedly learning, Adequate preparation will be done before the lesson according to the content of the lesson.	4.45	0.726	Agree
15.While online self-directedly learning, frequently assess and reflect on your learning.	4.33	0.779	Agree

Table 4.4 lists the participants' satisfaction with the process of self-directed learning. The results show that the participants' agreement with online courses on time, can master the learning content, and adjusting learning methods is relatively high, which are 4.45 and 4.43, 4.41 respectively. Mainly, they strongly agree with online courses. Thus, we can see that participants attach great importance to regular online courses.

However, among all the statements, interaction with teachers (4.33), online learning is more focused than offline learning (4.33), and adult learners' reflection on their learning (4.33) get relatively lower scores. From the above, it can be seen that participants prefer teachers to interact actively with adult learners. This is because those participants are adults, and their rich social experiences are related to personal characteristics. However, this does not mean that they are unwilling to take the initiative to interact with the teacher. However, compared with other factors, the scores of reflection on their learning are slightly lower than those of other questions.

The overall average of participants' perceived identification level in self-directed learning is 4.39, which is at an Agree level.

4.4.3 Analysis of Learning Perception

The perception of online learning is an essential factor in self-directed learning. Participants generally perceive their learning through learning outcomes, learning experiences, or discussions. Self-perception of knowledge is the final feedback of self-learning. Therefore, investigating participants' satisfaction with learning perception will help us better understand self-directed learning. We can see this in Table 4.5.

Table 4.5 Learning Perception

				(n = 415)
Items	\bar{x}	S.D.	Level of Agreement	
1.Through online self-directed learning , make your job prospects better.	4.36	0.763	Agree	
2.The purpose of online self-directedly learning is just to cope with various exams.	4.17	0.967	Agree	
3.Online self-directedly study is for a higher diploma.	4.27	0.895	Agree	
4.Online self-directedly learning can be of great help to you .	4.39	0.713	Agree	
5.While online self-directedly learning, the curriculum is very reasonable.	4.36	0.745	Agree	
6.While online self-directedly learning, The experience of the online self-directed learning process feels better than learning in a classroom.	4.34	0.803	Agree	

Table 4.5 (Continued)

Items	\bar{x}	S.D.	Level of Agreement
7.While online self-directedly learning,difficult questions can be solved by consulting relevant information on the Internet.	4.41	0.707	Agree
8. While online self-directedly learning,set goals to help manage study time.	4.39	0.724	Agree
9.While online self-directedly learning,feel motivated to explore questions related to the course content.	4.41	0.692	Agree
10.While online self-directedly learning,the presence of questions increases interest in the course topics.	4.39	0.746	Agree
11.While online self-directedly learning,sorry to ask others for advice, afraid of being rejected by others.	4.20	0.985	Agree
12.While online self-directedly learning, the learning activities of the course can help build analysis or solutions.	4.37	0.710	Agree
13.While online self-directedly learning,you can use many methods to complete your online learning tasks.	4.38	0.729	Agree
14.Online self-directedly learning is a learning style to adapt to the development of society.	4.36	0.702	Agree
15.Online self-directedly learning can increase your awareness of learning.	4.42	0.741	Agree

Table 4.5 lists the participants' satisfaction with their perception of self-directed learning. The results show that participants are most satisfied with the statements "7. While participating in online self-directed learning, difficult questions can be solved by consulting relevant information on the Internet. (Average score is 4.41)," "15. Online self-directed learning can increase your awareness of learning (Average score is 4.42)", and "9. While participating in online self-directed learning, you feel motivated to explore questions related to the course. (Average score is 4.4)", which have the highest agreement, and the agreement level is relatively high. This reflects their willingness to explore and solve independently in self-directed learning and shows their courage and efforts to forge ahead.

However, participants disagree less with the statements about learning for future jobs, worrying about being rejected when consulting others, and learning to prepare for exams. The level of agreement with these statements is low, and the scores are 4.26, 4.19, 4.14, respectively, which manifests that adult learners participate in self-directed learning not just for diplomas or preparation for exams but for the enrichment of both their spiritual and material life.

The overall average of participants' perceived identification level in self-directed learning is 4.35, which is at an Agree level.

4.4.4 Participants' Suggestions on Self-Directed Learning in Current Online Learning

The participants in this group are adult learners A1, A2, A3, A4, B1, B2, C, F, M2, and L4. These participants are the most efficient at making useful suggestions and can most accurately represent the surveyed population.

4.4.4.1 Interactions in Classroom

The first three points of view, most agreed upon by the participants, are in Question 7: "While learning independently on the Internet, one should be very clear about the teacher's teaching purpose." (Average score: 4.39); Question 9: While participating in online self-directed learning, there is a positive interaction between teachers and adult learners (Average score of 4.40); Question 15: The experience of online self-directed learning is excellent. (Average score: 4.42)

The three questions with the lowest scores were: Question 1: While participating in online self-directed learning, internet speed was stable (Average score: 4.33; score: 4.30); Question 10: While participating in online self-directed learning, the learning platform has an effective feedback mechanism. (Average score: 4.33)

The total score of learning environment factors for self-directed learning motivation is at the agreed-upon level (Average score of 4.366).

4.4.4.2 Resources in Platforms

The top three points that participants agreed with most were: Question 1: While participating in online self-directed learning, you can access your courses on time. (Average score: 4.45); Question 7: While participating in online self-directed learning, you can adjust your learning methods. (Average score: 4.41); Question 6: You can master the learning content while learning independently online. (Average score: 4.43)

The three viewpoints with the lowest scores among respondents to this question are: "Question 12: While participating in online self-directed learning, you will actively interact with the teacher." (Average score: 4.33) Question 13: Participating in online self-directed learning is more focused than offline learning (Average score: 4.33). Question 15: You can often evaluate and reflect on your knowledge while participating in online, self-directed learning. (Average score: 4.33)

The total score of learning process factors for self-directed learning motivation is at the agreed-upon level (Average score of 4.390).

4.4.4.3 Clear Objectives and Learn Step by Step

The top three opinions most agreed upon by the participants are Question 7: While participating in online self-directed learning, you can solve complex problems by consulting relevant online materials (Average score of 4.41); Question 15: Online self-directed learning can improve learning awareness (Average 4.42); Question 9: In the process of participating in online self-directed learning, you can be motivated to explore issues related to the course content. (Average score: 4.41)

The three ideas that participants scored the lowest on the interview questions were: Question 2: The purpose of online self-directed learning is only for the variable exam. (Average score: 4.17) Question 11: In participating in online self-directed learning, you are embarrassed to ask others for advice because you are afraid of being rejected by others (Average score: 4.20). Question 1: Through online, self-directed learning, your job prospects will be better. (Average score: 4.27)

The overall scores of participants on the perceived factors of self-directed learning motivation were at the agreeing level. (Average score: 4.349)

4.4.5 T-test for all self-directed online adult learners

We divided the T-test into two parts: work experience and gender. The T-test was carried out for different working experiences and different genders. The grouping is divided into three major sections based on the learning environment, the learning process, and the learning and perception, and then grouped under each section with different genders or work experiences.

