The Effect of College Students' Network Self-efficacy on Learning Autonomy

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Abstract

As a revolutionary means, online teaching has deeply affected all aspects of college students' learning. It has become an important ability for college students to learn and achieve their learning goals through the internet. In this paper, 160 non-English major students in a university were selected as the subjects. A combination of quantitative and qualitative analyses was adopted, and questionnaire and interviews were used as the research tools. The questionnaire was used to measure the network self-efficacy of the subjects before and after the experiment. The interviews were used to deeply explore the subtle changes in subjective emotion before and after the experiment. After the questionnaires and interviews at each stage, SPSS Statistics 26.0 was adopted to carry out phased data analysis and overall data analysis of the questionnaires, and content analysis was conducted on the data of the interviews, so as to measure the overall situation and correlation of non-English major students' autonomous learning and network self-efficacy in English learning, and find out the influencing factors. The purpose is to put self-efficacy, an internal factor affecting students' self-learning, in an important position, so that teachers can give more encouragement and praise to the students. In addition, self-efficacy assessment, a student-centered internal evaluation method, should be used to help students cultivate a positive evaluation of themselves, and to encourage students to engage in autonomous learning through the use of networks.

Key words: Online teaching; Self-efficacy; Autonomous learning

1. INTRODUCTION

Currently, with the widespread popularity of the internet, online teaching as a disruptive instructional method has experienced vigorous development. The use of modern information technology and online courses for educational reform has become a hot topic and trend in higher education in China. Because online courses have the characteristics of breaking through the limitations of time and space, reducing teaching costs, simple operation, multiple interaction, pertinence and suitable for personality education, colleges and universities are actively buying online education intelligent platforms, purchasing online courses, and introducing policies to encourage teachers to build online courses on intelligent platforms. With the increase of online courses in colleges and universities, students spend more and more time on online learning. Online teaching not only greatly improves the effect and efficiency of knowledge transmission, but also breaks through the constraints of previous learning methods in terms of space and time (Chen, 2018). At the same time, college students' acceptance of the internet today also provides the necessary conditions for the rise of this teaching method. Therefore, teachers' attention to and understanding of college students' online learning is helpful to their design and application of online teaching (Zhang 2004). How to improve the teaching quality and teaching effect of online courses is also becoming the focus and object of teachers' research.

The 21st century is an era of information-based knowledge economy, lifelong learning and lifelong

education have become the leading learning concepts of society, and students have autonomous learning ability, which is not only the requirement of the times, but also the inevitable demand for their survival and development. In the case that online teaching has gradually entered the campus and shown vigorous vitality, online learning has also become a fashion (Wu, 2017). In online teaching, students' self-efficacy is the key factor affecting students' learning autonomy.

2. THEORETICAL FRAMEWORK

Self-efficacy, first proposed by famous American psychologist Albert Bandura (Albert Bandura, 1977), refers to people's judgment of whether they can successfully achieve a certain behavioral result or not. It is "the degree to which people are confident that they can use the skills they have to perform a certain job behavior". The self-efficacy of students' English learning refers to the estimation and judgment of students' English learning ability, which refers to the degree of students' confidence and expectation of their English learning.

The theory of self-efficacy overcomes the tendency of traditional psychology to emphasize action over desire and knowledge over emotion, and it increasingly combines human needs, cognition and emotion to study human motivation, which has great scientific value. In his research, Bandura concluded that self-efficacy affects an individual's choice of behavior, as well as the degree of adherence and effort to that behavior. From this point of view, we believe that self-efficacy is an emotional expression or emotional response, and this response affects the acquisition and the performance of new behaviors. In the research, Bandura found that those with high self-efficacy are willing to work hard on the task they have chosen, they are pleased to accept challenges, and have high expectation value for expected results. They have strong self-confidence, and can deal with difficulties rationally, so that they get the ideal result at last; On the contrary, people with low self-efficacy are often forced to accept tasks, the expected effect of the completion of tasks is not high, they have little confidence in their own ability, and easy to be controlled by emotions. They are often at a loss in the face of difficulties, the original knowledge and skills can not be shown. It can be seen that personal self-efficacy plays a very important role in the quality of task completion, and people with high self-efficacy have high quality of task completion (Kou, 2004).

