The Current Situation of Online Education Based on Eviews Regression Analysis

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ABSTRACT

With the wide application of online teaching, in order to better understand the development status and influencing factors of online education in the context of " Internet + education ", members of this project conducted a questionnaire survey in some regions of Hubei Province, and used Eviews software to quantitatively analyze the main reasons for the influence of the three dimensions of " students ", " teachers " and " environment " on online learning effect. Through regression model analysis, the results show that ' students ' learning motivation and self-awareness are not strong ', ' teachers ' lack of online teaching experience ' and ' online teaching platform needs to be further improved ' are the main factors of poor online learning effect. In order to ensure online learning effect, constructive suggestions are put forward for these reasons, namely, " optimizing the educational network platform, " " integrating high-quality teaching resources, " " updating and optimizing the teaching mode, " and " enhancing the interaction between teachers and students, " so as to build a harmonious online classroom and optimize the effect of online education.

Keywords*: Eviews software, regression analysis, least-square method, Online education, teaching management, teaching quality, investigation and research*

1. INTRODUCTION

With the upgrade of the concept of "Internet + " to a national strategy in 2015, a large number of "Internet + Education" course learning platforms have emerged. "Dingding", "Tencent Classroom", "Tencent Meeting" and other software have become new teaching channels. New education and teaching methods have derived new models of classroom teaching, changed the way students acquire knowledge, and allowed more teachers to experience new teaching methods. However, some practical problems that follow also need to be solved.Therefore, the main purpose of this project is to deeply understand the development status and influencing factors of online education. In response to issues such as " how to improve the quality of online education "," how to optimize the online education platform "," how to change the online teaching mode ",etc., it provides suggestions for the development of online education. Before conducting field research, members of this project collectively learn relevant policy documents, journal literature, statistical indicators , etc., on the basis of learning from the existing achievements, combined with the current situation of online education in Hubei Province, developed three questionnaires - "Online Education Sitution in Hubei Province Questionnaire - Student Version, Teacher Version, Parent Version".Members of this project have conducted on- the - spot interviews in urban areas, villages and towns in Xianning, Wuhan, Ezhou, Yichang, Xiantao and other places in Hubei Province . The online education methods, attitudes of local students, teachers, and parents have been thoroughly understood and recorded.Then randomly looking for the masses to fill out the questionnaire, collected a large number of data and video pictures, fully understand the development of online education.

2. RESEARCH SITUATION

2.1. Basic information of the survey object

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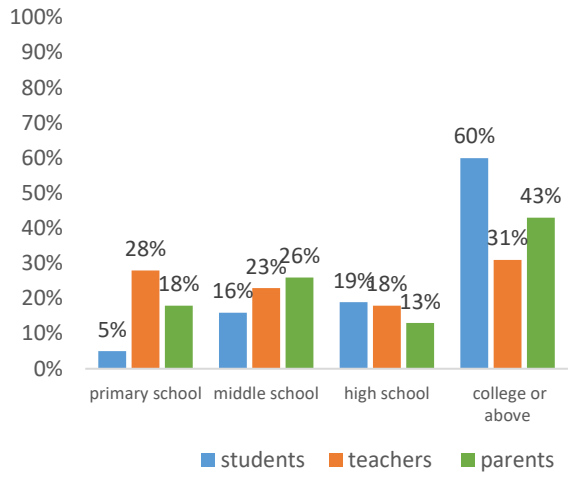

Figure 1: Distribution of the number of survey subjects

A total of 468 valid data were received, of which 208 were filled out by students, 126 by teachers and 134 by parents (as shown in Figure 1).Among the students, 5% are in elementary school, 16% are in junior high school, 19% are in high school, and 60% have college degree or above; Among teachers, 28% teach in elementary school, 23% in junior high school, 18% in high school Teachers, 31% teach at universities; Among the parents,18% of parents have their children in elementary school, 26% have their children in junior high school, 13% have their children in high school, and 43% have their children in college .

2.2. Survey respondents' attitudes towards online education

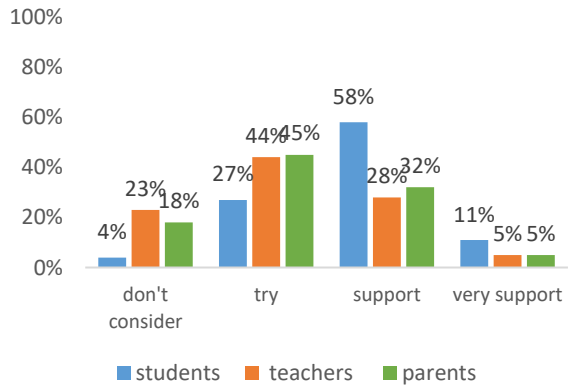

Figure 2: Basic attitudes of students, teachers and parents towards online education

The survey found that 58 per cent of students supported online education (as shown in Figure 2) because they felt that online education was more free and could be studied anytime and anywhere. Most teachers and parents feel that they can try online education. After all, in the face of public events, online teaching can better ensure the safety of students, but teachers and parents still hope to return to the classroom as soon as possible and carry out normal offline teaching.