Table 4.6 Comparing the learning motivation of self-directed learning based on different work experience

(n= 415)

Working experiences									
DV	IV	n	X	s	Levene's test		t	df	Sig.
					F	Sig.			
Learning Process	Less than or equal to 5 years	179	4.2365	0.57852	2.683	0.102	-4.245	413	0.000
	over 5 years	236	4.4647	0.51325			-4.176	357	0.000

Table 4.6 (Continued)

Working experiences									
DV	IV	n	X	s	Levene's test		t	df	Sig.
Learning Environment	Less than or equal to 5 years	179	3.9929	0.53797	0.699	0.404	-3.608	413	0.00
	over 5 years	236	4.1794	0.50847			-3.58	371.684	0.00

Working experiences									
DV	IV	n	X	s	Levene's test		t	df	Sig.
					F	Sig.			
Learning Perception	Less than or equal to 5 years	179	3.946	0.5591	0.352	0.553	-3.682	413	0.00
	over 5 years	236	4.1418	0.51885			-3.644	367.662	0.00

Through the statistical analysis, it can be seen that in the test of work experience and self-directed learning, there are statistical differences in the learning environment, learning process, and learning perception between more than five years of work experience and less than five years of work experience due to the P value also are 0.00, which $\text{Sig} > 0.05$. Hence, the result showed that work experience has a statistically significant influence on self-directed learning.

Table 4.7 Comparing the learning motivation of self-directed learning according to different genders

(n= 415)

Gender									
DV	IV	n	X	s	Levene's test		t	df	Sig.
					F	Sig.			
Learning Process	Male	215	4.3922	0.4493	38.19	0	0.992	413	0.322
	Female	200	4.3383	0.64691			0.979	351.792	0.328

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Table 4.7 (Continued)

Gender									
DV	IV	n	X	s	Levene's test		t	df	Sig.
					F	Sig.			
Learning Environ ment	Male	215	4.137 4	0.435 07	46.35 8	0	1.536	413	0.125
	Fem ale	200	4.057 7	0.612 46			1.518	356.6 07	0.13
Learning Perceptio n	Male	215	4.120 9	0.445 69	35.61	0	2.481	413	0.013
	Fem ale	200	3.989	0.628 05			2.452	356.3 88	0.015

In detecting gender and self-directed learning, there is no statistical difference between males and females in the learning environment, learning process, or learning perception. $\text{Sig}=0<0.05$, and the corresponding t-test P value >0.05 can indicate that different genders do not influence self-directed learning. Suppose the p-value is below your threshold of significance (typically $p < 0.05$), you can reject the null hypothesis, but this does not mean there is a 95% probability that the alternative hypothesis is true.

In the learning process, the sign of the first group in the learning process is 0.322, the t-test P value is 0.992, and the second group is between 0.328 and 0.979, respectively.

In the learning environment, the Sig of the third group in the learning process is 1.536, the t-test P value is 1.5182, and the fourth group is between 0.13 and 0.979, respectively.

In the learning perception, the Sig of the third group in the learning process is 2.481, the t-test P value is 0.013, and the Sig of the fourth group is between 2.452 and 0.015, respectively.

As the t-test P value >0.05 and $\text{Sig}=0<0.05$ can show that gender differences have no impact on self-directed learning. As can be seen, all the data have numerical p-values greater than 0.05, and we cannot conclude that there is a significant difference.

CHAPTER 5

CONCLUSION

This chapter gives (1) a research overview, (2) a summary of research results, (3) a discussion, (4) a conclusion, and (5) a recommendation.

5.1 Research overview

5.1.1 The Purpose of the Research

(1) To compare the difference between adult work experience and gender on the motivation of self-directed adult learners in online learning.

(2) To survey the online learning motivation of adult self-directed learners.

5.1.2 Subjects, materials and Procedures

The subjects of this study are adults who have taken part in work and have had an online learning experience. The survey was conducted by stratified sampling. Two hundred students and 200 women were divided into four groups with more than five years of work experience and less than five years of work experience, with 100 students in one group. The online questionnaire explains the research results and contents of adult learning motivation by domestic and foreign scholars. The author selected 44 representative learning motivation questions to make a questionnaire, which is divided into five categories:

1. The primary demographic situation of the participants
2. Participants' satisfaction with the online self-directed learning environment
3. Participants' satisfaction with the online self-directed learning process
4. Participants' satisfaction with their perceptions of online self-directed learning
5. What ideas do participants have for self-directed learning in today's online learning?The questionnaire adopts a 5-point scoring system, and the average score is taken for each sub-item.

5.2 Conclusion of the Research Results

5.2.1 Demographic Data of Participants

In this survey, 415 adults have been investigated and have all participated in work, including 215 men (52%) and 200 women (48%). Among these people, there are 110 people (27%) with a college degree or below, 183 people (44%) with bachelor's degrees, and 122 people (29%) with a master's degree or above. All of them have an online learning experience. The number of people with more than five years of work experience (57%) is 57 more than those with less than five years of work experience (43%).

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5.2.2 The Participants' Motivation for Self-directed Learning

5.2.2.1 Learning Environment

The first three viewpoints that the participants most agree with are in Question 7: "When learning online or on your own, be very clear about the purpose of the teacher's instruction." (Average score is 4.39); Question 9: While participating in online self-directed learning, there are positive interactions between teachers and adult learners (Average score is 4.40); Question 15: The experience of online self-directed learning is excellent. (Average score is 4.42)

The three questions with the lowest scores are Question 1: While participating in online self-directed learning, your Internet speed is stable (Average score is 4.33); Question 4: While participating in online self-directed learning, the teacher pays attention to the questions asked by the adult learners (Average score is 4.30); Question 10: While participating in online self-directed learning, the learning platform has an effective feedback mechanism. (Average score is 4.33)

The average score for the learning environment factor for self-directed learning motivation is 4.366, which is a good number.

5.2.2.2 Learning Process

The first three viewpoints that participants most agree with are Question 1: While participating in online self-directed learning, you can access your classes on time. (Average score is 4.45); Question 7: While participating in online self-directed learning, you can adapt your study method. (Average score is 4.41); Question 6: While online and self-directedly learning, you can master the learning content. (Average score is 4.43.)

The three points of view with the lowest scores of the interviewees in this question are Question 12: "While participating in online self-directed learning, you will actively interact with teachers." (Average score is 4.33); Question 13: You will be more focused when participating in online self-directed learning than when studying offline (Average score is 4.33); Question 15: When participating in online self-directed learning, you can frequently assess and review your knowledge. (Average score is 4.33)

The average score for the self-directed learning motivation factor in the learning process is 4.390, which is reasonable.

