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RESEARCH ARTICLE

THE INFLUENCE OF COLLEGE STUDENTS' LEARNING MOTIVATION AND BELIEFS ON LEARNING ENGAGEMENT AND METACOGNITIVE REGULATION STRATEGIES

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ABSTRACT

In the network learning, the most important element of the learning effect is the learner's self-regulation learning and learning engagement. So it is a hot research topic to study the influence of network learning motivation of college students on learning engagement and self-regulation learning strategies. In this study, First of all, the current research results of learning motivation were investigated; then, it studies and analyzes the learning engagement, the metacognitive regulation and other concept and the relationship among them; next, general characteristics of learning engagement, metacognitive regulation and other related concepts are studied, and then differences of students from different gender and grade in learning metacognitive regulation and learning engagement and other aspects are compared and analyzed; finally through specific experiment, the relationship among learning motivation and beliefs and learning engagement, metacognitive regulation of university students in blended courses are studied, and the experiment results are carried out the comparative analysis, which verifies the influence of learning motivation on learning engagement and metacognitive regulation. Through the research, we can find that college students' network learning motivation and beliefs have significant influence on learning engagement and metacognitive regulation strategies. At the same time, the influence exists significant differences in different gender and grade, and motivational regulation plays a partial intermediary role in it.

KEYWORDS

learning beliefs, learning engagement, metacognitive regulation

1. INTRODUCTION

In traditional learning environment, learner's motivation and belief has a positive predictive role in motivational regulation and metacognitive regulation, and motivational regulation can not only make a full impact on metacognitive regulation, it also has important influence on learning effort degree. The degree of learning effort reflects the amount of learning engagement, through the study it can also be found that learning motivation also affect the learning engagement, so the motivation regulation can also have an impact on learning engagement. Therefore, with more and more college students choosing network learning, the influence of their network learning belief on learning engagement and metacognition, the effect of motivational regulation has become important subjects that we need to study.

For the topic in this paper, relevant experts and scholars have conducted a lot of research and achieved good results, and we need to conduct further in-depth study and analysis on the results of previous studies. Usually school engagement is used as the defining method to study motivational beliefs and learning engagement research, according to certain rules, it will be divided into behavioral, cognitive and emotional engagement three aspects, at the same time, the school engagement is divided into engagement of learning activities in school and outside school and affective learning experience [1]. Good self-regulation can improve academic performance and higher learning satisfaction, but also can make virtuous attribution in learning results, and relationship between self-regulated learning and learning engagement just embodies the

relationship between individual learning autonomy and learning engagement [2]. In the primary stage, along with the grade increasing students' self-regulated learning ability gradually improves, but they are still not good as adults in the species and quantity of regulation strategies. Therefore, it can be inferred that regulation level of college students from different grades has significant difference [3]. With the growth of grade, students' learning engagement level decreased. The results clearly show that compared to the junior students, learning engagement level of freshman and sophomore students is significantly higher, the reason may be that students more and more adapt to the mode of teaching and learning method in university, so they get tired of learning [4]. Based on the combination with the results of previous studies, learning engagement is divided into three dimensions, namely, vigor, dedication and focus. Vigor reflects the learner's energy level and degree of mental resilience, dedication is the description of significance enthusiasm of learners, and focus emphasizes the degree of concentration and attention on learning of learners [5].

The second part of this paper is to study and introduce the related basic concepts and basic theories and analyze the mutual influence and mutual relationship between them. The third part studies in detail how to use experiment to study the general characteristics of the university students' learning motivational regulation, metacognitive regulation and learning engagement and relationships among university students' learning motivation beliefs, motivational regulation and learning engagement, metacognitive regulation in blended courses, and gives the specific methods and steps. The fourth part is the comparison and analysis of the

experiment results in the third part, and gives the final conclusion, the results of the study are summarized. The fifth part is the summary of the full text and induction, points out the defects of the study and gives the direction of future research.

2. START OF THE ART

At present, with the development of information technology and network technology, education is no longer the pure traditional classroom

education, many students begin self-learning on the network. At the same time, with the support of the government, network education teaching mode gets rapid promotion, it becomes a new educational model which keeps pace with traditional classroom education, thus relevant theories and practical experience of network education have also obtained more and more researchers' attention, and lead to a series of research and development [6]. As shown in Figure 1, college students are using network teaching mode for self-study.

Figure 1: College students' Internet learning

2.1 Learning engagement

The study of the learning engagement originates from the extension of the work engagement. Exploring how to enable learners to generate a high level of learning engagement, so as to stimulate their enthusiasm for learning and achieve ideal results. At present, although the definition of learning engagement has not obtained unanimous conclusion, but almost all researchers tend to classify the learning atmosphere into multiple dimensions to analyze it, which are behavioral engagement, cognitive engagement and emotional engagement [7]. Behavioral engagement reflects the active participation degree of students for study, cognitive engagement mainly refers to the intellectual activity of learners in order to complete the study, emotional engagement is the embodiment of emotions in students' learning, at the same time, it includes the degree of students' learning interest.

