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An Analysis and Research on the Factors Affecting Online Teaching in Colleges and Universities

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ABSTRACT

Online teaching in colleges and universities has developed rapidly in recent years. This paper explores the online teaching implementation effect and online teaching influencing factors of college students by using cross-analysis method, and the study shows that; college students are more satisfied with the online teaching effect as a whole, and the main influencing factors of undergraduate online teaching are the class status and external environment, while the main influencing factors of graduate students' online teaching are the teacher's academic level and the class status. In addition, undergraduate students and graduate students have big differences in evaluation indexes such as equipment, platform, interaction frequency and course mode. Based on the research results, this paper puts forward corresponding countermeasure suggestions in four aspects: students, teachers, teaching platforms, and online course mechanism.

1. Introduction

In recent years, colleges and universities have carried out online teaching through multiple online platforms to break the constraints of face-to-face teaching and communication that cannot be carried out due to geography, and the online teaching mode has gradually taken shape. However, after years of development, there are still many problems in online teaching, and the whole teaching process also has many deficiencies. Therefore, research on the influence factors of online teaching and how to improve the teaching effect is still a top priority.

Many scholars have conducted more research on the influence factors of online teaching, and at the same time,

scholars at home and abroad have made some achievements in analysing the influence factors of online teaching. Influenced by cultural differences, domestic scholars tend to do more research on qualitative analysis, and the objects of research are mostly undergraduates or post-graduates as a single group. This paper investigates the situation and implementation effect of online teaching in colleges and universities, and analyses and compares the implementation effect of online teaching and online teaching influencing factors of college and university students using cross-analysis methods, so as to provide decision-making and suggestions for improving the effect of online teaching.

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2. Data results and analyses

The questionnaire is made by the domestic mainstream questionnaire platform ‘Questionnaire Star’, involving different disciplines and grades, and the questionnaire is designed to be carried out before, during and after the class, and the research is mainly carried out in the aspects of students’ basic information, classroom equipments, software and hardware problems, online teaching mode and platform, classroom interactions between teachers and students, teachers’ appearance, students’ status, students’ completion of homework after class, etc. to understand students’ overall evaluation of online teaching. The research was conducted in terms of students’ basic information, class equipment, hardware and software problems, classroom interaction between teachers and students, teacher’s style, students’ status, and students’ completion of homework after class to understand students’ overall evaluation of online teaching. The questionnaire concluded that 92.23% of undergraduates and 7.77% of postgraduates were online students. The devices used for online classes among undergraduate students were 88.15% mobile phones and 74.22% computers, as the majority of the survey respondents were first-year students, there was a situation in which some of the students were not equipped with computers, and 95.83% of postgraduate students used computers to receive online teaching. According to the analysis of the data, it was found that the effective learning time of the students who studied online through computers was slightly higher than that of the students who studied online through mobile phones, indicating that the students who studied online through computers had a better class experience and their effective learning time was longer. Regarding the frequency of classroom interaction, the interaction frequency of undergraduates is significantly higher than that of postgraduates; with regard to the evaluation indexes of equipment, platform and interaction frequency, there are some differences between undergraduates and postgraduates, while with regard to the status of completing the homework after the class, the difference between undergraduates and postgraduates is not obvious.

3. Analysis of Influencing Factors

The types of problems encountered by undergraduates and postgraduates during online classes are more or less the same, but the percentage of the number of people who chose each type of problem can be concluded: the main problem encountered by undergraduates is that they are not self-conscious enough, and they can easily be distracted or go to do something else, while the main problem