5.2.2.3 Learning Perception

The first three opinions that the participants most agree with are Question 7: While participating in online self-directed learning, difficulty questions can be solved by consulting relevant information on the Internet (Average score is 4.41); Question 15: Online self-directed learning can increase your awareness of knowledge (Average score is 4.42); and Question 9: While participating in online self-directed learning, you can feel motivated to explore questions related to the course content. (Average score is 4.41)

The participants' three points of view with the lowest scores in the interview question are Question 2: The purpose of online self-directed learning is to

deal with variable exams (Average score is 4.17); Question 11: While participating in online self-directed learning, you feel embarrassed to ask others for advice for fear of being rejected by others (Average score is 4.20); Question 1: Through online self-directed learning, you may improve your job prospects (Average score is 4.27).

The overall score of the factor of participants' perceptions of self-directed learning motivation is at the agreed-upon level. (Average score is 4.349.)

5.2.3 T-test for all self-directed online adult learners

Through the statistical analysis, it can be seen that in the test of work experience and self-directed learning, there are statistical differences in the learning environment, learning process, and learning perception between those with more than five years of work experience and those with less than five years of work experience. $\text{Sig} > 0.05$, the corresponding t-test P value $= 0.0 < 0.05$ shows that different work experience influences self-directed learning.

In detecting gender and self-directed learning, there is no statistical difference between males and females in the learning environment, learning process, or learning perception. $\text{Sig} = 0 < 0.05$, and the corresponding t-test P value > 0.05 can indicate that different genders do not influence self-directed learning.

5.2.4 Suggestions of Participants on Self-directed Learning in Current Online Learning

Many users suggested that online self-directed learning be promoted more. First of all, learners should clarify their goals so that they can effectively improve their learning efficiency and enhance their value. This is also a kind of self-exploration of learning motivation. Since adult learners learn to meet specific demands, they will be more willing to participate in self-directed learning if they have high expectations for learning results.

Most people also put forward such a suggestion: enriching resources and interactions. More interesting knowledge-acquiring experiences and a better learning atmosphere will be achieved. We need to emphasize the importance of mutual learning among adult learners. Such mutual learning understandings mean that learners can learn from and help others based on self-directed education and eventually possess the awareness and ability to learn interactively and collaboratively.

A few adult students mentioned the importance of a positive learning attitude. For example, a learning attitude is essential. We should adjust our learning state in time, be patient, and dream of mastering all knowledge at once. Only through repeated learning and consolidation can the understanding of knowledge be deepened. Therefore, we must guard against arrogance and rashness; only a quiet attitude can lead to high efficiency.

5.3 Discussion

Many users suggested that online self-directed learning be promoted more. First of all, learners should clarify their goals so that they can effectively improve

their learning efficiency and enhance their value. This is also a kind of self-exploration of learning motivation. Since adult learners learn to meet specific demands, they will be more willing to participate in self-directed learning if they have high expectations for learning results.

Most people also put forward such a suggestion: enriching resources. Regarding the learning environment, this study's findings are comparable to Bianca Andreea Schiopca's (2014) study in that learners may exhibit varying degrees of self-direction in various learning contexts. In contrast, Bianca Andreea Schiopca's research also came to the following conclusion: more study in this area has to consider other factors like drive for achievement, independence, and self-efficacy. Research by Wang Zhaohui has also supported it (2021). He emphasized that the classroom is the main arena for adult learners to learn and that teaching is a process that involves bilateral action. Adult learners cannot learn independently unless the strong emergence of self-directed learning, their subjective consciousness, and their learning requirements are all stimulated. Only by creating a solid atmosphere of independent learning, arousing adult learners' subjective consciousness, and arousing adult learners' learning needs can adult learners truly mobilize their learning potential, carry out self-directed learning, and truly become the master of classroom learning. However, the research also points out that self-directed learning emphasizes that adult learners should rely on their efforts to consciously and actively learn, acquire knowledge, and emphasize the adult learners' principal position and spirit in educational activities instead of relying solely on the learning environment.

During the learning process, the previously acquired knowledge is assimilated, expanded, and improved to create a learner-created knowledge structure known as a cognitive learning structure. Students can employ their past ability to digest new material more successfully with an efficient cognitive learning structure, which is a requirement for continued learning. Additionally, Chen Xin (2015) pointed out in the study that the self-directed learning of adult learners has changed into a more personal issue due to problems with working hours and individual learning capacity. Adult learners can grasp content more quickly if they have good learning cognition. The attitude of adult English learners is crucial to the self-directed learning process.

From the perspective of adults' concepts of self-directed learning, all participants stated that self-directed learning strengthens self-ability and manifests self-maturity. The research results of Goncalves (2014) have been verified: among young, employed, and highly educated individuals, adults are more willing to participate in education. They pursue internal reasons (discipline interest and personal enrichment) and external reasons related to work. As a result, participation rates are lower among adults with lower education and unemployment rates. The main reason for returning to education is to seek advancement in one's profession. For example, they hope to get a better job. However, Goncalves has some different conclusions from the author: The relationship between self-efficacy, self-concept, and cognitive

motivation is weak; that is, there is no correlation between enrollment motivation and self-efficacy. This research also echoes Xia Yuwen's (2017) research results: adult learners must correct their learning attitude, enhance their learning motivation, complete their learning tasks on time, and independently complete online homework so that they can come out of the misunderstanding of "mixed brand diplomas," truly grasp new knowledge and skills, and improve their business level. The original intention of most adult learners participating in online learning was to "recharge" and learn new knowledge and skills. However, as assessed, some adult learners are bound to relax in their studies because they need help to reasonably solve the contradiction in time allocation. Their learning attitude is wavering, and they waver between seeking knowledge and obtaining a diploma.

Findings regarding gender differences in online learning outcomes tend to be inconsistent and even paradoxical. Online female learners prove more perseverance and engagement than males (Richardson & Woodley, 2003), while males tend to hold more stable positive attitudes toward online learning (Nistor, 2013). Alghamdi et al. (2020) say that when it comes to online learning, females have better self-regulation than males. However, males can use more learning strategies and have better technical skills than females. The above findings may have offset the gender preferences in online learning, which might lead to no significant gender differences revealed in online learning outcomes. The above may not be the only explanation for inconsistencies in gender differences. More in-depth research into this field could be conducted in the future.

5.4 Recommendation

Many users mentioned that they often need help with the problem of low learning efficiency when learning independently. In this regard, learners must first clarify their own goals to improve learning efficiency and enhance their value effectively. This is also a kind of self-exploration of learning motivation. We can understand it this way: adult learners have specific needs in learning, and if learners have high expectations for learning results, they will be more willing to participate in self-directed learning. Secondly, you can adequately divide yourself into small goals that are easy to achieve. Whenever you reach a small goal, it will bring a sense of accomplishment to people, which is a reward for your learning and can promote the improvement of learning efficiency. Next, choosing a course that suits you is also one of the most effective ways. It would be best to decide on paths according to your situation instead of following the crowd and selecting the methods most people use.

In addition, the inability to persist for a long time is also a problem that must be addressed. Many self-directed learners abandon learning after three minutes of enthusiasm. In response to this situation, you can join a learning group with a common goal and participate in mutual supervision and check-ins to help with long-term persistence. This kind of check-in learning group can be found on various

social platforms, which is a good choice. Reward yourself whenever you achieve a small goal, such as going to a movie, eating a meal, etc. It can also effectively motivate you to persevere.



