

FACTORS AFFECTING THE LEARNING EFFICIENCY OF COLLEGE STUDENTS

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Abstract

As the last stage before talents move into the society, universities emphasize the autonomy and efficiency of knowledge learning more compared with primary and secondary school education. On the one hand, university course depth and the difficulty is higher, only in entry will face great challenges, especially for some difficult courses, students are generally poor, on the other hand, university courses often do not repeat course content, there is no such as primary and secondary schools and multiple rounds of review, combined with university hours is limited, students also need to learn different courses each semester, in a limited time to master more valuable knowledge, which also makes college students have to improve their learning efficiency and meet the needs of knowledge and time. In terms of theoretical research, many scholars also put forward the factors affecting the efficiency of college students' learning, which has more traditional external and internal environment analysis, ideas also combines the characteristics of times of information and noninformation factor analysis, enough to see the importance of the field of research and the importance of scholars in the field. This paper is based on relevant domestic and foreign research and learning efficiency, study experience, Theoretical definitions, such as learning methods, A questionnaire of learning experience based on college students' perception was issued to seven universities in Nanjing, Learning style questionnaire and learning efficiency questionnaire, The questionnaire content was subsequently recovered, The kmo analysis of the three sets of questionnaire data, basic characteristics analysis, gender and grade difference analysis, different grade difference analysis, and post-hoc multiple comparisons, Finally, three sets of questionnaires on learning efficiency and learning experience were integrated and analyzed, And to judge the learning efficiency and learning style, Level of association of learning experiences, In terms of theoretical significance, it can improve the depth and breadth of relevant types of research, And to provide researchers with theoretical references and available research tools, In terms of its practical significance, It can not only help Chinese universities to improve the learning efficiency of college students, At the same time, it can also provide the reflection of the teaching mode for colleges and universities.

Keywords: college students; learning efficiency; influencing factors

Introduction

Research background

As the last stage before talents move into the society, universities emphasize the autonomy and efficiency of knowledge learning more compared with primary and secondary school education. On the one hand, university course depth and the difficulty is higher, only in entry will face great challenges, especially for some difficult courses, students are generally poor, on the other hand, university courses often not repeat course content, there is no such as primary and secondary school simulation test and multiple rounds of review, combined with university hours is limited, students also need to learn many different courses each semester, in a limited time to master more valuable knowledge, it also makes college

students have to improve their learning efficiency and meet the demand of knowledge and time. And in terms of theoretical research, many scholars also put forward the factors affecting the efficiency of college students' learning, which has more traditional external and internal environment analysis, ideas also combines the characteristics of information and uninformation factor analysis, enough to see the importance of the field of research and the importance of scholars in the field.

Research meaning

The research significance of this paper can be divided into theoretical significance and practical significance. In terms of theoretical significance, this paper on the research at home and abroad review, at the same time, the learning efficiency learning experience and learning way concept is elaborated and based on this theoretical concept, on the one hand can provide theoretical reference for relevant researchers in the questionnaire, on the other hand also can provide researchers with available research tools, so as to improve the related types of research depth and breadth.

In terms of practical significance, we take learning experience learning way, and learning efficiency three sets of questionnaires, on the one hand, the three sets of questionnaire data KMO analysis, basic characteristics analysis, gender differences, age differences, and after multiple comparison analysis, on the other hand, the correlation between the three sets of questionnaires, thus get the link of learning efficiency and learning experience, on the one hand, can help improve the learning efficiency of college students, on the other hand also can provide teaching mode for college reflection.