Because the research community has different definitions for learning engagement and in order to determine learning engagement, they prepare the different research questionnaire, in general, there are students' learning engagement scale, middle school students' learning engagement scale and so on, consistency coefficient of the various scales is between 0.79-0.92, which fits the scale of original models well [8].

2.2 Meta cognitive regulation

Metacognitive regulation is one of the important factors which affects the learning performance of learners, including declarative knowledge, observation and control part of cognitive activities. In this study, we study the trial of learning strategies, and these strategies can help learners to monitor and regulate their own cognitive activities [9]. In network learning, students not only need to use cognitive strategies to process information effectively, at the same time, they also ought to monitor, evaluate and adjust their cognitive interaction. Only students' metacognitive regulation level is relatively high, can they complete the goal setting and task analysis better.

For measurement of metacognitive regulation, the most widely used method is self-regulated learning measurement questionnaire. The questionnaire has 81 projects, divided into two parts with 15 scales. Each scale has a certain degree of reliability and validity, and the internal consistency coefficient is 0.79. When using it, the researchers can extract part of the scale according to their need to conduct research, the method

is applied to the study of self-regulated learning in the network or hypermedia [10].

2.3 Motivational regulation

Motivational regulation is a process that learners actively adopt certain strategies to adjust the current learning motivation to avoid the weakening of motivation and being unable to complete the learning task. Motivational regulation is an important part of self-regulated learning, in the learning process, students' learning motivation may drop because of some reasons, so motivational regulation is needed to adjust and improve their learning motivation [11].

Measurement of motivational regulation mainly uses self-reporting questionnaire, generally it can be divided into six aspects: value adjustment strategy, performance goal regulation strategies, self-strengthening, environment construction strategy, situational interest regulation strategies and mastery goal adjustment strategy [12]. Specifically, it can respectively be described as "I will link these knowledge and in my life together to make them look more practical", "I tell myself to continue learning and have outstanding performance in this course", "I set a goal for my learning, once I reach the goal I would reward myself", "I try to overcome the distractions when I am learning", "I try to regard learning knowledge and homework as a game", "For the thirst for knowledge, I will persuade myself to study hard".

2.4 The relationship among motivation beliefs, motivational regulation and learning engagement

Learning belief is one of the prerequisites which influences the engagement and final results of students in the learning process, only with a positive motivational beliefs and higher levels of motivation, would students be active in learning activities [13]. It is found that self-efficacy has a positive predictive effect on learning engagement, and it plays an intermediary role in the prediction of classroom psychological climate. In addition, the task value also has a predictive effect on the learning engagement. Motivational regulation and learning engagement have a positive predictive relationship. Similarly, the learner's motivational beliefs can promote their positive initiative of self-regulated learning and motivational regulation is an integral part of it [14].

2.5 The relationship among motivation beliefs, motivational regulation and metacognitive regulation

Through the study, it is found that self-efficacy sense and task interleaving can positively predicted students' metacognitive regulation in network learning, and that metacognitive regulation score of students with high motivation and belief(self-efficacy, task value) - low negative emotion is much higher than that of students with low motivation and belief - high negative emotion, therefore, it can positively predict that the factors of students' metacognitive regulation include the level of students' self-efficacy and the value of their tasks [15]. In the learning process, students who use more motivation regulation strategy maintain a high level of motivation, and motivation level is one of the most important conditions for students to self-regulate.

3. METHODOLOGY

3.1 Study on the general characteristics of College Students' learning motivation, metacognitive regulation and learning engagement

3.1.1 Objective

To explore the general characteristics of the three, and to analyze the differences between the three when the gender and grade changes.

3.1.2 Method

A questionnaire survey was conducted among college students in a suitable class, and 381 questionnaires were sent out, and 336 valid questionnaires were collected. The basic information of the students involved in the survey is shown in table 1.

Table 1: The basic information of the participants

Variable	Category	Sample (people)	The percentage (%)
Gender	Male	91	27.1
	Female	240	71.4
Grade	Freshman	24	7.1
	Sophomore	214	63.7
	Junior	88	26.2
	Senior	5	1.5

Research tool: motivational regulation strategy, a total of 30 questions, which are divided into five parts: value regulation, performance objectives regulation, self-reinforcement, learning environment construction, situational interest regulation and mastery goal regulation. Metacognitive regulation strategy and self-efficacy sense use scale in the questionnaire of motivation and learning strategies, which has 11 and 8 questions respectively. Task value uses scale in the questionnaire of online learning value and self-efficacy sense, which has a total of 6 questions. Learning

engagement is divided into vitality, dedication and focus three aspects, with a total of 17 questions.

Data processing: to use data software for data entry and management, use statistics to conduct t test and reliability analysis, and conduct confirmatory factor analysis.

3.2 The relationship among online learning motivation and belief, motivational regulation and learning engagement, metacognitive regulation of college students in blended course

3.2.1 Objective

To explore relationship among self-efficacy sense, task value, motivational regulation and metacognitive regulation of students in network learning environment and to understand the effect of motivational regulation, and the facilitating effect of motivational factors in self-regulation on learning engagement.