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APPENDIX

APPENDIX A Questionnaire

The population of this questionnaire was adult learners who had received online self-directed learning in Heilongjiang Province, China. This questionnaire is for academic research purposes only. Your responses will be kept confidential. Please feel free to fill out the questionnaire. The questionnaire is divided into three parts.

Part 1: Your basic information

Age:

年龄:

Gender: Male Female

性别: 男 女

Have you ever had online self-directed learning experience: Yes No

是否有过在线自主学习经历: 是 否

Education level: Junior college and below Undergraduate Master and above

文化程度: 大专及以下 本科 硕士及以上

Marital status: Unmarried married Unmarried

婚姻状况: 已婚 未婚

Working experiences: less than or equal 5 years more than 5 years

工作经验: 5 年以下工作经验 5 年以上工作经验

Table A.1 Adult Learning Motivation" questionnaire

Items	Level of Agreement				
	5	4	3	2	1
Online self-directly learning Environment 在线自主学习环境					
1.在线自主学习时，您的网速很稳定。 While online self-directedly learning, your Internet speed is stable.					
2.在线自主学习时，学习平台运行很稳定。 While online self-directedly learning, the learning platform runs very stable					

Table A.1 (Continued)

<p>3.在线自主学习时,您上课时的音频很清晰。</p> <p>While online self-directedly learning, the audio of your class is very clear</p>					
<p>4.在线自主学习时,您上课时的画面很清晰。</p> <p>While online self-directedly learning, the picture of your class is very clear.</p>					
<p>5.在线自主学习时,老师重视学生提出的问题。</p> <p>While online self-directedly learning, the teacher pays attention to the questions asked by the adult learners.</p>					
<p>6.在线自主学习时,老师对您有很大的耐心。</p> <p>While online self-directedly learning, the teacher has a lot of patience with you.</p>					
<p>7.在线自主学习时,非常清楚老师的教学目的,如上课老师课上采取某些教学活动的目的。</p> <p>While online self-directedly learning, Be very clear about the purpose of the teacher's teaching, (e.g., the purpose of certain teaching activities taken by the teacher in the class.)</p>					
<p>8.在线自主学习时,老师采取线上教学方式对您的学习有一定的促进效果。</p> <p>While online self-directedly learning,your learning will be facilitated by the online teaching method.</p>					

Table A.1 (Continued)

<p>9.在线自主学习时,老师和同学积极的互动。</p> <p>While online self-directedly learning,positive interaction between teachers and adult learners.</p>					
<p>10.在线自主学习时,学习平台有有效的反馈机制。</p> <p>While online self-directedly learning,the learning platform has an effective feedback mechanism.</p>					
<p>11.在线自主学习时,学习平台的资源丰富和全面。</p> <p>While online self-directedly learning,the learning platform is rich and comprehensive in resources.</p>					
<p>12.在线自主学习时,学习资源的内容帮助很大。</p> <p>While online self-directedly learning,the content of the learning resources helps a lot.</p>					
<p>13.在线自主学习时,周围环境很利于学习。</p> <p>While online self-directedly learning,the surroundings are very conducive to learning.</p>					
<p>14.以后您还会继续在线自主学习。</p> <p>You will also continue to be online self-directedly to learn later.</p>					
<p>15.在线自主学习的学习体验感很好。</p> <p>Online self-directedly learning is found the learning experience is very good.</p>					

Table A.1 (Continued)

Online self-directed learning process 在线自主学习过程					
1.在线自主学习时,您能否按时上网课? While online self-directedly learning,are you able to access your classes on time?					
2.在线自主学习时,明确自己的学习目标。 While online self-directedly learning, define your learning goals.					
3.在线自主学习时,制定具体的学习计划。 While online self-directedly learning, develop a specific study plan.					
4.在线自主学习时,您会认真记录笔记。 While online self-directedly learning, you have to take notes carefully.					
5.在线自主学习时,您能按时完成课后作业。 While online self-directedly learning, you are able to complete your assignments after class on time.					
6.在线自主学习时,您能掌握相应的学习内容。 While online self-directedly learning,you can master the learning content.					
7.在线自主学习时,您能够在学习过程中调整自己的学习方法。 While online self-directedly learning,you are able to adapt your study method as you go along.					

Table A.1 (Continued)

<p>8.在线自主学习时,您会进行课后复习。</p> <p>While online self-directedly learning,you will do post-class review.</p>					
<p>9.在线自主学习时,您能够清晰自己遇到的困惑。</p> <p>While online self-directedly learning,you can clearly understand the confusion you encounter.</p>					
<p>10.在线自主学习时,您能够针对出现的困惑及时调整学习策略,实施补救措施。</p> <p>While online self-directedly learning, You are able to adjust your learning strategies and implement remedial measures in response to emerging confusion.</p>					
<p>11.在线自主学习时,您会与学习伙伴进行交流。</p> <p>While online self-directedly learning, You will communicate with your study partners.</p>					
<p>12.在线自主学习时,您会积极和老师互动。</p> <p>While online self-directedly learning, you will actively interact with teachers.</p>					
<p>13.在线自主学习时,您会比线下学习更加专注。</p> <p>While online self-directedly learning, you will be more focused than when you study offline.</p>					

Table A.1 (Continued)

<p>14.在线自主学习时,课前将根据课程内容做充分的准备。</p> <p>While online self-directedly learning,Adequate preparation will be done before the lesson according to the content of the lesson.</p>					
<p>15.在线自主学习时,经常评估和反思你的学习。</p> <p>While online self-directedly learning,frequently assess and reflect on your learning.</p>					
<p>Online self-directed learning perception 在线自主学习感知</p>					
<p>1.通过在线自主教育的学习,使您的就业前景变好。</p> <p>Through online self-directed learning , make your job prospects better.</p>					
<p>2.在线自主学习的目的只是为了应付各种考试。</p> <p>The purpose of online self-directedly learning is just to cope with various exams.</p>					
<p>3.在线自主学习是为了获得更高的文凭。</p> <p>Online self-directedly study is for a higher diploma.</p>					
<p>4.在线自主学习对您有很大的帮助。</p> <p>Online self-directedly learning can be of great help to you .</p>					
<p>5.在线自主学习时,课程设置很合理。</p> <p>While online self-directedly learning, the curriculum is very reasonable.</p>					

Table A.1 (Continued)

<p>6.在线自主学习时,在线自主学习过程的体验感觉比在教室里学习更好。 While online self-directedly learning, The experience of the online self-directed learning process feels better than learning in a classroom.</p>					
<p>7.在线自主学习时,困难的问题可以通过查阅互联网上的相关信息来解决。 While online self-directedly learning,difficult questions can be solved by consulting relevant information on the Internet.</p>					
<p>8.在线自主学习时,设立目标以帮助管理学习时间。 While online self-directedly learning,set goals to help manage study time.</p>					
<p>9.在线自主学习时,感到有动力去探索与课程内容相关的问题。 While online self-directedly learning,feel motivated to explore questions related to the course content.</p>					
<p>10.在线自主学习时,问题的出现增加了对课程议题的兴趣。 While online self-directedly learning,the presence of questions increases interest in the course topics.</p>					
<p>11.在线自主学习时,不好意思请教他人,怕被别人拒绝。 While online self-directedly learning,sorry to ask others for advice, afraid of being rejected by others.</p>					

Table A.1 (Continued)

12.在线自主学习时,课程的学习活动能够帮助建立分析方案或解决方案。 While online self-directedly learning, the learning activities of the course can help build analysis or solutions.					
13.在线自主学习时, 您能运用很多方法来完成在线学习任务。 While online self-directedly learning,you can use many methods to complete your online learning tasks.					
14.在线自主学习是一种适应社会发展的学习方式。 Online self-directedly learning is a learning style to adapt to the development of society.					
15.在线自主学习, 能提高了您对学习的自觉性。 Online self-directedly learning can increase your awareness of learning.					