encountered by postgraduates is that they are ‘too long to look at the screen, too long to look at the eyes, too long to look at the screen. The most important problem encountered by postgraduates is ‘prolonged exposure to the screen, which affects the eyesight’. The results of this survey reflect that undergraduates and postgraduates do not have the same major concerns during online classes. In terms of the attitudes of undergraduates and postgraduates towards the factors affecting the effectiveness of online teaching, the proportions of ‘personal class status/motivation’ and ‘platform functions/equipment problems’ are close to each other, which indicates that these two factors are the factors affecting the quality of online learning as agreed upon by the vast majority of undergraduates and postgraduates. This indicates that these two factors are the factors that most undergraduates and postgraduates agree affect the quality of online learning. Among the factors affecting online teaching and learning among undergraduates, the degree of students’ influence on the quality of online learning varies significantly. Among them, course interest, instructor’s academic level, students’ own class status, pre-course preparation and external environment have some influence on students’ online learning quality, with positive residuals; the residuals of platform equipment and pre-course preparation are negative, so these two factors have no influence on students’ online learning. The motivation factors indicate that there is no significant difference between the five factors of personal development goals, learning interest, self-discipline, course content, and external pressure or inducement on the motivation of postgraduate students during online classes. Undergraduate class modes, there were significant differences in students’ preferences for the four different class modes. Undergraduates preferred the two class modes of webcasting and recorded video with positive residuals, and for the two class modes of online microclasses and independent learning by providing only course PPTs and other materials, the results of this analysis are of some practical significance for teachers to arrange for which class modes. The calculation results of graduate students’ class modes indicate that there is no significant difference between the four class modes of live online classes, recorded videos, microclasses for independent learning, provision of learning materials, and Q&A and discussion in the WeChat group on the quality of learning during the graduate students’ online classes. Increasing the frequency of teacher-student interactions in the classroom will result in a stronger mastery of the content and a better learning effect, which indicates that the graduate students have a neutral attitude towards the ‘effective learning time in the classroom’ and the ‘mastery of the content’.such as insuf-

efficient preparation of online teaching conditions, unstable teaching platform, imperfect functions, monotonous design of functions within the platform, and lack of personalised functions for teaching practice.

4. Countermeasure Suggestions

Analysing the obtained online teaching influencing factors and conclusions, targeted countermeasures and suggestions are put forward, with a view to enhancing the online learning effect of college students.

First, students. Students are the object of online teaching, which is the ultimate reflection of the quality of online teaching. Therefore, for the situation of ‘lack of self-consciousness, easily distracted or doing other things’, students should understand what level and state they need to achieve in order to achieve better learning results, in the case of a clear and definite purpose, the motivation and initiative to learn will be greatly improved, thus reducing the distraction behaviour due to the influence of external factors and environmental factors in the learning process. This will reduce the distraction caused by external factors in the learning process and improve the effective time of students’ listening in class. In terms of ‘learning motivation’, the most important factor affecting undergraduates is ‘personal development goals’, undergraduates should do a good job in the following areas, first cultivate a good emotional state and a healthy personality, and then set up a positive self-concept, clear personal development goals in the future. The most important factor affecting postgraduates is that they have a good emotional state and a healthy personality. The most important factor affecting postgraduates is ‘interest in learning’, postgraduates should cultivate their interest in learning, exert their subjective initiative, improve their self-consciousness and motivation in learning, make full use of the advantages of the freedom and convenience of online learning, and formulate a learning plan that suits their own characteristics on the basis of which they can learn more knowledge. On the whole, it is necessary to ensure the quality and effectiveness of learning. Online teaching is a greater test of students’ own self-discipline and ability to learn independently. They should carry out efficient pre-study and post-study, complete the assigned homework, develop good study habits, and strengthen self-control in a teacher-less learning atmosphere to overcome blindness and enhance self-control.

Secondly, teachers. The terminal of online teaching is the teacher, so the teacher is the guarantee of online teaching quality. Online teaching is different from traditional classroom teaching, and teachers must undergo systematic training to adapt to the needs of online teaching. The