Therefore, in online teaching, if teachers attach importance to the cultivation of students' learning self-efficacy and improve students' learning self-efficacy, the teaching effect of online courses can be greatly improved.

3. RESEARCH STATUS AT HOME AND ABROAD

Many scholars at home and abroad have studied it from different views. Self-efficacy has corresponding impacts on the planning stage, the performance stage and the self-reflection stage of autonomous learning respectively. Zimmerman and colleagues investigated the role of learner confidence in achieving academic success in autonomous learning (Gao, 2000). The results show that the self-efficacy of autonomous learning has a positive effect on students' motivational beliefs and perceived academic success. Domestic studies have shown that students with high self-efficacy use more cognitive, meta-cognitive and self-regulation learning strategies than students with low self-efficacy, and their persistence is longer. The higher the sense of self-efficacy, the higher the level of self-monitoring learning behavior, and vice versa (Kou, 2004). Yang Xinde's research shows that students with high self-efficacy have significantly higher short-term and long-term goals than students with medium or low self-efficacy (Little, 1991). Other studies conducted an empirical study on the self-efficacy of non-English major learners in English learning under multimedia environment, and proposed that self-efficacy is an important factor affecting academic performance (Liu, 2011). However, in general, there are relatively few empirical studies on self-efficacy in the current network teaching environment in our country, so the author tries to explore an effective way to improve learners' learning autonomy from the perspective of self-efficacy.

4. SIGNIFICANCE OF THE RESEARCH

From the perspective of the long-term expectation of teaching reform, English learning should be sustainable. For most non-English major students, college English courses basically end after the second year of college, and the end of teacher teaching does not mean the end of English learning. Many students are also faced CET-4 and CET-6, postgraduate English test and even IELTS and TOEFL, and some students may engage in English-related jobs after graduation. Self-efficacy will play a key role in how to continue to use the network platform, maintain high interest and enthusiasm in English learning, and persist in autonomous English learning under unsupervised environment.

In addition, this study can also help to understand the impact of college students' network self-efficacy on learning autonomy, and provide a theoretical basis for improving college students' learning autonomy. To provide reference for the development of online education for college students, explore how online education can improve students' autonomy and promote students' learning outcomes; To provide guidance for college

students' personal growth and career development, help them cultivate autonomous learning ability, improve self-efficacy, and better adapt to the requirements of social development; To provide education administrators with policy suggestions on college students' online education, to provide students with better educational resources, and to promote educational equity and social development.

5. RESEARCH PROCESS

There are many factors that affect students' self-efficacy, including the successful experience of English learning, whether the setting of learning goals and tasks is appropriate or not, the influence of performance evaluation methods, and even the gender, psychological and physiological state of students. This paper will focus on how to cultivate students' self-efficacy in the special environment of network autonomous learning. So as to measure the overall situation and correlation of non-English major students' autonomous learning and network self-efficacy in English learning, and find out the influencing factors. The purpose is to put self-efficacy, an internal factor affecting students' self-learning, in an important position, so that teachers can give more encouragement and praise to the students. In addition, self-efficacy assessment, a student-centered internal evaluation method, should be used to help students cultivate a positive evaluation of themselves, and to encourage students to engage in autonomous learning through the use of networks.

5.1 Method of the Research

In this study, the cultivation of self-efficacy is not only used to detect, reflect on and monitor the implementation of teaching links, but also used to cultivate students' ability of autonomous and cooperative learning, and promote and coordinate the development of students' learning ability through timely information feedback, so that the cultivation of self-efficacy becomes an organic component of the teaching process. The evaluation of students' learning effect comes from the self-evaluation of the students, the evaluation of individual learning by learning groups, the incentive evaluation of students by teachers, and the evaluation of whether they have completed the meaning construction of the learned knowledge and the final examination or not. According to the above evaluation indicators and elements in the evaluation of online teaching, the effect of self-efficacy in students' autonomous learning is comprehensively evaluated with the comprehensive results to ensure the effectiveness and practicability of online autonomous learning.

5.2 Object of the Research

160 students from the non-English major undergraduates of Grade 2022 in a university were randomly selected

as the research objects, and they also finished the questionnaires before and after the experiment. Among which, the author selected 12 students for interviews and recordings, and two interviews were also conducted before and after the experiment. The teaching materials used by these students were the online learning system of the New Horizon College English--Reading and Writing Course and New Horizon College English--Viewing, Listening & Speaking Course. Relevant data are collected at first, and then the effectiveness of self-efficacy in online English autonomous learning is analyzed and studied.