Part 3:Views of participants

1. What suggestions do you have for self-directed learning in current online learning?

您对当前的在线学习中自主学习有什么建议?

Description:

This questionnaire is to investigate the Motivation of self-directed learning for Adult Learners in Online learning. Your answers are valuable and are considered highly confidential.

Direction:

Read through the test questions in this form. Please indicate the degree to which each item is congruent with the objective of this study. If you have any comments on the

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congruence of each question, please record them in the space provided. Tick (✓) to rate the congruence according to the scale below.

+1 = This question is consistent with the theme of Motivation of Self-directed Learning for Adult Learners in Online Learning.

0 = It is not sure whether this question conforms to the theme of "Motivation of self-directed Learning for Adult Learners in Online learning".

-1 = certain that this question is inconsistent with the theme of Motivation of Self-directed Learning for Adult Learners in Online Learning.

Table A.2 "Adult Learning Motivation" questionnaire

No	Question items	+1	0	-1	Comment
Learning Environment (1-15) 学习环境					
1.	在线自主学习时，您的网速很稳定。 While online self-directedly learning, your Internet speed is stable.				
2.	在线自主学习时，学习平台运行很稳定。 While online self-directedly learning, the learning platform runs very stable				
3.	在线自主学习时，您上课时的音频很清晰。 While online self-directedly learning, the audio of your class is very clear				
4.	在线自主学习时，您上课时的画面很清晰。 While online self-directedly learning, the picture of your class is very clear.				
5.	在线自主学习时，老师重视学生提出的问题。 While online self-directedly learning, the teacher pays attention to the questions asked by the students.				
6.	在线自主学习时，老师对您有很大的耐心。 While online self-directedly learning, the teacher has a lot of patience with you.				

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Table A.2 (Continued)

7.	<p>在线自主学习时，非常清楚老师的教学目的，如上课老师课上采取某些教学活动的目的。</p> <p>While online self-directedly learning, Be very clear about the purpose of the teacher's teaching, (e.g., the purpose of certain teaching activities taken by the teacher in the class.)</p>			
8.	<p>在线自主学习时，老师采取线上教学方式对您的学习有一定的促进效果。</p> <p>While online self-directedly learning,your learning will be facilitated by the online teaching method.</p>			
9.	<p>在线自主学习时，老师和同学积极的互动。</p> <p>While online self-directedly learning,positive interaction between teachers and students.</p>			
10.	<p>在线自主学习时，学习平台有有效的反馈机制。</p> <p>While online self-directedly learning, the learning platform has an effective feedback mechanism.</p>			
11.	<p>在线自主学习时,学习平台的资源丰富和全面。</p> <p>While online self-directedly learning, the learning platform is rich and comprehensive in resources.</p>			
12.	<p>在线自主学习时,学习资源的内容帮助很大。</p> <p>While online self-directedly learning, the content of the learning resources helps a lot.</p>			
13.	<p>在线自主学习时，周围环境很利于学习。</p> <p>While online self-directedly learning,the surroundings are very conducive to learning.</p>			
14.	<p>以后您还会继续在线自主学习。</p> <p>You will also continue to be online self-directedly to learn later.</p>			

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Table A.2 (Continued)

15.	在线自主学习的学习体验感很好。 Online self-directedly learning is found the learning experience is very good.				
Learning Processing(1-15)					
学习过程					
1.	在线自主学习时,您能否按时上网课。 While online self-directedly learning,are you able to access your classes on time.				
2.	在线自主学习时,明确自己的学习目标。 While online self-directedly learning, define your learning goals.				
3.	在线自主学习时,制定具体的学习计划。 While online self-directedly learning, develop a specific study plan.				
4.	在线自主学习时, 您会认真记录笔记。 While online self-directedly learning, you have to take notes carefully.				
5.	在线自主学习时, 您能按时完成课后作业。 While online self-directedly learning, you are able to complete your assignments after class on time.				
6.	在线自主学习时, 您能掌握相应的学习内容。 While online self-directedly learning,you can master the learning content.				
7.	在线自主学习时,您能够在学习过程中调整自己的学习方法。 While online self-directedly learning,you are able to adapt your study method as you go along.				

Table A.2 (Continued)

8.	在线自主学习时, 您会进行课后复习。 While online self-directedly learning,you will do post-class review.				
9.	在线自主学习时,您能够清晰自己遇到的困惑。 While online self-directedly learning,you can clearly understand the confusion you encounter.				
10.	在线自主学习时,您能够针对出现的困惑及时调整学习策略, 实施补救措施。 While online self-directedly learning, You are able to adjust your learning strategies and implement remedial measures in response to emerging confusion.				
11.	在线自主学习时,您会与学习伙伴进行交流。 While online self-directedly learning, You will communicate with your study partners.				
12.	在线自主学习时, 您会积极和老师互动。 While online self-directedly learning, you will actively interact with teachers.				
13.	在线自主学习时, 您会比线下学习更加专注。 While online self-directedly learning, you will be more focused than when you study offline.				
14.	在线自主学习时,课前将根据课程内容做充分的准备。 While online self-directedly learning,Adequate preparation will be done before the lesson according to the content of the lesson.				
15.	在线自主学习时,经常评估和反思你的学习。 While online self-directedly learning,frequently assess and reflect on your learning.				

