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A Study of Factors Influencing College Students' Engagement and Retention in Learning

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Abstract: College students' learning engagement and retention is an important part of cultivating talents, which is the cornerstone of quality and sustainable development of colleges and universities. This study starts from students' learning engagement and retention, and investigates the six dimensions of learning engagement and retention - independent learning, environmental interaction, teacher-student interaction, student-student interaction, self-motivation, and learning retention - based on the academic situation of college students. It was found that a superior learning environment enhances students' learning initiative, thus increasing learning engagement. Students' self-internal drive and initiative have a stronger effect on students' learning engagement and retention. Therefore, teaching methods can be optimized to improve the learning environment for students and support teachers in encouraging students.

1. Introduction

1.1. Background of the study

Jerome Seymour Bruner, a famous American educational psychologist and educator, said, “Learners should take the initiative to acquire knowledge by engaging themselves actively in the learning process rather than passively accepting it.” The degree of students' participation in the classroom directly affects the quality of teaching and students' learning [1]. In some contemporary university classrooms, many students are accustomed to the “water class”, college students play with cell phones in class, the phenomenon of dozing off is more common, the degree of participation is very low, and many college students just want to get a diploma, rather than really want to learn knowledge. As a result, the retention rate of students is often not too high, students do not listen carefully in class, and they are unable to memorize and review their knowledge after class. In order to gain a deeper understanding of this phenomenon, this study decided to investigate some classes in Yunnan Normal University, statistically analyze college students' learning engagement and retention rate, and propose corresponding coping strategies and suggestions.

1.2. Literature review

1.2.1. Student Learning Engagement and Retention Profile

Since the 21st century, more and more studies have begun to focus on college students' learning engagement. Students' learning engagement is different from students' involvement or participation; learning engagement includes not only behavioral participation, but also students' input in cognitive aspects and affective aspects. Jennifer A. Fredricks and others divided learning engagement into behavioral engagement, affective engagement and cognitive engagement, which refer to the degree of college students' involvement in learning, the degree of interest and the degree of meeting the assessment requirements. George D. Kuh and other scholars pointed out that learning engagement refers to the time and energy that students devote to university-specified activities and other activities that contribute to the realization of expected gains, and he believed that student engagement mainly refers to the degree of learning participation, including the degree of academic challenge of college students, active and collaborative learning, faculty-student interactions, enriching educational experiences, and the supportive campus environment in the five dimensions [2][3].

1.2.2. Insufficient research

Scholars at home and abroad are currently conducting more research on online learning and students' learning engagement in primary secondary school stage, and there are fewer studies on college students' learning engagement in offline learning, and some of the studies only focus on one aspect of the influencing factors, which is not comprehensive enough, so this study will analyze the students' engagement and retention on the basis of the previous researchers and give the corresponding suggestions.

2. Research design

2.1. Purpose and process of the study

In this study, 73 undergraduate students majoring in Educational Technology in the College of Information Technology of Yunnan Normal University were selected to explore their learning engagement in the classroom and learning retention after class, to analyze the possible influencing factors of college students' learning engagement and retention, and to make corresponding suggestions.

2.2. Questionnaire design and composition

The dependent variables of this study are college students' learning engagement and retention, and this study refers to many scholars' definitions and questionnaires about learning engagement, and combines the characteristics of contemporary college students to formulate the “College Students' Learning Engagement and Retention Questionnaire”, which is divided into the following six dimensions: independent learning, environmental interaction, teacher-student interaction, student-student interaction, self-motivation, and retention of learning. Among them, two questions were set in the dimension of independent learning, which were mainly about students' reviewing and previewing in class; two questions were set in the dimension of environmental interaction, which were mainly about the influence of the classroom atmosphere or activities on students' interest in learning; two questions were set in the dimension of teacher-student interaction, which were about the content of students' discussions with the teacher and the content of their presentations on the stage; and two questions were set in the dimension of student-student interaction, which were mainly about

students during group discussions in the classroom; 3 questions were set in the dimension of students' self-initiative, mainly to explore students' individual initiative; and 2 questions were set in the dimension of learning retention, which was used to investigate the extent of students' memorization of knowledge after class.

The options of the questionnaire questions were set as a five-level ordinal variable, and the questionnaire categorized the options as “always”, “often”, “sometimes”, “seldom”, “never”, and “very consistent”, “fairly consistent”, “generally consistent”,“not very consistent” and “very inconsistent” on a scale of 1-5.

2.3. Questionnaire reliability and validity analysis

In this study, questionnaires were prepared using the Questionnaire Star platform, and 73 students from Yunnan Normal University were surveyed, of which 73 questionnaires were sent out and 73 valid questionnaires were retrieved, and SPSS30.0 was used to analyze the reliability of the questionnaires, and the results are as follows.