5.3 Methods of Data Collection and Analysis

According to the evaluation model of this study, qualitative and quantitative data were collected during the course of the study, and five methods of data collection and analysis were adopted

Literature review method. According to the purpose of this study, this study consulted, analyzed and summarized Bandura's self-efficacy theory, and took relevant literature as the theoretical basis.

Questionnaire survey method. The questionnaire on English learning autonomy mainly refers to the "English Learning Autonomy Scale" (Yan, 2010) and the "English Autonomous Learning Questionnaire" (Liu Xin, 2009), and it is made after the corresponding modifications based on the characteristics of English autonomous learning in the multimedia and network environment of college campuses. Before the experiment, the author investigated the status quo of autonomous learning and self-efficacy of these students. After the experiment, a survey was conducted on these students' motivation, interest, ability of autonomous learning, whether students can feel satisfied in autonomous learning or not, and the role of teacher's guidance in students' autonomous learning. All the data obtained were analyzed by SPSS Statistics 26.0. to verify the effect of college students' network self-efficacy on learning autonomy.

The interview method. According to the final test results of the experiment, 12 students with three grades of "excellent", "good" and "pass" were selected to discuss their goal setting in autonomous learning, the strength of their self-confidence in completing the goal, the completion of the learning task, and the existing problems in learning, etc., and put forward suggestions for the next step of students' learning.

Experimental teaching method. Online teaching was carried out among 160 non-English major undergraduates of Grade 2022 in a university, and its effectiveness was verified.

Comparative study method. By comparing the changes of students' self-learning, learning motivation and self-confidence before and after the implementation of the online teaching mode, the effectiveness of the self-efficacy of the network teaching mode on improving students' interest, ability and achievement is verified.

6. DATA ANALYSIS AND DISCUSSION

In this study, data were collected through two questionnaires. Before the experimental teaching, questionnaires were distributed to 160 students, and 141 valid questionnaires were collected. After the experiment teaching, the questionnaires were conducted again, and 143 questionnaires were collected, then, SPSS Statistics 26.0 was used for data management and quantitative analysis of questionnaire results. Through qualitative analysis of students' interview records, this paper discusses the role of self-efficacy in students' autonomous learning.

6.1 The Effect of Network Self-efficacy on Learning Interest

Since the implementation of this evaluation system, through two times of questionnaire survey data collection (see Table 1), it is not difficult to see that this evaluation mode has played a role in promoting students' enjoyment of autonomous learning process and improving their learning interest, and students have more rights to autonomous learning.

Table 1
Changes of Students' Learning Interest before and after the Experiment

Items	Before experiment	After experiment
Enhance self-confidence	62.5%	73%
Reduce the study pressure	62%	65%
Having the joy of success	55%	67%
Can stimulate interest in learning	59%	66%
Enjoy the learning process	46%	58%
Can promote autonomous learning	63%	71%

As shown in Table 1, since self-efficacy was introduced into the online self-learning class, students' self-confidence in self-learning was enhanced. In an unsupervised learning environment, students are able to shake off their mental burdens, set their own learning plans, and complete the study plans within the prescribed time. The joy of success stimulates the interest in autonomous learning, so that autonomous learning forms a virtuous circle. The reference principle for self-efficacy is not to compare with classmates, but to compare with themselves in different periods. In the questionnaire survey, we found that 72.53% of students believe that the quality of high school English has a great impact on their English learning in college. For the students with bad English foundation, if they only compared with their previous studies, it is not easy to have inferiority, not easy to lose self-confidence, they can get positive evaluation in continuous learning, and get positive stimulation. Teachers can also give encouragement and fair evaluation to a student during his/her learning transition from weak to strong, and become the motivation for students to learn.

6.2 Statistics of Self-efficacy in Online Classes

From Table 2, we can see that the mean of self-efficacy is lower than 3.5, in which the self-efficacy of skills is slightly higher than the self-efficacy of tasks, this indicates that students can experience moderate self-efficacy, and the confidence in listening, speaking, reading and writing skills is higher than the confidence in completing tasks.