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Table A.2 (Continued)

Learning Perception(1-15)				
学习动机				
1.	<p>通过在线自主教育的学习,使您的就业前景变好。</p> <p>Through online self-directed learning , make your job prospects better.</p>			
2.	<p>在线自主学习的目的只是为了应付各种考试。</p> <p>The purpose of online self-directedly learning is just to cope with various exams.</p>			
3.	<p>在线自主学习是为了获得更高的文凭。</p> <p>Online self-directedly study is for a higher diploma.</p>			
4.	<p>在线自主学习对您有很大的帮助。</p> <p>Online self-directedly learning can be of great help to you.</p>			
5.	<p>在线自主学习时,课程设置很合理。</p> <p>While online self-directedly learning, the curriculum is very reasonable.</p>			
6.	<p>在线自主学习时,在线自主学习过程的体验感觉比在教室里学习更好。</p> <p>While online self-directedly learning, The experience of the online self-directed learning process feels better than learning in a classroom.</p>			
7.	<p>在线自主学习时,困难的问题可以通过查阅互联网上的相关信息来解决。</p> <p>While online self-directedly learning,difficult questions can be solved by consulting relevant information on the Internet.</p>			

Table A.2 (Continued)

8.	<p>在线自主学习时,设立目标以帮助管理学习时间。</p> <p>While online self-directedly learning,set goals to help manage study time.</p>				
9.	<p>在线自主学习时,感到有动力去探索与课程内容相关的问题。</p> <p>While online self-directedly learning,feel motivated to explore questions related to the course content.</p>				
10.	<p>在线自主学习时,问题的出现增加了对课程议题的兴趣。</p> <p>While online self-directedly learning,the presence of questions increases interest in the course topics.</p>				
11.	<p>在线自主学习时,不好意思请教他人,怕被别人拒绝。</p> <p>While online self-directedly learning,sorry to ask others for advice, afraid of being rejected by others.</p>				
12.	<p>在线自主学习时,课程的学习活动能够帮助建立分析方案或解决方案。</p> <p>While online self-directedly learning, the learning activities of the course can help build analysis or solutions.</p>				
13.	<p>在线自主学习时,您能运用很多方法来完成在线学习任务。</p> <p>While online self-directedly learning,you can use many methods to complete your online learning tasks.</p>				
14.	<p>在线自主学习是一种适应社会发展的学习方式。</p> <p>Online self-directedly learning is a learning style to adapt to the development of society.</p>				

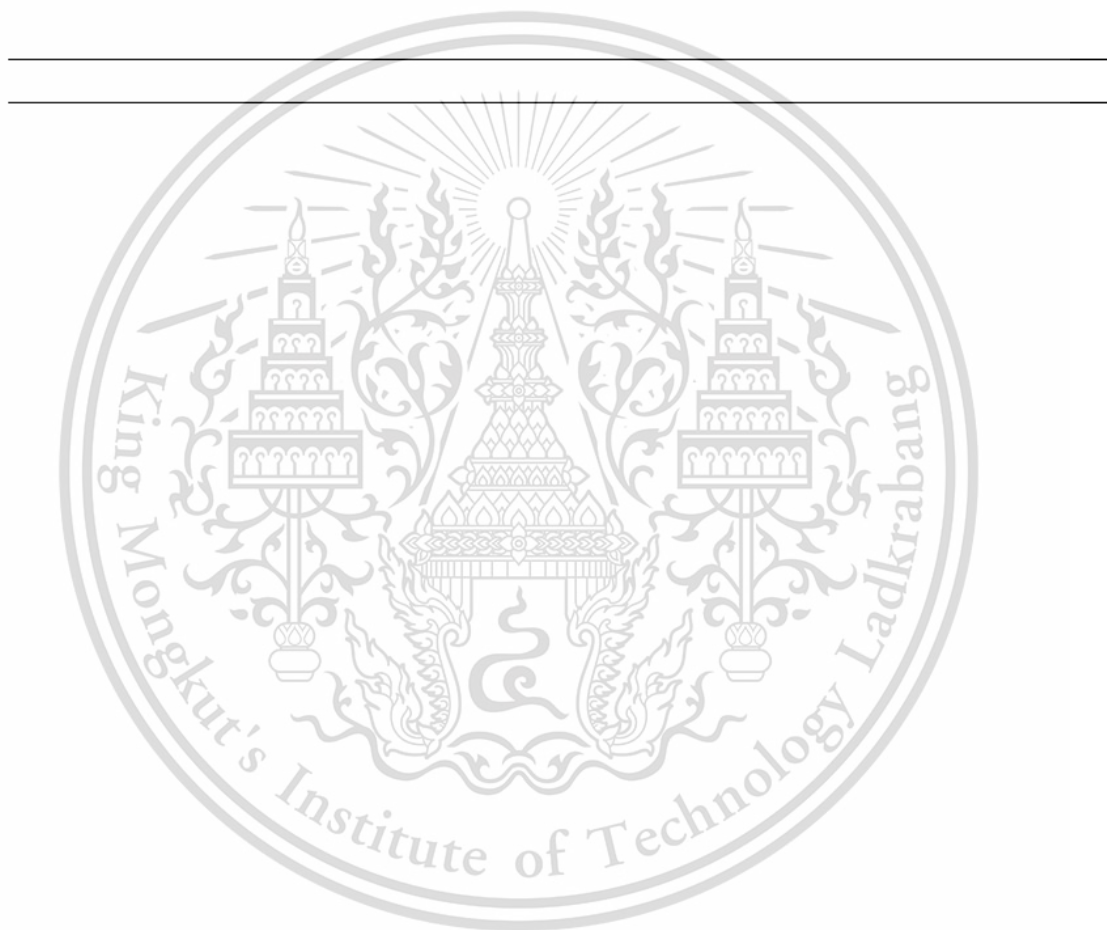
Table A.2 (Continued)

15.	<p>在线自主学习，能提高了您对学习的自觉性。</p> <p>Online self-directedly learning can increase your awareness of learning.</p>				
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Views of participants

What suggestions do you have for self-directed learning in current online learning?

您对当前的在线学习中自主学习有什么建议？



APPENDIX B LIST OF EXPERTS

This questionnaire is to investigate the Motivation of self-directed learning for Adult Learners in Online learning.

List of experts for the online active learning activities.

1. Adult Education

Cao Meng

Lecturer of Daqing Special Education School

2. Adult Education

Yan yan

Lecturer of Daqing Special Education School

3. Educational Technology Expertise

Dr. Pimprapa Phanphai

Instructor at Educational Technology Center in Sukhothai Thammathirat

Open University

4. Educational Technology Expertise

Dr. Kittisak Panngam

Educational Supervisor at Nakhommayok Primary Educational Service Area

Office.



No.

School of Industrial Education and Technology
King Mongkut's Institute of Technology Ladkrabang
1 Chalongkrung Soi 1, Ladkrabang District,
Bangkok 10520, Thailand

August 19 , 2022

Dear Mrs. Cao Meng

Ms. Chen Mengying, student ID 63603152, a master's degree student in Master of Science Program in Technology-Enhanced Learning and Innovation, King Mongkut's Institute of Technology Ladkrabang is working on a thesis title "Motivation of Self-directed Learning for Adult Learners in Online Learning" with Asst. Prof. Dr. Kanyarat Sriwisathiyakun as thesis advisor and Asst. Prof. Dr. Thanin-Ratanaolarn as co-advisor.

The School of Industrial Education and Technology acknowledged on your professional competence in regarding field, the faculty would like to invite you as a senior expert to evaluate on accuracy and appropriate of the content on questionnaires (IOC Checking). The recommendations and reviews from your assessment will be beneficial to the completeness of Ms. Chen Mengying's research.

Please consider on this invitation, the faculty is looking forward and most appreciated for your kind acceptance.

Yours Sincerely,

(Assistant Professor Dr. Worapong Pairindra)

ผู้ช่วยคณบดีฝ่ายวิชาการ ปฏิบัติการแทนคณบดี

2022/08/19 Time: 11:30:05 Non-PKI Server Sign-LN

Signature Code: 11598A-EEA7E-B5F6C-ARABC



No.