survey shows that some teachers are not familiar with the online teaching mode and the platform functions are not used smoothly. Colleges and universities should target to strengthen the training of teachers in using the online teaching platform. On the one hand, to help teachers master to solve the problems in online teaching, so that they can make timely adjustments in case of emergencies; on the other hand, to help teachers learn to use the various functions on the platform, in order to improve the efficiency of online teaching. It is found that the teaching platforms used for undergraduate and postgraduate teaching are not exactly the same. Teachers can choose the appropriate teaching platforms according to the courses, explore and improve the design, use and optimisation of the teaching platforms, and further promote the reform and construction of the relevant courses. In addition, undergraduates and postgraduates think that the interest of the content and the frequency of teacher-student interactions have an impact on online teaching. Teachers should make full use of the platform’s functions (e.g., quiz and practice) to increase the frequency of interactions with students, to enhance the interest of the content and to show the teacher’s style, which will help to build up a good classroom atmosphere and to improve the quality of teaching. Survey results show that undergraduates and postgraduates have different preferences for different types of courses. Teachers can communicate with students before class about the mode of class, fully understand the advantages and disadvantages of various platforms, use multiple platforms to carry out blended teaching, and use ‘live broadcasting + video broadcasting’ and other forms to design teaching programmes. In addition, 74.04% of the postgraduates think that ‘teachers’ academic level/classroom performance’ affects the quality of online teaching. Teachers should do a good job of designing the teaching process before class, including the online teaching process of “before, during and after class”, so that they can improve their performance and get better results in the live broadcasting of classes. Teachers should do a good job of teaching design before class, including the online teaching process of ‘before, during and after class’, so that they can improve their classroom performance and get better teaching results during the live class.

Third, teaching platform. Online teaching platform is a third-party platform connecting students and teachers, and the experience of the platform has a direct impact on the effect of online teaching. The results of the questionnaire show that undergraduates accounted for 29.47% and postgraduates accounted for 29.17% in terms of the platform function and equipment problems affecting the online teaching effect, so the online teaching platform is an im-

portant physical factor in guaranteeing the online teaching effect. According to the questionnaire survey, the following problems are summarised: live lag, poor video fluency, screen sharing content can not be loaded, live interaction in a single way, the education platform function is simple and so on. In view of the problems in the platform combined with the feedback of the questionnaire, the online teaching platform must continue to optimise the network smoothness to prevent network lag; enrich the ways of communication with students, improve the frequency of interaction, enhance the sense of participation of students; multi-platform functionality is integrated with each other, continue to optimise and improve, to create an integrated platform; optimise the learning platform in many ways, the system interface is set up to be simple, beautiful and easy to use, set up such as Q&A zone, The system interface is set up to be simple, beautiful and easy to use, with special modules such as Q&A zone, download zone and exchange zone; and eye protection reminder function is provided. In addition, the survey results show that 33.1% of undergraduates and 12.8% of postgraduates will use the playback learning function, therefore, the online teaching platform can increase the conference live playback function to ensure that students have not understood the knowledge of the class repeatedly watch and learn. Various teaching platforms should also provide basic tutorials on the use of the platform, so that the potential functions of the design can be fully utilised, which in turn improves the satisfaction of teachers and students and enhances the effect of online teaching.

Fourth, the mechanism of online classes. Today's education should integrate the development of online and offline teaching, build a complementary hybrid teaching model, the 'Internet + education' reform and innovation into practice. On the one hand, offline teaching for online teaching provides the basis and guarantee, integration and optimisation of offline traditional teaching course content, drawing on the methods and means of offline teaching. For experimental operations and sports activities that are difficult to teach online, offline teaching is supplemented and improved. Based on the Internet platform, the use of big data, artificial intelligence and other emerging technologies, the transplantation of knowledge resources and teaching methods on the network platform is real-

ised, breaking the time and space limitations and making it more convenient for students to acquire knowledge. Through the optimisation of classroom content, fragmented knowledge is organised and managed to enrich the teaching content and cultivate students' interest in learning. Colleges and universities should conduct in-depth research on the integration and development of online and offline hybrid education based on big data, think about the future development form of schools in the Internet era, establish a long-term mechanism for online and offline hybrid teaching, reform the environmental management and supervision mechanism and the 'Internet+' evaluation mechanism, and explore new modes of teaching in order to better enhance the learning effect of students.

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