3. Model construction of influencing factors of online education

3.1. Model description.

This project uses Eviews software to analyze the data . The factors affecting online education are divided into three dimensions : student factors, teacher factors, and environmental factors . The student factor is divided into four small factors —not taking notes in class, not making a study plan, doing behaviors unrelated to study in class, plagiarizing other people's homework, which are expressed by x1 , x2 , x3 , and x4 respectively . The teacher factor is divided into three small factors —not proficient in using the online teaching platform, not having classroom atmosphere, and have never accepted online teaching guidance, which are expressed by x5 , x6 , and x7 respectively . Environmental factors are divided into four small factors —network speed and other reasons lead to not fluent, long-term viewing of the screen is not good for eyesight, students do not have electronic equipment and not have better online teaching platform, which are expressed by x8 ,x9, x10 and x11 respectively. Finally, the online teaching effect feedback is recorded as Y, and the overall regression analysis is carried out.

3.2. Student factor: The lack of supervision in online teaching leads to low motivation and low self-awareness of students. [5]

3.2.1. Data summary

According to the investigation, we will summarize the obtained data, as shown in Table 1.

Table 1: Student factors survey data

Influencing factors	specific factors	Survey data (number of people)			
		Completely agree	Somewhat agree	Not agree	Completely disagree
Student factor	X1	9	110	46	43
	X2	15	120	50	23
	X3	68	43	44	53
	X4	74	49	55	30

3.2.2. Model building

Dependent Variable: Y
Method: Least Squares
Date: 04/14/22 Time: 14:51
Sample (adjusted): 1 208
Included observations: 208 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	8.810208	0.279130	31.56310	0.0000
X1	-1.167706	0.228428	-5.111915	0.0000
X2	-0.170175	0.216344	-0.786594	0.4324
X3	-0.265598	0.166433	-1.595826	0.1121
X4	-0.769678	0.232604	-3.308967	0.0011

R-squared	0.810789	Mean dependent var	3.028846
Adjusted R-squared	0.807061	S.D. dependent var	2.449319
S.E. of regression	1.075859	Akaike info criterion	3.007861
Sum squared resid	234.9669	Schwarz criterion	3.088090
Log likelihood	-307.8175	Hannan-Quinn criter.	3.040301
F-statistic	217.4696	Durbin-Watson stat	0.132641
Prob(F-statistic)	0.000000		

Figure 3: Analysis of the influence of student factors on the effect of online education

Using the least squares method for regression analysis, the obtained model is:

Y = - 1.16770590538*X1 - 0.17017467667*X2 - 0.265598420678*X3 - 0.769677647107*X4+8.81020810721

3.2.3. Analysis of the model summary

The results show that under the condition that the significance level α is 0.05, x3 is not significant in the equation, and the rest of the variables are significant, among which R^2 It is very close to 1, indicating that the model is still good. Among these four factors, x1 and x4 are highly significant,that is to say, online education in terms of students ' influencing factors, " not taking notes in class " and "copying others ' homework "are the most obvious factors.

Most students in online teaching do not have the ability to control themselves. For example, when they do not want to study, 65% of students choose to rest for a while and then study, and even 7% of students give up studying. Such a short study time will greatly reduce the learning effect. . Online teaching lacks the teacher's real-time supervision of students. Some students have difficulty concentrating in class, even sleeping, listening to songs, watching videos, playing games, and chatting. Even if they study hard for a while, they are easily attracted by other things and distract their study attention.When teaching offline, teachers will invite students to come on stage or stand up to answer questions, inspire students to think independently and actively explore, and consolidate the new knowledge they have learned. In the process of online teaching, when teachers ask questions, students quickly find the answers online, lacking the inspiration of offline teaching, teachers cannot determine whether students really master the knowledge, which may delay the teaching progress. Lack of problem-solving process will make students gradually lose their enthusiasm for discovering and exploring problems, and their initiative to think independently. In the long run, students will gradually become rigid in their thinking, do not understand flexibility, and promote a bad style of study.

3.3. Teacher factor: Insufficient online teaching experience, unable to deal with emergencies. [3]

3.3.1. Data summary

According to the investigation, we will summarize the obtained data, as shown in Table 2.