Research methods, research tools and data processing are the same as the relevant content in 3.1.

4. RESULTS ANALYSIS AND DISCUSSION

Through the above investigation, we have obtained results of the experiment, and now we need to analyze and study the results and get the final results. Table 2 shows the general situation of students' learning motivation beliefs, metacognitive regulation, learning engagement and motivational regulation, figure 2 shows the histogram expression.

Table 2: College students' network learning motivation beliefs, metacognitive regulation, learning and motivation to adjust the overall situation

	M	SD
Task value	4.85	0.95
self-efficacy	4.59	0.91
Master control target	5.08	0.92
Value adjustment	4.97	0.89
Learning environment to build	4.96	0.88
Expressive objectives	4.94	0.99
Situational interest adjustment	4.69	0.88
self-reinforcing	4.60	1.06
Motivation to adjust	4.87	0.72
Metacognitive regulation	4.68	0.71
Study Engagement	4.12	0.86

Figure 2: College students' network learning motivation beliefs, metacognitive regulation, learning and motivation to adjust the overall situation

Through the above data, it can be obtained that in blended courses, college students can perceive higher value of task in network learning, they are also very confident in their ability of grasping the knowledge content in network classroom. Students would show high levels of learning engagement in learning, also conduct active planning, monitoring and regulation in the learning process, what is more important is that the students would regulate their own level of motivation actively in the

learning process.

Table 3 shows the mean differences test in each variable inspection of male and female students. Figure 2 is the histogram expression, indicating the differences of metacognitive regulation, learning engagement and motivational regulation of college students from different gender and grade when learning online.

Table 3: Male, female college students in each of the variables on the mean value difference test

variable	gender	M	SD
Metacognitive regulation	M	4.58	0.89
	F	4.70	0.64
Study Engagement	M	4.15	0.95
	F	4.12	0.83
Motivation to adjust	M	4.70	0.82
	F	4.94	0.67
Value adjustment	M	4.77	1.03
	F	5.05	0.83
Expressive objectives	M	4.69	1.16
	F	5.03	0.90
self-reinforcing	M	4.51	1.06
	F	4.64	1.04
Learning environment to build	M	4.79	0.95
	F	5.03	0.84
Situational interest adjustment	M	4.63	1.02
	F	4.72	0.83
Master control target	M	4.84	1.01
	F	5.17	0.87

Figure 3: Male, female college students in each of the variables on the mean value difference test

From the above data, we can find that ensemble average of girls' motivational regulation is significantly higher than of boys, and girls' use frequency of motivational regulation strategy is significantly higher than that of boys. Girls are more likely to be regulated by value, performance objectives, environmental construction and mastery goal. Similarly, the effect of grade is not significant, and there is no significant difference in the level of the use of the relevant strategies of different grades of college students in the network learning.

Similarly, through above experiments it is found that the performance objective regulation and the learning environment construction are more commonly used motivational regulation strategies and situational interest regulation strategy is used less, so we can concluded that, regardless of what kind of learning mode, test score is still very important, for students, the learning environment regulation is the most effective and direct strategy to preserve and enhance learning motivation. At the same time, for the gender differences of male and female students, female students' self-regulation is far better than that of boys.

Motivational regulation plays an intermediary role between the motivational beliefs and metacognitive regulation, which can effectively maintain and improve learning motivation, and ensure that students can

actively use a variety of regulation strategies to improve learning efficiency. And the students' self-regulation ability is the premise to ensure students' high level of learning engagement, the implementation of various strategies can make the students more focus on the learning psychologically.

5. CONCLUSIONS

With the deepening of education reform and the strong support of national policy, application of network learning in college students is more and more widely, so the study of the influence of learning motivation belief on learning engagement and metacognitive regulation strategies is particularly important, this is also the purpose of this study. In this paper, the author first defines the related concepts and theories, and carries on the research and analysis of the relationship between them, and then designs two experiments to study the general characteristics of learning motivational regulation, metacognitive regulation and learning engagement when university students learn online, and to study the relationships among them in blended courses, and through the comparative analysis of the experiment results, this paper verifies the positive predictive effect of learning beliefs on motivational regulation, and the effects of grade and gender are analyzed, which finds out the effect

of gender is significantly higher than that of grade.

We can get the following conclusions through the research of this paper: it needs to pay attention to the important position of motivational regulation in self-regulated learning, motivational regulation has a positive predictive effect, which can improve the level of learning motivation and guarantee the learning enthusiasm of the students; it needs to concern the differences between male and female students learning in the network environment, and to choose strategy and adjust accordingly, so that each student can select and use suitable regulation strategies as far as possible; as for the learning engagement under the network environment, it should start from motivation factors of self-regulated learning and take full consideration of the independent effect each factor and their comprehensive effects; it needs to pay attention to adjust the settings of network course for the students' individual need, so as to optimize the students' experience and provide a better network learning process. Although this research has made some achievements, there are still some problems. In the future research, more research methods need to be used and the professional background of the person under test and the related network learning discipline should be classified to control, the effects of traditional classroom teaching model on network classroom also need to be studied.

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