Cronbach's Alpha coefficient reliability test is more commonly used to assess the stability of the questionnaire, when the detected reliability is greater than 0.5, it means that the reliability of this questionnaire is qualified, and greater than 0.7 indicates that this questionnaire has good reliability[4]. Therefore, the reliability test was conducted on the questionnaire scale, and the test results are shown in TABLE 1: $\alpha = 0.925$, which is greater than 0.7, indicating that this questionnaire has high stability and reliability, and good reliability. Then the validity was tested, when the KMO and Bartlett test coefficient>0.7, significance<0.05, it means the validity is qualified, the validity test result is shown in TABLE 2: KMO and Bartlett test coefficient=0.906, significance<0.001, it meets the conditions, the test results of reliability and validity are qualified.

Table 1: Results of Reliability Measures

Cronbach' s Alpha Coefficient Test	
Cronbach' s Alpha	Terms
0.925	14

Table 2: Results of validity measures

KMO and Bartlett' s test		0.906
Bartlett' s test of sphericity	Approximate chi-square	565.969
	Degree of freedom	91
	Significance	<0.01

3. Analysis of results

3.1. Descriptive Analysis of Student Engagement and Retention in Learning

The options in the questionnaire set up in this study are scored from 1-5, where 1 represents the higher the students' learning participation, and 5 represents the lower the learning participation. 6 dimensions of the university students, namely, independent learning dimension, environmental interaction dimension, teacher-student interaction dimension, student-student interaction dimension, learning motivation dimension, and learning retention dimension, are now descriptively analyzed, as shown in TABLE 3:

From this table, it can be seen that the students' overall engagement profile is greater than 2 points, indicating that students' learning engagement in the classroom is more average and needs to be improved. The mean value of students' independent learning is close to 3, which indicates that

students' initiative to conduct independent learning after class is not high enough. The mean value of the environmental interaction dimension is less than 2.5, which indicates that the learning environment and classroom atmosphere still have a greater impact on students' learning participation, and a good learning environment can improve students' learning efficiency. The mean values of the three modules of teacher-student interaction, self-internal motivation and learning retention are all around 2.8, indicating that the frequency of students' interaction with the teacher and the degree of their memorization of the knowledge in the class are relatively average, and the students' self-internal motivation is at a medium level, which can ensure the normal completion of their studies, but it is not yet at the level of excellence. The mean value of the student-student interaction dimension is around 2.5, which is slightly better than the teacher-student interaction, and students are more willing to have student-student interaction.

Table 3: Descriptive analysis of students' engagement and retention in learning

	N	M	SD
Overall Status	73	2.73	1.83
Self-directed Learning	73	2.95	1.43
Environmental Interaction	73	2.41	1.09
Teacher-Student Interaction	73	2.86	1.28
Student-Student Interaction	73	2.58	1.22
Self-Integrated Motivation	73	2.88	1.23
Retention of Learning	73	2.81	1.1

3.2. Correlation Analysis of Student Learning Engagement and Retention Rates

Table 4: Correlation analysis

Relevance						
	Self-directed Learning	Environmental Interaction	Teacher-Student Interaction	Student-Student Interaction	Self-Integrated Motivation	Retention of Learning
Self-directed Learning	1					
Environmental Interaction	.486**	1				
Teacher-Student Interaction	.625**	.548**	1			
Student-Student Interaction	.585**	.762**	.601**	1		
Self-Integrated Motivation	.780**	.636**	.739**	.708**	1	
Retention of Learning	.784**	.582**	.629**	.650**	.736**	1
** Significant correlation at the 0.01 level (two-tailed).						

In this study, the questionnaire was correlated using SPPS, and the method chosen was Pearson correlation analysis. As can be seen in TABLE 4, the correlation coefficients between the six dimensions listed, namely independent learning, environmental interaction, teacher-student interaction, student-student interaction, self-internal drive, and learning retention, are all with two stars, which indicates that all of these dimensions are correlated with each other two by two. The correlation between the dimension of self-directed learning and the dimensions of self-internal drive and learning retention is around 0.78, which is a high correlation. The correlation between the environmental interaction dimension and the student-student interaction dimension is also high, implying that a good learning environment promotes student-student interaction. The correlation between the dimension of intrapersonal drive and the dimension of student-teacher interaction is also higher than the correlation between the other dimensions, which means that students with high intrapersonal drive are more able to have the courage to engage in conversation with their teachers and are eager for knowledge and progress. The correlations between the other dimensions are also

higher, with positive correlations between the variables.

3.3. Regression analysis

The data were analyzed by linear regression with students' learning retention as the dependent variable and independent variables of independent learning, environmental interaction, teacher-student interaction, student-student interaction, and intrapersonal drive, and the results are shown in TABLE 5.