Table 2: Teacher factors survey data

Influencing factors	specific factors	Survey data (number of people)			
		Completely agree	Somewhat agree	Not agree	Completely disagree
Teacher factor	X5	27	45	22	32
	X6	58	31	23	14
	X7	2	25	36	63

3.3.2. Model building

Dependent Variable: Y
Method: Least Squares
Date: 04/14/22 Time: 14:53
Sample (adjusted): 1 126
Included observations: 126 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5.000000	4.17E-15	1.20E+15	0.0000
X5	-7.72E-15	2.42E-15	-3.194095	0.0018
X6	-6.11E-15	1.89E-15	-3.236376	0.0016
X7	2.18E-14	2.18E-15	9.982073	0.0000

Mean dependent var	5.000000	S.D. dependent var	0.000000
S.E. of regression	9.97E-15	Sum squared resid	1.21E-26
Durbin-Watson stat	0.113617		

Figure 4: Analysis of the influence of teacher factors on the effect of online education

Using the least squares method for regression analysis, the obtained model is:

Y =5-7.71606186258e-15*X5 - 6.11375875697e-15*X6 + 2.17814348452e-14*X7

3.3.3. Analysis of the model summary

The results show that when the significance level α is 0.05, the variables in the equation are very significant, and R^2 is also very close to 1, indicating that the model is still good. Among these three factors, x7 is highly significant, that is to say, online education in terms of teachers' influencing factors , the factor of "have never accepted online teaching guidance" has the most obvious influence.

During the survey, it was found that 40% of teachers

teach in provincial capital cities/municipalities/prefecture-level cities, 40% teach in districts/counties/townships/towns, and 20% teach in rural areas, most of whom are 26-45 years old，the teaching age ranges from 1 to 15 years. But 23% of teachers have rarely received online teaching guidance. For many teachers, online teaching is their first attempt, so it is difficult to change the teaching concept in a short period of time.At the same time, teachers also need to learn how to use online teaching software. Different software has different functions. It is not easy to learn, and it is even more difficult to use it proficiently. Furthermore, most of the teachers are middle-aged teachers, and their ability to accept new technologies is weak. Some teachers have become voice live broadcasts because they cannot turn on cameras; some teachers are not used to writing on the online blackboard; some teachers are unable to use functions such as roll call and sign in. A series of problems led to poor overall learning effect of students.

3.4. Environmental factors: the online teaching platform needs to be further improved. [4]

3.4.1. Data summary

According to the investigation, we will summarize the obtained data, as shown in Table 1.

Table 3: Environmental factors survey data

Influencing factors	specific factors	Survey data (number of people)			
		Completely agree	Some what agree	Not agree	Completely disagree
Environmental factor	X8	262	135	24	47
	X9	140	131	88	109
	X10	145	121	84	118
	X11	246	102	68	52

3.4.2. Model building

Dependent Variable: Y
Method: Least Squares
Date: 04/14/22 Time: 14:56
Sample: 1 468
Included observations: 468

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.845937	0.138885	34.89165	0.0000
X8	0.073607	0.185402	0.397014	0.6915
X9	-1.701844	0.309485	-5.498952	0.0000
X10	-1.263652	0.311660	-4.054583	0.0001
X11	1.836605	0.217861	8.430169	0.0000

R-squared	0.669021	Mean dependent var	1.346154
Adjusted R-squared	0.666162	S.D. dependent var	2.220174
S.E. of regression	1.282789	Akaike info criterion	3.346576
Sum squared resid	761.8881	Schwarz criterion	3.390897
Log likelihood	-778.0988	Hannan-Quinn criter.	3.364016
F-statistic	233.9701	Durbin-Watson stat	0.063808
Prob(F-statistic)	0.000000		

Figure 5: Analysis of the influence of environmental factors on the effect of online education

Using the least squares method for regression analysis, the obtained model is:

Y =4.8459372432 + 0.0736073116619*X8 - 1.70184417631*X9 - 1.26365158703*X10 + 1.83660507521*X11

3.4.3. Analysis of the model summary

The results show that: when the significance level α is 0.05, the variables in the equation are very significant, and R^2 is also very close to 1, indicating that the model is still good. Among these four factors, x9 and x11 are highly significant, that is to say, in terms of environmental impact factors of online education, the two factors, "Looking at the screen for a long time is not good for eyesight" and "there is no better online teaching platform" are the most obvious.

In the survey, it was found that 66% of the teachers used the "Tencent Meeting" and "Tencent Classroom" software. The interface operation of these two platforms is relatively simple. After sharing the QR code, students can quickly enter the online classroom, which are not only free and does not require verify, but occasionally there will be a lag.During the survey of parents, it was found that 63% of parents expressed that they do not want their children to study online, mainly that students' eyesight will be greatly affected when they face mobile phones and computers for a long time. If the network speed of the teaching platform and the unstable network at the receiving end cause the screen to flicker and delay, the students' eyesight will be more affected, resulting in a worse learning effect.Compared with the "Tencent Meeting" software, students in the "Tencent Classroom" software cannot turn on the camera, but have some simple interactions, such as "raise hand" and "sign in", are set up to facilitate teachers to check the number of students. "Tencent Meeting" software does not have these functions, it is more troublesome when there are many people. There are also many problems with other teaching platforms such as "Rain Classroom", "MOOC", "Zhidao", "Dingding", and "QQ".