Literature review, both at home and abroad

Domestic research review

At present, there are many types of research on the learning efficiency of college students in China, covering a wide range of areas, including not only model research and theoretical definition research, but also empirical research. Zhan Tangsen, Cheng Hang, Yang Lihua (2018), in two documents, Using the DEA model based on grey association as well as the DEA model for cluster analysis, To construct and set up the available models for the learning efficiency of college students, To quantify the level of learning efficiency of college students, Among them, the DEA model based on cluster analysis can effectively distinguish between different types of students, and include the vast majority of types of college students, and also have the complete ranking ability to facilitate the quantitative evaluation of the learning efficiency of college students, While the DEA model based on the grey association, Relying on the gray correlation degree to set the sample set and judge the course teaching problems according to the course and graduation design correlation, And college students; Qiu Shubing, Wang Zhanglin (2017) changed his research thinking, The correlation analysis between mobile Internet and the classroom learning efficiency of college students, And the empirical study on the accounting students of Jilin Engineering Technology Normal College, Understand the correlation between mobile Internet and college students' classroom learning efficiency, At the same time, the problems in the use of mobile Internet to carry out classroom teaching, Finally, based on the perspective of improving the classroom learning efficiency of college students, the mobile phone mobile Internet application mode is proposed; high and new, Wang Yantao (2017) adopted the field observation method to observe and analyze the learning efficiency of college students in many universities, And I have obtained the problems existing in the learning efficiency of college students, Including poor learning initiative, insufficient learning understanding, low recognition of professional courses, And based on the current problems of college

students' learning efficiency, we put forward the corresponding solutions; Wang Huan, Chen Yu dao, Shan Huimei (2021) and others have conducted an integrated analysis of the classroom learning efficiency of college students mentioned in the relevant domestic research, And to make a summary, It is believed that the main reasons for the low classroom learning efficiency of college students can include the student side, the teacher side and the school side, Then we propose solutions to the problems existing in the three directions, Including students 'correct learning attitude, teachers' improve their professional ability, improve students' principal status in the classroom, provide students with a good learning environment, make full use of online teaching platform to realize online and offline mixed teaching mode, bring task-based teaching into the classroom, and improve the classroom teaching evaluation system; Zheng Yan (2019)

Based on the big data background, This paper analyzes the current learning efficiency of college students and expounds the important value of big data background for college students, Including helping college students to build a knowledge system, Improve the degree of expansion of college students' knowledge, strengthen their innovation ability and other dimensions, Finally, based on big data technology, the multi-dimensional college education mode to improve students' learning efficiency is proposed; Zhong Yuanbo (2019) changed his research direction from classroom learning to independent learning, And focuses on the reasons for the low efficiency of college students' independent learning, Including the failure of online platforms to play effective constraints, the failure of independent learning knowledge content to arouse students' interest, and the lack of correlation of online platform independent learning content with majors, Finally, it improves the efficiency of college students' independent learning.

A review of foreign studies

Foreign research direction is different from domestic ones. Compared with domestic ones, foreign countries prefer more theoretical research, and the research direction can be roughly divided into three parts: learning experience, learning method and learning efficiency.

Firstly, K L Wilson studied the correlation between learning experience and learning style, and considered the significant correlation between learning environment, teacher evaluation and student burden as the scope of the teaching environment. M. A. Church conducted a questionnaire survey of college students in his article, and obtained the correlation data of students' self-achievement and classroom environment in the learning experience.

Next, In terms of the learning style, John B Biggs is based on learning-related theory, as well as psychological theory, The students' learning behavior is expounded from three perspectives, It also proposes a 3P learning model, At the same time, it is believed that the learning mode can include three parts: learning motivation, learning strategy and achievement learning; Brown G T L (2003) studied Hong Kong college students in Hong Kong, Twenty-six college students from Hong Kong, China were randomly selected and given questionnaires and interviews, Get the students' behavior and psychological activities in learning, Students' learning behavior is summarized into eight directions, including negative emotions, competition and burden.

Last, In terms of learning efficiency, Yang L J, Ling H X (2013) in Comparing the Tool of Students' Learning Efficiency, The advantages and disadvantages of each student learning efficiency tool; David M and Tasko T A (2015) determine learning efficiency, Self-regulatory learning and the frequency of information technology as three research variables to obtain relevant data, Judging the correspondence between the three variables, Finally, the number of self-regulated learning and the frequency of information technology use

are significantly positively related with students' learning efficiency, There is no significant connection between the number of self-regulated learning and the frequency of information technology use; Liu H (2011) conducted an empirical and theoretical dual study of the undergraduate teaching situation of AAC & U, At the same time, relying on the research data, it is found that the current undergraduate teaching methods in American universities have insufficient attention to learning efficiency and insufficient learning motivation, Finally, the teaching reform idea of AAC & U undergraduates is proposed.