According to the data, it can be seen that the R2 is 0.689, which indicates that these five independent variables can explain the amount of variation in learning retention rate of 68.9%, and that the students' learning retention rate by 68.9% is caused by independent learning, Environmental Interaction, Teacher-Student Interaction, Student-Student Interaction, and Self-Internal Motivation factors[5].

The regression coefficients of independent learning, environmental interaction, teacher-student interaction, student-student interaction, and self-internal motivation are all positive, indicating that they can all positively affect learning retention. The VIF test values between each variable are less than 5, indicating that there is no multicollinearity between the independent variables.

In summary, the resulting regression equation is: learning retention=0.475*self –learning + 0.127*environmental interaction + 0.084*teacher-student interaction + 0.125*student-student interaction + 0.092*self-endogenous drive

Table 5: Regression analysis

Coefficient a							
model	Unstandardized coefficient		Standardized coefficient	t	significance	tolerances	VIF
	B	standard error	Beta				
(Constant)	0.265	0.229		1.159	0.251		
Self-directed learning	0.475	0.101	0.517	4.687	<.001	0.383	2.614
Environmental interactions	0.127	0.118	0.116	1.073	0.287	0.396	2.522
Teacher-student interactions	0.084	0.097	0.089	0.863	0.391	0.435	2.301
Student-student interactions	0.125	0.108	0.138	1.161	0.25	0.33	3.034
Intra-self-drive	0.092	0.134	0.096	0.687	0.494	0.239	4.181
R2: 0.689			F: 29.662			P<0.01	
a Dependent variable: learning retention rate							

4. Summary of the study

4.1. Current Status of College Student Learning Engagement and Retention

After investigation and research, it is found that the overall situation of current college students' learning engagement is good, but there is still a lot of room to rise. College students show good interaction, but students' independent study after class is not yet good, and the correlation between the independent study dimension and the dimension of self-internal drive and the dimension of learning retention is high, which indicates that students' better self-internal drive will lead to their independent study after class, thus improving their own learning retention. The correlation between the other dimensions is also high, which indicates that the dimensions are directly reinforcing each other, and that a good learning environment can increase the interaction rate in the classroom, as well as the students' learning initiative. A high frequency of interaction can also improve students' learning engagement and make them more able to absorb classroom knowledge.

4.2. Factors Influencing College Student Learning Engagement and Retention

Through descriptive analysis, correlation analysis and regression analysis of the influencing

factors, the following results were obtained:

From the descriptive analysis of the questionnaire, it can be seen that the surveyed students' participation in learning is at a moderate level, in which independent learning is more general, and teacher-student interaction and student-student interaction are better.Autonomous learning, environmental interaction, teacher-student interaction, student-student interaction, and self-initiated motivation have a positive and significant effect on students' learning participation and retention, and students' self-initiated motivation and initiative are the key factors affecting students' learning participation and retention.

Learning environment and classroom atmosphere have a greater impact on students' learning participation. A good learning environment and a relaxed and lively classroom atmosphere can promote students' learning, improve students' initiative and promote interaction in the classroom, so to improve students' learning participation, we can start from the classroom environment.However, with the richness and openness of online learning modes, students can also be encouraged to engage in self-study offline to check for gaps and thus enhance their engagement with the learning program[6].

There are different degrees of influence between independent learning, environmental interaction, teacher-student interaction, student-student interaction, self-internal drive, and learning retention, in which student initiative and internal drive have the greatest influence on learning participation and retention, and environmental influence has the greatest influence on student-student interaction.In contrast, the correlation between independent learning and environmental interaction was lower than between the other dimensions, suggesting that the learning environment does not have a significant impact on students' independent learning after school.

4.3. Strategies for improving college students' learning engagement

Resourceful classroom environment and relaxed learning atmosphere can improve college students' learning participation, promote the interaction between students and students directly, between students and teachers, and between students and the environment, and create students' favorite teaching situations, which can enable students to better understand and internalize the content of the class [7]. And with the progress of science and technology, the teaching environment is becoming smarter and smarter. Teachers can reasonably utilize tools such as smart classrooms to design the classroom and set up game activities, so that students can participate more fully in the classroom.

More designer-student and student-student interactions in teaching sessions can also improve students' learning participation. Interactive learning can make students more deeply involved in the classroom and think deeply, dialectically, discuss and understand what they have learned, which can enable them to better master their knowledge[8].

Teachers can also encourage students to teach, praise students more when they answer questions and complete tasks, which can boost students' self-confidence, thus inadvertently improving students' learning initiative and prompting students to be more motivated to learn independently.The increased willingness to learn on their own helps students to acquire knowledge and also facilitates learning retention.

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