4. RECTIFICATION SUGGESTIONS

4.1. Optimize the education network platform to provide more personalized education environment. [7]

With the advancement of science and technology, there are more and more teaching network platforms, but the information in them is also mixed. Online education gives students more possibilities and provides students with personalized education. If we can make full use of big data analysis, we can monitor and evaluate the current state of students, and conduct accurate analysis from various aspects such as learning time, in-class tests, classroom questions, homework, learning performance, etc, and report to teachers in a timely manner to provide more accurate and scientific products and services, then the quality of online teaching will be further improved, and students' personalized education will be realized.

4.2. Integrate high-quality teaching resources, improve teachers' online teaching level. [1]

Teachers ' education level is the fundamental guarantee of teaching quality. Schools should not only strengthen teachers ' subject teaching ability, but also pay attention to teachers ' ability to use information teaching platform. It is necessary to organize teachers to learn online teaching platform. Teachers should continue to learn, understand the teaching characteristics of major platforms, skillfully and flexibly use the various functions of online teaching platforms, and strengthen the flexibility and adaptability, so as to select suitable platforms for teaching. They can also choose to use multiple platforms together to ensure the maximization of online teaching effect.

When teaching online, there may be any unexpected situations, such as sudden Carton, video cannot be displayed, and PPT cannot be opened. When there is an emergency, teachers should keep calm and calm thinking about the solution to the problem. At the same time, online teaching platform should have operational guidelines and question answering areas. When problems arise, teachers should be reminded and helped to solve problems as soon as possible.

4.3. Update and optimize the teaching mode to ensure the effect of online teaching. [2]

Compared with offline learning, online learning is more susceptible to the interference of various external factors. When students are not self-conscious, their learning efficiency will be unsatisfactory. Therefore, online teaching should focus on attracting students' attention. For example, teachers can present the teaching content to learning in the form of problem situations through micro-videos, animation, stories, cases and other forms, so as to arouse students 'interest in learning, stimulate students' learning motivation and mobilize students' enthusiasm for learning. Of course, the created situation should be interesting and challenging, not only to maintain a high degree of relevance to the learning content, but also to have a meaningful connection with the students' existing experience or the knowledge they will learn.

When teachers teach online, they need to adjust the teaching process. Teachers can randomly point students to answer questions, and adopt the time limit. Students do not need to say specific answers, but only need to say the thinking process and problem solving ideas. When arranging homework after class, the original questions in the book cannot be arranged. The data should be appropriately modified so that even if students search for similar answers on the Internet, they will have to calculate themselves to obtain the correct answers, so as to achieve the purpose of enabling students to master this type of questions. In terms of teaching content should also be concise, focus on teaching difficulties, in the limited time as much as possible to improve teaching efficiency, a teaching time as much as possible in 40 minutes, so as to maximize the quality of teaching, but also to protect students ' visual health.

4.4. Enhance teacher-student interaction and build a harmonious online classroom. [8]

Now there are many online teaching platforms. Teachers should make full use of various functions of online teaching platforms to improve teaching interaction. For example : check in, raise hands, random nominations, etc. Classroom questioning is the best and most frequently used classroom atmosphere teaching skills. Teachers can use the online hand-lifting mode or video and audio frequency to invite students to answer questions and stimulate students ’ learning motivation. The use of comment interactive teaching, more interaction with students in the comment area, as part of the final grades, which can also improve students ' learning enthusiasm in class.

Online group discussion is also a good choice. Teachers can randomly divide students into several groups, so that students can carry out collaborative inquiry around problems, and teachers can enter the group discussion area at any time for guidance. Teachers should give full play to the interactive mechanism of teaching platform, and encourage students with high learning enthusiasm and good performance of group discussions to make praises, flowers on the platform, so as to build a good and harmonious online classroom.

5. TAG

With the rapid development of information

technology, "Internet +" has penetrated into all sectors of society. Online education is the product of the combination of Internet technology and education, in the process of regression analysis using Eviews software, it is not difficult to find, it not only brings great changes to the form of education and learning methods, but also has a great impact on the ideas, concepts, models, contents and methods of education. The continuous improvement of online teaching platform does bring more opportunities to learning, but it is still difficult to replace the traditional offline teaching. In order to improve the quality of education, it is also necessary to combine online education with offline education. The two complement each other, integrate each other, foster strengths and circumvent weaknesses, and give full play to the advantages of online teaching, so that online teaching can better make up for the shortcomings of offline teaching and achieve better teaching results by reasonable application.

Project source: Innovation Training Project for College Students in Hubei Province S202010927055

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