

Analysis of Differences in Independent Learning Ability Based on Formative Evaluation Indicators—Taking a Medical College as an Example

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Abstract: The cultivation of students' independent learning ability is formed based on the formative evaluation index system, and it is also the need of college students to continuously improve their self-abilities. In view of this situation, this paper will take a medical college as the research object and use the form of questionnaire to analyze the differences in independent learning ability based on formative evaluation indicators. The methods used in this process are programming in python. In the analysis, it is found that medical students have some problems in learning strategies. In order to fundamentally solve related problems, traditional evaluation methods need to be optimized and perfected. It needs to take into account the individual differences of students, analyze and research teachers in different dimensions and standard factors. The conclusion is that the evaluation should be transformed methods, because it can provide space for independent development, and pay attention to the cultivation of students' learning strategies.

1. Introduction

In the process of social development, the evaluation of students' learning status is mostly based on achievement tests at different stages. This is a manifestation of formative evaluation. Although this method of evaluating students based on grades has a very positive effect, it is difficult to arouse students' interest in learning. The formative evaluation system is different. It is a modern and effective means, which can encourage students to continuously conduct independent learning, and let students understand that independent learning is an ability to be responsible for their own learning, so as to promote the comprehensive ability of medical students in China and level of development.

Current situation of independent learning in medical colleges in China Since the last century, the reform and innovation of China's education has been particularly important. In order to better meet the needs of modernization, the application of formative evaluation has gradually expanded. Formative assessment is a kind of modernization that can better judge and check teaching programs and plans, so as to detect existing problems and optimize the ongoing educational process, thereby improving the quality of education. Formative evaluation needs to follow the process of evaluation feedback to accurately understand the actual situation of each link of education and teaching, and

finally achieve the purpose of cultivating ability[1]. At present, many colleges and universities are building a formative evaluation system to promote the reform of educational evaluation. This paper will take a provincial medical college in Sichuan Province as the research object, and analyze the situation of students' independent learning ability after the use of formative assessment.

2. Research object and analysis method

2.1. Research Object

This paper will take all the students of the College of Imaging as the survey object, and conduct a data survey on the grades, genders, origins of students when they serve as class cadres, and academic performance grade rankings of different professionals. Among them, in terms of independent learning, medical imaging majors are the best, with 614 students being able to conduct independent learning. This number accounts for 65.67% of all students, followed by medical imaging technology and biomedical engineering, with 220 and 101 students respectively, accounting for 23.53% and 10.80%. In terms of the grade distribution of independent learning students, in the three grades from 2016 to 2018, the number of independent ability has also increased year by year, which shows that the medical college has indeed made achievements in independent learning, and the effect is acceptable. In terms of gender, there are more girls than boys, and more urban students than rural students. It can be seen that students' ideology and education level also directly affect whether students have strong independent learning ability. In terms of the distribution of class cadres, there are more ordinary students. In terms of the distribution of grades, the middle and upper classes are the most, the lower middle class, the first 25% of the college, and the last 25% of the college.

2.2. Research Methods

The main method is the questionnaire survey, and the data is systematically entered after screening all invalid data. The method used in this process is python programming, which can perform T test and variance analysis on all data, and the analysis software is Jupyter Notebook in Anaconda Navigator 1.9.7. In addition, two dimensions of learning motivation and learning strategy are also selected for the self-learning measurement method used in the research process. Six standard factors are selected in each dimension, which will be improved and optimized according to the self-learning ability indicators in different situations. Finally a scientific and effective self-learning scale will be obtained. Each measurement aspect is divided into 5 grades in the table. 1 means completely disagree, 2 means somewhat disagree, 3 means not sure, 4 means somewhat agree, 5 means completely agree. The percentage of compliance represents the proportion of the total in each category (uncertain, relatively consistent, fully consistent)[2].

3. Research Analysis and Conclusion

3.1 Aggregate analysis

(1) Reliability and validity

The data obtained in this study are all real data in the real study, so the accuracy and science can meet the actual needs, and the final reliability is 0.9577, and the KMO / Bartlett spherical degree value is 0.9691 / 0.05.

(2) Learning motivation

In the table obtained after the study, the relevant scholars find that the proportion of the

corresponding ones reach 56.9%. Meeting this criterion is between full and comparative, while self-efficacy and extrinsic goals are 48.44% and 39.89%, respectively. After the calculation, the mean and standard deviation are 3.60007 and 0.94813. Based on this, the opposite results appear on the external target and the internal target. The maximum mean value is the internal target 3.947773, and the minimum value is the external target 2.961115.