School of Industrial Education and Technology
King Mongkut's Institute of Technology Ladkrabang
1 Chalongkrung Soi 1, Ladkrabang District,
Bangkok 10520, Thailand

August 19 , 2022

Dear Mrs. Yan yan

Ms. Chen Mengying, student ID 63603152, a master's degree student in Master of Science Program in Technology-Enhanced Learning and Innovation, King Mongkut's Institute of Technology Ladkrabang is working on a thesis title "Motivation of Self-directed Learning for Adult Learners in Online Learning" with Asst. Prof. Dr. Kanyarat Sriwisathiyakun as thesis advisor and Asst. Prof. Dr. Thanin-Ratanaolarn as co-advisor.

The School of Industrial Education and Technology acknowledged on your professional competence in regarding field, the faculty would like to invite you as a senior expert to evaluate on accuracy and appropriate of the content on questionnaires (IOC Checking). The recommendations and reviews from your assessment will be beneficial to the completeness of Ms. Chen Mengying's research.

Please consider on this invitation, the faculty is looking forward and most appreciated for your kind acceptance.

Yours Sincerely,



(Assistant Professor Dr. Worapong Pairindra)

ผู้ช่วยคณบดีฝ่ายวิชาการ ปฏิบัติการแทนคณบดี

2022/08/19 Time: 11:32:32 Non-PKI Server Sign-LN

Signature Code : A3QFA4EEAM5ATAEE-APQ4y



No.

School of Industrial Education and Technology
King Mongkut's Institute of Technology Ladkrabang
1 Chalongkrung Soi 1, Ladkrabang District,
Bangkok 10520, Thailand

August 19 , 2022

Dear Dr. Pimprapa Phanphai

Ms. Chen Mengying, student ID 63603152, a master's degree student in Master of Science Program in Technology-Enhanced Learning and Innovation, King Mongkut's Institute of Technology Ladkrabang is working on a thesis title "Motivation of Self-directed Learning for Adult Learners in Online Learning" with Asst. Prof. Dr. Kanyarat Sriwisathiyakun as thesis advisor and Asst. Prof. Dr. Thanin-Ratanaolarn as co-advisor.

The School of Industrial Education and Technology acknowledged on your professional competence in regarding field, the faculty would like to invite you as a senior expert to evaluate on accuracy and appropriate of the content on questionnaires (IOC Checking). The recommendations and reviews from your assessment will be beneficial to the completeness of Ms. Chen Mengying's research.

Please consider on this invitation, the faculty is looking forward and most appreciated for your kind acceptance.

Yours Sincerely,

(Assistant Professor Dr. Worapong Pairindra)

ผู้ช่วยคณบดีฝ่ายวิชาการ ปฏิบัติการแทนคณบดี

2022/08/19 Time: 11:32:49 Non-PKI Server Sign-LN

Signature Code : AQ44A-QMAGC-BAEI-AQ4BB



No.

School of Industrial Education and Technology
King Mongkut's Institute of Technology Ladkrabang
1 Chalongkrung Soi 1, Ladkrabang District,
Bangkok 10520, Thailand

August 19 , 2022


Dear Dr. Kittisak Panngam

Ms. Chen Mengying, student ID 63603152, a master's degree student in Master of Science Program in Technology-Enhanced Learning and Innovation, King Mongkut's Institute of Technology Ladkrabang is working on a thesis title "Motivation of Self-directed Learning for Adult Learners in Online Learning" with Asst. Prof. Dr. Kanyarat Sriwisathiyakun as thesis advisor and Asst. Prof. Dr. Thanin-Ratanaolarn as co-advisor.

The School of Industrial Education and Technology acknowledged on your professional competence in regarding field, the faculty would like to invite you as a senior expert to evaluate on accuracy and appropriate of the content on questionnaires (IOC Checking). The recommendations and reviews from your assessment will be beneficial to the completeness of Ms. Chen Mengying's research.

Please consider on this invitation, the faculty is looking forward and most appreciated for your kind acceptance.

Yours Sincerely,



(Assistant Professor Dr. Worapong Pairindra)

ผู้ช่วยคณบดีฝ่ายวิชาการ ปฏิบัติการแทนคณบดี

2022/08/19 Time: 11:33:09 Non-PKI Server Sign-LN

Signature Code: MAAQAQYANw-ADAE-AQz8G

APENDIX C

IOC Validation

Description:

This questionnaire is to investigate the Motivation of self-directed learning for Adult Learners in Online learning. Your answers are valuable and are considered highly confidential.

Direction:

Read through the test questions in this form. Please indicate the degree to which each item is congruent with the objective of this study. If you have any comments on the congruence of each question, please record them in the space provided. Tick (✓) to rate the congruence according to the scale below.

+1 = This question is consistent with the theme of Motivation of Self-directed Learning for Adult Learners in Online Learning.

0 = It is not sure whether this question conforms to the theme of "Motivation of self-directed Learning for Adult Learners in Online learning".

-1 = certain that this question is inconsistent with the theme of Motivation of Self-directed Learning for Adult Learners in Online Learning.

Table C.1 IOC Questionnaire

No.	Question Items	Experts				ΣR	IOC	Result
		1	2	3	4			
Learning Environment (1-15) 学习环境								
1.	在线自主学习时，您的网速很稳定。 While online self-directedly learning, your Internet speed is stable.	+1	+1	+1	+1	4	1.00	Used
2.	在线自主学习时，学习平台运行很稳定。 While online self-directedly learning, the learning platform runs very stable	+1	+1	+1	+1	4	1.00	Used

Table C.1 (Continued)

3.	在线自主学习时，您上课时的音频很清晰。 While online self-directedly learning, the audio of your class is very clear	+1	+1	+1	+1	4	1.00	Used
4.	在线自主学习时，您上课时的音频很清晰。 While online self-directedly learning, the audio of your class is very clear	+1	+1	+1	+1	4	1.00	Used
5.	在线自主学习时，老师重视学生提出的问题。 While online self-directedly learning, the teacher pays attention to the questions asked by the students.	+1	+1	+1	+1	4	1.00	Used
6.	在线自主学习时，老师对您有很大的耐心。 While online self-directedly learning, the teacher has a lot of patience with you.	+1	+1	+1	+1	4	1.00	Used
7.	在线自主学习时，非常清楚老师的教学目的，如上课老师课上采取某些教学活动的目的。 While online self-directedly learning, Be very clear about the purpose of the teacher's teaching, (e.g., the purpose of certain teaching activities taken by the teacher in the class.)	+1	+1	+1	+1	4	1.00	Used

Table C.1 (Continued)