Generally speaking, the research direction of home and abroad varies greatly. China is more inclined to micro-innovate and supplement the existing research results, while foreign countries prefer to conduct innovative analysis with existing actions. However, but in terms of the number of studies, China's research is obviously dominant.

Related concept elaboration

Learning efficiency

The so-called learning efficiency, according to the definition of Zhan Tangsen, Cheng Hang, Yang Lihua (2018), learning efficiency is "the optimal learning effect in the shortest time", while Wang Yantao (2017) believes that learning efficiency is "a form of showing the slow learning speed". Referring to the existing research, in the definition of learning efficiency, the concept of learning efficiency is confirmed as "the expression of the highest knowledge understanding, mastery and application ability in the shortest time".

Study experience

About the definition of learning experience, the current academia has no clear and accurate concept, and from the perspective of linguistics to analyze learning experience, can be considered as learners in their learning career contact with material and non-material conditions, at the same time these conditions will be the learners learning behavior and a direct or indirect impact on learning psychological activities.

Learning style

As for the definition of learning mode, Marton and Saljo believe that learning mode is "the thinking and action mode used by learners to understand, master and apply knowledge". Wang Yang (2017) believes that learning mode is "the preferred behavior mode and behavior characteristics shown by individuals when conducting learning activities". In this paper, the definition of learning style refers to the high bright and Wang Yang's definition.

Literature reviews

Study object definition

To study the factors affecting the learning efficiency of college students, this paper choose Nanjing seven university as the research object, at the same time using random selection and distribution mode, the questionnaire with network platform to seven college students, the sample size of each school, adjust according to the total number of students, and follow the principle of stratified sampling method.

Research tool selection

A learning experience questionnaire based on college student perception Learning experience is the material and non-material conditions that learners are exposed to in their learning career, and these conditions will have direct or indirect effects on learners' learning behavior and learning psychological activities. Learning experience does not

cover all aspects of the teaching environment, but focuses on the main factors of classroom teaching, which are based on students' intuitive feelings. This paper will be based on the college students' perception of learning experience questionnaire as one of the research tools, set 36 questions, the content is given priority to with college teaching quality, each question take Likert 5 level scale mode, investigate and analyze the students as the quality subject, at the same time according to the learning experience questionnaire students' data to judge the university teaching quality and teaching quality on students' learning efficiency.

Questionnaire based on college student perception Learning mode is "the preferred behavior mode and behavior characteristics shown by individuals in learning activities", and learning mode can be roughly divided into learning motivation and learning strategy, motivation is the motivation of students to use learning strategy, and learning strategy is the actual direction of learning motivation into behavior. In this paper, the questionnaire based on college students was used as one of the research tools, with a total of 20 questions. The content can be divided into two parts: deep and surface learning, and each question adopts the Likert 5-level scale mode.

Learning efficiency questionnaire based on university student perception According to Zhan Tangsen, Cheng Hang and Yang Lihua (2018), learning efficiency is "completing the optimal learning effect in the shortest time", and high-tech. Wang Yantao (2017) believe that learning efficiency is "a form of showing the fast and slow learning speed". Referring to the existing research, in the definition of learning efficiency, the concept of learning efficiency is confirmed as "the expression of the highest knowledge understanding, mastery and application ability in the shortest time". This paper takes the learning efficiency questionnaire based on college students' perception as one of the research tools. On the one hand, we understand the students' own learning efficiency from the perspective of students themselves; on the other hand, the learning efficiency, learning experience and learning methods are compared and analyzed, and the core arguments of this paper are obtained. The learning efficiency questionnaire based on college student perception contains 6 questions and adopts the Likert 5-level scale model.