(3) Learning strategies

In the overall analysis of self-learning ability, it is found that the proportion of overall compliance is relatively large, reaching 84.45%. Two of the dimensions have a total of 5 standard factors. The mean difference and variance are in normal standards, which are 3.42852 and 1.11751, respectively. The overall mean is under the learning motivation dimension, and the internal target reaches 3.94556.

3.2 Analysis of the Differences Between the Different Factors

(1) T test

In the dimension of learning motivation, it can be found that in the gender dimension, girls' independent learning ability is higher than that of boys. There is a very significant difference (P less than 0.01), while there is no statistical difference between urban and rural students (P greater than 0.05). In terms of statistical differences, there are statistical differences (P less than 0.05) in external goals, learning significance, and learning anxiety. In terms of learning strategies, there is no significant statistical difference as a whole. Among them, there is a statistical difference (P less than 0.05) in the difference of student origin. A student cadre has certain indicators in the dimensions of planning, summarization and evaluation. Statistical differences (P less than 0.05) also prove that work experience will have different degrees of influence on self-directed learning ability.

(2) Analysis of variance

In the survey, it can be seen that there is no serious difference in independent learning ability among students of different majors, but there are statistical differences in age and academic performance, among which academic performance is more serious. In addition, there is also a certain statistical difference in academic performance in learning motivation. At the same time, there is also a certain statistical difference in learning significance and general method[3].

(3) Research conclusion

In the process of analysis, it can find that after the college implements formative evaluation, students' independence has a certain impact on the source of students, gender, and whether they serve as learning cadres. Among them, according to the T-test analysis, gender has the greatest influence on learning motivation, and there is a significant difference like learning strategies. Among them, there are some differences in the learning motivation between the lower grade students and the upper grade students. In terms of professional nature, medical imaging is a medical specialty, and the other two are less related to medicine, but they are also very important fields. Therefore, the research targets are 614 people in medical imaging, 220 people in medical imaging technology, and 101 people in biomedical engineering. Based on this, the research results will also have certain limitations, which is also an important reason for the uneven situation.

All in all, the ability of independent learning has a certain relationship with many factors, so for medical colleges and other industries, analysis and research should be carried out from multiple perspectives. The influence of group differences cannot be ignored. Girls will be more affected by external factors in terms of gender. Therefore, they can be biased towards the shaping of their hands-on ability in the learning process, so as to stimulate their interests in learning, which is also based on the results of the survey data of rural and urban students. Students' independent learning ability is related to educational innovation and spiritual shaping, so it is very important.

4. The specific optimization path from traditional evaluation to formative evaluation index

4.1 Change the Evaluation Method

After several educational reforms, the college's teaching goals have begun to focus on cultivating students' comprehensive application ability, so that while cultivating cultural literacy, it can enhance students' ability to shape and better serve social development. The formative evaluation system should run through the entire training process of students, using the forms of mutual evaluation among classmates and students' independent and objective evaluation, so that students can understand their actual situation, and understand their shortcomings in learning. Only in this way can students better find ways to work hard in future learning, which also improves students' independent learning ability to a certain extent, and provide them with a good ability training environment in the process of exercising students' self-reflection and thinking. It can also create favorable conditions for their future study and employment. Teachers should also meet the needs of students in a timely manner after evaluation, help students improve their interests in learning, and further enhance students' learning drive.

4.2 Provide Independent Space for Development

Teachers can arrange the corresponding activities in the teaching process, improve students' work enthusiasm, such as speech contest, training projects. These activities not only provide students with certain space to work, but also help students in the process of activities to understand some substantive problems. These activities can scientifically let students enjoy the process of independent learning, the fun of mutual communication. In addition, teachers also need to strengthen students' group learning ability. When arranging relevant medical operations, they need to let students understand their own learning results, and reward those students who take the initiative to learn, so as to encourage them to show themselves to the greatest extent and conduct independent learning. At the same time, when teachers encourage students to learn independently, they need to do their own jobs as their own instructors to guide students to learn and avoid problems.