8.	在线自主学习时，老师采取线上教学方式对您的学习有一定的促进效果。 While online self-directedly learning,your learning will be facilitated by the online teaching method.	+1	+1	+1	+1	4	1.00	Used
9.	在线自主学习时，老师和同学积极的互动。 While online self-directedly learning,positive interaction between teachers and students.	+1	+1	+1	+1	4	1.00	Used
10.	在线自主学习时，学习平台有有效的反馈机制。 While online self-directedly learning, the learning platform has an effective feedback mechanism.	+1	+1	+1	+1	4	1.00	Used
11.	在线自主学习时,学习平台的资源丰富和全面。 While online self-directedly learning, the learning platform is rich and comprehensive in resources.	+1	+1	+1	+1	4	1.00	Used
12.	在线自主学习时,学习资源的内容帮助很大。 While online self-directedly learning, the content of the learning resources helps a lot.	+1	+1	+1	+1	4	1.00	Used
13.	在线自主学习时，周围环境很利于学习。 While online self-directedly learning,the surroundings are very conducive to learning.	+1	+1	+1	+1	4	1.00	Used

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Table C.1 (Continued)

14.	以后您还会继续在线自主学习。 You will also continue to be online self-directedly to learn later.	+1	+1	+1	+1	4	1.00	Used
15.	在线自主学习的学习体验感很好。 Online self-directedly learning is found the learning experience is very good.	+1	+1	+1	+1	4	1.00	Used
Learning Processing(1-15) 学习过程								
1.	在线自主学习时,您能否按时上网课。 While online self-directedly learning,are you able to access your classes on time.	+1	+1	+1	+1	4	1.00	Used
2.	在线自主学习时,您能否按时上网课。 While online self-directedly learning,are you able to access your classes on time.	+1	+1	+1	+1	4	1.00	Used
3.	在线自主学习时,制定具体的学习计划。 While online self-directedly learning, develop a specific study plan.	+1	+1	+1	+1	4	1.00	Used
4.	在线自主学习时, 您会认真记录笔记。 While online self-directedly learning, you have to take notes carefully.	+1	+1	+1	+1	4	1.00	Used

Table C.1 (Continued)

5.	在线自主学习时，您能按时完成课后作业。 While online self-directedly learning, you are able to complete your assignments after class on time.	+1	+1	+1	+1	4	1.00	Used
6.	在线自主学习时，您能掌握相应的学习内容。 While online self-directedly learning, you can master the learning content.	+1	+1	+1	+1	4	1.00	Used
7.	在线自主学习时,您能够在学习过程中调整自己的学习方法。 While online self-directedly learning, you are able to adapt your study method as you go along.	+1	+1	+1	+1	4	1.00	Used
8.	在线自主学习时，您会进行课后复习。 While online self-directedly learning, you will do post-class review.	+1	+1	+1	+1	4	1.00	Used
9.	在线自主学习时,您能够清晰自己遇到的困惑。 While online self-directedly learning, you can clearly understand the confusion you encounter.	+1	+1	+1	+1	4	1.00	Used

Table C.1 (Continued)

10.	在线自主学习时,您能够针对出现的困惑及时调整学习策略,实施补救措施。 While online self-directedly learning, You are able to adjust your learning strategies and implement remedial measures in response to emerging confusion.	+1	+1	+1	+1	4	1.00	Used
11.	在线自主学习时,您会与学习伙伴进行交流。 While online self-directedly learning, You will communicate with your study partners.	+1	+1	+1	+1	4	1.00	Used
12.	在线自主学习时,您会积极和老师互动。 While online self-directedly learning, you will actively interact with teachers.	+1	+1	+1	+1	4	1.00	Used
13.	在线自主学习时,您会比线下学习更加专注。 While online self-directedly learning, you will be more focused than when you study offline.	+1	+1	+1	+1	4	1.00	Used
14.	在线自主学习时,课前将根据课程内容做充分的准备。 While online self-directedly learning, Adequate preparation will be done before the lesson according to the content of the lesson.	+1	+1	+1	+1	4	1.00	Used

Table C.1 (Continued)

15.	在线自主学习时,经常评估和反思你的学习。 While online self-directedly learning,frequently assess and reflect on your learning.	+1	+1	+1	+1	4	1.00	Used
Learning Perception(1-15) 学习动机								
1.	通过在线自主教育的学习,使您的就业前景变好。 Through online self-directed learning , make your job prospects better.	+1	+1	+1	+1	4	1.00	Used
2.	在线自主学习的目的只是为了应付各种考试。 The purpose of online self-directedly learning is just to cope with various exams.	+1	+1	+1	+1	4	1.00	Used
3.	在线自主学习是为了获得更高的文凭。 Online self-directedly study is for a higher diploma.	+1	+1	+1	+1	4	1.00	Used
4.	在线自主学习对您有很大的帮助。 Online self-directedly learning can be of great help to you .	+1	+1	+1	+1	4	1.00	Used
5.	在线自主学习时,课程设置很合理。 While online self-directedly learning, the curriculum is very reasonable.	+1	+1	+1	+1	4	1.00	Used

Table C.1 (Continued)

6.	<p>在线自主学习时,在线自主学习过程的体验感觉比在教室里学习更好。</p> <p>While online self-directedly learning, The experience of the online self-directed learning process feels better than learning in a classroom.</p>	+1	+1	+1	+1	4	1.00	Used
7.	<p>在线自主学习时,困难的问题可以通过查阅互联网上的相关信息来解决。</p> <p>While online self-directedly learning,difficult questions can be solved by consulting relevant information on the Internet.</p>	+1	+1	+1	+1	4	1.00	Used
8.	<p>在线自主学习时,设立目标以帮助管理学习时间。</p> <p>While online self-directedly learning,set goals to help manage study time.</p>	+1	+1	+1	+1	4	1.00	Used
9.	<p>在线自主学习时,感到有动力去探索与课程内容相关的问题。</p> <p>While online self-directedly learning,feel motivated to explore questions related to the course content.</p>	+1	+1	+1	+1	4	1.00	Used
10.	<p>在线自主学习时,问题的出现增加了对课程议题的兴趣。</p> <p>While online self-directedly learning,the presence of questions increases interest in the course topics.</p>	+1	+1	+1	+1	4	1.00	Used

Table C.1 (Continued)

11.	在线自主学习时,不好意思请教他人,怕被别人拒绝。 While online self-directedly learning,sorry to ask others for advice, afraid of being rejected by others.	+1	+1	+1	+1	4	1.00	Used
12.	在线自主学习时,课程的学习活动能够帮助建立分析方案或解决方案。 While online self-directedly learning, the learning activities of the course can help build analysis or solutions.	+1	+1	+1	+1	4	1.00	Used
13.	在线自主学习时,您能运用很多方法来完成在线学习任务。 While online self-directedly learning,you can use many methods to complete your online learning tasks.	+1	+1	+1	+1	4	1.00	Used
14.	在线自主学习是一种适应社会发展的学习方式。 Online self-directedly learning is a learning style to adapt to the development of society.	+1	+1	+1	+1	4	1.00	Used
15.	在线自主学习,能提高了您对学习的自觉性。 Online self-directedly learning can increase your awareness of learning.	+1	+1	+1	+1	4	1.00	Used

Views of participants

1.What suggestions do you have for self-directed learning in current online learning?

您对当前的在线学习中自主学习有什么建议?

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