Questionnaire distribution and implementation

Questionnaire distribution

The questionnaire issued using gold data network platform, before the university and seven administrators communication to obtain permission, forward to the administrators, then issued by the administration to the college guide, adopt voluntary filling mode, at the same time in the communication with the management personnel sampling ideas, ensure stratified sampling and random sampling characteristics. In this survey, 1400 questionnaires were distributed, and 1340 questionnaires were collected, with a recovery rate of 95.71%, and 1307 valid questionnaires, with an effective recovery rate of 93.36%.

Demographic data of the study subjects Demographic data of the current study subjects are shown in Table 2-1.

Table 2-1 Demographic data of the study subjects

As can be seen from Table 2-1, the number of men in this questionnaire is lower than that of women, while in the grade of second to fourth grades. Among male college students, the number of fourth college students was the highest, reaching 14.08%, while among female college students, the number was the highest, reaching 21.81%.

Reliability test of the study tools

Since this study used three sets of questionnaires and a large number of options for each scale, a reliability test of the study instrument is required to ensure that the

questionnaire data are available for the study. In this study, Cronbach's α reliability coefficient was used as the reliability test of the research tool. More than 0.8, and when the reliability was considered above 0.7, the validity coefficient test was less affected. Study tool reliability test data are shown in Tables 2 – 2.

Table 2-2 Study tool reliability test data

As can be seen from Table 2-2, the Cronbach's α reliability coefficient of both learning experience, learning method and learning efficiency questionnaire is higher than 0.8, and the learning experience questionnaire has the maximum coefficient of learning efficiency questionnaire and the lowest reliability coefficient, which is related to the direct correlation between the reliability coefficient and the number of items; and the overall reliability coefficient can be used to support this study.

Analysis of research results

Analysis of learning experience data based on college student perception

KMO analysis

In order to ensure that the learning experience data based on college students have subsequent research value, KMO and Barrett sphere tested the questionnaire data, and obtained KMO, approximate chi-square, df and Sig values, which can be considered available when the km value is greater than 0.8. The KMO test data for study experience are shown in Table 3-1.

It is known from Table 3-1 that the KMO measure of 0.904 > 0.8 in the university student-based perceived learning experience data represents that the data can be used for subsequent studies.

Basic characteristics

After completing the KMO analysis, the study analyzed the course learning experience, with specific data shown in Tables 3-2.

Table 3-2 Basic characteristic data of learning experience

As can be seen in the Table 3-2 data, Except for the appropriate pressure classification, The average value of the other dimensions is above 3, Meanwhile, the mean value of all dimensions exceeds the average score line, The overall mean value reached 3.302, It shows that the students' learning experience is relatively good; At the good teaching classification reached 3.338, To prove that students have a high degree of adaptation to the current teaching mode; At the basic skill classification average reached 3.547, To prove that the students' basic skills mastery effect is relatively good; At the appropriate pressure classification the average value was 2.924, Above the average score line, To prove that the students accept the learning pressure is more reasonable; At the reasonable evaluation classification mean was 3.305, To prove that the evaluation received by the students is more pertinent; At the clear target classification the average was 3.401, To prove that students are more clear about their own goals in the learning process. Generally speaking, the students have a relatively good learning experience.

Sex difference group statistics

In order to determine the different gender and the differential influence of the different classification data, this paper conducts statistical analysis for the different gender difference groups, in order to determine the mean standard difference of their existence. Specific data are shown in Tables 3-3.

As can be seen from Table 3-3, the scores of different genders have a certain gap, respectively. Meanwhile, the average value of male learning experience in all dimensions

is higher than that of women, showing the characteristics of high men and low women, which shows that the average learning experience of men is generally better than that of women.

Analysis of different gender differences

To further determine the difference in the learning experience of different gender students, the Levene-test for variance equation and the mean-equation t-test are conducted for different gender. The specific gender difference data are shown in Table 3-4.

Table 3-4 Data on different gender differences

As can be seen from Table 3-4, in terms of the variance equation F value, only the target dimension F value is high, while the F value of other dimensions is not significant; in the mean T-test, the Sig value of appropriate pressure and reasonable evaluation is 0, and the other dimensions are less than 0.01, proving that the classifications are significantly different between different genders.