4.3 Pay Attention to the Cultivation of Students' Learning Strategies

Learning is inseparable from the correct method, especially in the study of medicine. During the investigation, it was found that many students have difficulty in correctly understanding the content they need to learn, and even have a negative psychology, which is not conducive to the normal learning of knowledge, nor is it conducive to the physical and mental health of students. Therefore, for students, the emphasis should be placed on the education of learning methods, so that students can learn in a good atmosphere. In this process, teachers should also increase communication with students, understand students' confusion in the learning process, and solve problems in a timely and effective manner.

4.4 Practical Training to Strengthen Students' Professional Skills

Teachers need to focus on the cultivation of students' medical professional skills in education and teaching. For example, the clinical nursing major should pay attention to the practical ability of students, which is difficult to reflect in the ordinary written test. This requires the use of formative evaluation for analysis. While the written test examines students' professional skills, teachers can combine theoretical knowledge with practice to strengthen students' teamwork ability and create

favorable conditions for students' development. Colleges can establish a complete evaluation system, which is directly related to the quality of formative evaluation. In the traditional evaluation method, it is necessary to optimize and improve, not only to take into account the personality differences of students, but also to analyze and research teachers in different dimensions and standard factors. Only in this way can teachers understand the situation of students and at the same time recognize the differences of teachers in different situations, so as to help colleges better optimize education and teaching for different majors.

4.5 Improve the Formative Teaching Evaluation System

For students, each person's learning ability and the degree of acceptance of knowledge are different, so teachers should improve their abilities. While using the formative evaluation system for teachers, colleges can establish a complete set of education and teaching evaluation systems. For teachers, they can work according to the relevant standards in the evaluation system, so that teachers can be more realistic in their education and teaching situation-centered. Colleges also need to conduct special research on formative evaluation, use relevant experience at home and abroad, strengthen teaching and research activities, and let students realize the reflection of independent learning ability in the formative evaluation system, so as to better complete independent learning. Teachers should really understand the differences of students in different latitudes, so as to optimize the existing teaching mode, help students learn independently, improve the quality of teaching, and achieve the purpose of cultivating students' abilities. For students, the evaluation system is an effective restriction and constraint on students, which will enable students to master the correct way in their daily independent learning. In addition, medical colleges must strengthen the construction of dual teachers, actively introduce excellent doctors through education policies, and establish good cooperative relations with enterprises and hospitals, so that practitioners of related majors in hospitals can participate in professional teaching, which can help the theoretical teachers share the teaching pressure and enable students to learn the learning direction that should be mastered. The construction of Double Teachers is not only the work of a single institution, because it requires the cooperation of the society and the government to provide a good policy environment and practical environment for the development and construction of education [4].

4.6 Strengthen the Construction of Students' Self-study Learning Platform

In the context of rapid social development, information technology has also become an effective means to improve students' learning ability. In order to meet the actual needs of students, a single traditional teaching method is difficult to cultivate students' all-round development. Therefore, colleges should establish a complete course teaching platform based on teaching knowledge, and provide students with different kinds of learning materials in the form of the Internet and database. The difficulty of the materials can be selected according to the actual situation of the students. Teachers can also provide medical students with methods of use, and students can provide feedback on the independent learning of relevant knowledge on the platform, and timely solve their own confusion. In this way, teachers and students can break the boundaries of time and space, and provide help to students anytime, anywhere. In addition, there are various courses on the Internet, but in order to choose the ones that really suit the students' conditions, they need to be screened layer by layer. Teachers can query related resources on the Internet, and optimize and delete them in a targeted manner, which can reduce inconsistencies between resources and what students need to learn[5].

5. Conclusion

Cultivating students' independent learning ability is the focus of students' training at this stage, and it is also an inevitable requirement. Self-directed learning ability takes a long time to develop, so teachers and students need to cooperate with each other. Teachers should make effective use of formative evaluation indicators to understand the actual situation of students and help them learn independently. Students should enhance their enthusiasm for learning, use a scientific and reasonable method to comprehensively study their own learning situation, and conduct targeted learning, so as to improve the quality of training by improving the self-learning ability of medical students. In specific work, teachers should change the evaluation method, use various forms to understand the problems existing in students' independent learning, and give students enough space for independent development, so that students can implement the relevant concepts of independent learning. In addition, it is necessary to pay attention to the cultivation of students' learning strategies, strengthen students' understanding of independent learning, and fundamentally improve the quality of students' independent learning.

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