Table 2
Statistics of Self-efficacy in Network Environment

	Mean of items	Overall mean	Std. deviation	Maximum value	Minimum value
Self-efficacy of skills	3.3445	32.0235	6.09324	43.00	8.00
Self-efficacy of tasks	3.0132	16.4638	3.73462	24.00	4.00
Overall self-efficacy	3.2331	47.3648	8.53672	64.00	20.00

6.3 The Effect of Gender Differences on Network Self-efficacy

Gender factors have long been the focus of educational research because boys and girls show different motivations, behaviors and achievements during learning. With the popularization of online education, gender differences also affect all the aspects of college students' learning. In the process of online learning, there are huge differences in the motivation and self-disciplined behaviors of boys and girls. Compared with girls, boys have a more positive and open attitude towards the internet, and their frequency of using online learning means is also higher than that of girls. Although boys show higher online self-efficacy, they tend to be less self-disciplined than girls, and therefore their academic performance is not higher than that of girls.

Table 3
Statistics of Network Self-efficacy of Male and Female Students

	Gender	Number of people	Mean value	Std. deviation	Mean of standard error
Self-efficacy of skills	Male	62	31.6532	6.31234	.49462
	Female	98	32.4323	6.11322	.77760
Self-efficacy of tasks	Male	62	16.3624	3.98788	.32322
	Female	98	16.3723	3.74569	.47325
Overall self-efficacy	Male	62	47.6514	8.94672	.71892
	Female	98	48.1312	8.23561	1.1243

We used independent sample T test to analyze the questionnaire data. The results show that gender differences have a significant impact on network self-efficacy, learning motivation and academic performance, and the self-efficacy of girls in the internet environment is generally higher than that of boys.

6.4 Effect on the Role of Teachers

In answer to the questionnaire "Which way do you prefer to complete the learning tasks of online courses?", 37.83% of the students chose completely autonomous learning, while 62.17% of the students preferred autonomous learning under the supervision of teachers. In addition, in response to the question " I believe that positive evaluation of teachers can promote the autonomy of learning and increase the interest in learning", almost one hundred percent of the students agreed. From this, we can see that although we advocate autonomous learning and hope that self-efficacy can play a great role, in the network classroom, the role of teachers can not be weakened, but should be strengthened. In the online classroom, teachers should play the role of organizing, coordinating, monitoring, helping and even tutoring individually. Teachers should not leave the classroom completely to students and let them be free, but should find students' problems, intervene, guide and supervise, and make online autonomous learning more scientific and humane.

6.5 Correlation of Network Self-efficacy and Learning Autonomy

Pearson product moment correlation coefficient is widely used in academic research to measure the strength of linear correlation between two variables. As shown in Table 4, there is a statistically significant correlation between network self-efficacy and learning autonomy of non-English majors ($r=0.632$, $p=0.012$), because the statistical correlation coefficient ($0.4 \leq r < 0.7$, $p < 0.05$) indicates a significant correlation between the two variables. Therefore, the improvement of students' network self-efficacy helps to enhance students' learning autonomy, while the decrease of students' network self-efficacy will weaken students' learning autonomy.

Table 4
Correlation of Network Self-efficacy and Learning Autonomy

		Network self-efficacy	Learning autonomy
Network self-efficacy	Pearson's correlation coefficient	1	.632
	P value		.012
	Number of people	143	143
Learning autonomy	Pearson's correlation coefficient	.632	1
	P value	.012	
	Number of people	143	143

7. CONCLUSION

This research finds that non-English major students have a moderate level of self-efficacy in the network environment. After introducing self-efficacy as a psychological hint, it can have a positive impact on students' learning. Appropriately enhancing students' self-efficacy is an effective measure to improve students' autonomous learning ability. At the same time, the research also reveals that the evaluation mechanism for students should be diversified. If students can persist in the process of autonomous learning and finally complete the task successfully, they can stimulate a strong sense of self-efficacy. In addition, the role of teachers in the network environment cannot be ignored. Teachers' positive feedback can make students have a sense of admiration for teachers and enhance their courage to overcome difficulties (Wen Qiufang, 1996). Moreover, individual differences and gender differences also affect the development of self-efficacy (Jiang Yingjie, 2001). This also provides support for future research and exploration of the feasibility of self-efficacy cultivation and development.

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