Data analysis of learning methods based on college students' perception

KMO analysis

In order to ensure that the learning method data based on college student perception has subsequent research value, KMO and Barlett sphere test the questionnaire data, and KMO, approximate chi square, df and Sig data can be considered available when the km value is greater than 0.8. Learning experience KMO test data are shown.

It is known from Tables 3-5 that the KMO measure of $0.867 > 0.8$ in the university student-perceived learning style data represents that the data can be used for subsequent studies.

Basic characteristics

As can be seen from the data in Table 3-2, students prefer deep learning in various learning methods, and the average value of learning motivation is the highest among all dimensions, while the score value of deep learning and deep motivation is the highest in all dimensions, proving that the deep motivation opportunity directly affects the deep learning level.

Sex difference analysis and t-test

In order to determine the differential influence of different gender on the different classification data of learning behavior, this paper conducted a statistical analysis for different gender difference groups to determine the mean standard error. The group statistics are shown in Table 3-7; to further determine the learning behavior of students of different genders, the variance equation Levene test and mean equation t-test for different genders are shown.

the SIG value of the levene test result is higher than 0.05, indicating the homogeneity of variance; the SIG value of 0 indicates that the deep spraying and surface methods between men and women are higher than women, indicating that male students are more inclined to choose the deep way and have stronger ability of thinking and analysis integration.

Analysis of the learning efficiency questionnaire based on college student perception

KMO analysis

In order to ensure that the learning efficiency data based on college students' perception has subsequent research value, KMO and Barlett sphere tested the questionnaire data, and obtained KMO, approximate chi-square, df and Sig values. The questionnaire data can be considered available when the KMO value is greater than 0.8. Learning efficiency KMO test data are shown.

that the KMO measure of $0.922 > 0.8$ in the learning efficiency data based on the college students' perception means that the data can be used for subsequent studies.

Basic Characteristics and Gender

After completing the KMO test, the basic features of the learning efficiency data are required. In terms of the basic characteristics of learning efficiency, the average value is 3.342, in which the learning efficiency data are different. The specific data are shown in Table 3-10.

As can be seen from Table 3-10, the mean average of men is higher than that of women, and for the specific reasons, the descriptive statistical analysis of learning efficiency, learning style and learning experience is still needed.

Descriptive statistics of learning efficiency, learning style and learning experience In terms of the correlation between learning efficiency and learning style and learning experience, the specific data are shown in Tables 3-11.

Table 3-11 Descriptive statistics of learning efficiency and learning style and learning experiences Can be seen from table 3-11, both learning experience learning way, or learning efficiency, male average are higher than women, and learning efficiency is learning experience and learning way directly, so can think men because of learning experience and learning way, so learning efficiency is higher than women, but also proved the learning experience and learning style and strong correlation of learning efficiency.

Conclusion and suggestion

Conclusion

According to the study data, In terms of learning experience, learning style, and learning efficiency, Men all averaged higher values than women; In terms of learning experience data, men generally believe that they have a relatively good educational experience, Considering that both male and female students receive the same education, Therefore, men can be considered to have a higher degree of educational experience acceptance; In terms of the learning style, Men men mean higher than women, And showing a higher level in the deeper ways, It can indicate that men are more inclined to use deep learning methods when learning, Women tend to prefer surface learning; Finally, combined with the differences in the mean values of the learning efficiency, It may be that because men have deeper learning styles, And they have a good acceptance of the learning environment and educational experience, Therefore, a higher learning efficiency can be obtained, It also proves that the learning efficiency and the learning experience and the learning style have some correlation.

Suggestions

Given the differences in learning efficiency across the genders, Colleges and universities should pay attention to questioning female college students and provide more comfortable and detailed teaching for them, For example, in the classroom teaching,

intentionally guide female college students to think about the deep content of knowledge, And try to use different ideas to solve the problem; When practicing after class, Specifically for female students to provide 1-2 deep reminders for students to complete, So as to stimulate the deep learning style of female students, Further improve the learning efficiency; For all of the college students, Teachers should also focus on improving students' deep learning motivation and deep learning strategies, to analyze knowledge and apply knowledge from a more comprehensive perspective.

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