A Study on College Students’ Online Learning Satisfaction During the COVID-19 Epidemic

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Abstract. In early 2020, the COVID-19 broke out in China. Colleges failed to start classes as scheduled, they use online teaching to carry out the course learning. This paper puts forward the measurement indicators of online learning satisfaction. On this basis, through the questionnaire survey of college students, the following conclusions are drawn: platform design, students-student interaction, homework, and final assessment significantly affect the perceived value of online learning. Learning material transfer, learning atmosphere, platform design and final assessment significantly affect the overall satisfaction of online learning. According to the above conclusions, this paper puts forward corresponding suggestions from the aspects of perfecting the learning platform, improving the learning atmosphere, strengthening the interaction between students and paying attention to the learning effect of students.

1. Introduction

In January 2020, COVID-19 broke out in China. In order not to affect students’ learning progress, the Ministry of Education issued an important instruction of “suspending classes without ceasing classes”, and various schools have adopted online teaching methods to carry out course learning.

College students are one of the main users of online education. Before the outbreak of the epidemic, college students’ online learning courses were mainly extra-curricular courses, including IELTS training, postgraduate entrance exams training, vocational certificate, etc. This is the first time that college students have used online learning to complete on-campus credit courses on a large scale.

2. Related Works

On the basis of customer satisfaction, Tough (1982) believed that learning satisfaction was a feeling of whether learners meet their desires and needs in the learning process [1]. Jian-chun Hao (2005) defined learning satisfaction from the perspective of learning process and learning result. He believed that college students were satisfied if they had interest and favorable impression in the learning activity process, or they had satisfied desire or need in the learning result. Otherwise, they were dissatisfied [2]. Hong-miao Tao (2016) divided college students’ satisfaction with education into two parts: college students’ expectation and college students’ perceived quality of education, and satisfaction is the difference between perceived quality and expectation [3]. Jing Wen and...
Qiu-heng Shi (2013) divided perceived quality into process perceived quality and result perceived quality, and believed that college students’ satisfaction with classroom learning was a kind of psychology derived from the relative relationship between expectation, process and harvest after receiving education services [4].

About online learning, Xiao-li Zhang (2019) researched students’ satisfaction with online learning from three dimensions: teachers, learners, curriculum design and quality [5]. Yong Hu and Feng-mei Zhao (2015) analyzed the influencing factors of students’ satisfaction with online learning from six dimensions, including learners, teachers, curriculum, technology and design [6]. Zhi-ying Zhang (2013) conducted a study from the perspective of teachers, and believed that teaching methods and skills, teaching attitude and teaching content were potential factors affecting classroom satisfaction [7]. Min Yang and Zhi-hong Ye (2019) explored the teacher-student interaction and student-student interaction in online learning, and drew the conclusion that high-quality teacher-student interaction can help improve students’ learning interest and enthusiasm, create a good teacher-student relationship, and that student-student interaction can help students learn better [8].

3. Model building

According to the literature review and summary above, we divides the evaluation index system into three levels. College students’ satisfaction with online learning is the research purpose of this paper, which is the first level; The measurement index of college students’ satisfaction with online learning consists of expected value and perceived value, which are the second level. Seven influence factors, including learning material transfer, learning atmosphere, platform design, teacher-student interaction, student-student interaction, homework and final assessment are the third level. Therefore, we established the following research model.

![Model of online learning satisfaction](image)

Figure 1. Consumer satisfaction model of online learning.

4. Data Collection and Analysis

During the epidemic period, due to traffic control and travel restrictions, we adopted the network questionnaire survey method. Base on the model above, we designed questionnaires and distributed them on internet through SO JUMP, and 261 effective answers were obtained.
4.1. Basic Information Analysis

Table 1. Basic information of the sample.

| Index   | Classes | Numbers | Percentage (%) |
|---------|---------|---------|---------------|
| Gender  | Male    | 92      | 35.2          |
|         | Female  | 169     | 64.8          |
| Identity| Freshman| 29      | 11.1          |
|         | Sophomore| 99    | 37.9          |
|         | Junior  | 71      | 27.2          |
|         | Senior  | 62      | 23.8          |

The percentage of female students in the survey is higher, 35.2% for male students and 64.8% for female students. Among the students who participated in the survey, the number of sophomores was the largest (37.9%), while the number of first-year students was the smallest (11.1%).

4.2. Multivariate Regression Analysis of Online Learning Perceived Value

We can use seven influencing factors as independent variables and perceived value as dependent variables for multiple linear regression analysis.

Table 2. Coefficient of regression analysis of each factor on the perceived value.

| Model | Coefficients | Standardized Coefficients | t | Sig. |
|-------|--------------|---------------------------|---|-----|
|       |               | Non-standardized Coefficients | Standardized Coefficients | t | Sig. |
|       |               | B | Std. Error | Beta |       |   |    |
| 1     | (Constant)    | 0.003 & 0.078 | 0.043 & 0.966 |
|       | Learning material transfer | 0.084 & 0.048 | 0.085 | 1.751 & 0.081 |
|       | Learning atmosphere | 0.098 & 0.059 | 0.094 | 1.658 & 0.099 |
|       | Platform design | 0.284 & 0.052 | 0.282 | 5.485 | 0.000 |
|       | Teacher-student interaction | 0.029 & 0.057 | 0.029 | 0.505 & 0.614 |
|       | Student-student interaction | 0.151 & 0.052 | 0.148 | 2.883 | 0.004 |
|       | Homework      | 0.153 & 0.053 | 0.152 | 2.916 | 0.004 |
|       | Final assessment | 0.217 & 0.048 | 0.228 | 4.528 | 0.000 |

a. Dependent variable: Online learning perceived value
Table 2 is variable and dependent variable multiple regression coefficient significance test. According to the data, we can see that the SIG values corresponding to information transfer (0.081), learning atmosphere (0.099) and teacher-student interaction (0.614) are all greater than 0.05, so the above three factors cannot be retained in the regression equation. The corresponding SIG values of platform design (0.000), student interaction (0.004), homework (0.004) and final assessment (0.000) are all less than 0.05. Therefore, the linear relationships between these four influencing factors and the online learning perceived value are significant and should be retained in the regression equation.

Among the four factors retained in the regression equation, the corresponding value of platform design is 0.282, the corresponding value of student-student interaction is 0.148, the corresponding value of homework is 0.152, and the corresponding value of final assessment is 0.228. Therefore, it can be concluded that the platform design factor has the greatest influence on the online learning perceived value, followed by the final assessment, homework is the third, and the interaction has the least influence on the online learning perceived value.

4.3. Comparative Analysis of Online Learning and Offline Learning in Various Influencing Factors

In order to find out the advantages of online learning, we compare online learning with offline learning of college students in various aspects of learning. The students’ comments would be changed into marks (strongly agree=5, strongly disagree=1, etc.) to do comparison.

| Online learning is better than offline learning | Strongly agree | Agree | Common | Disagree | Strongly disagree | Total | Average Marks |
|-----------------------------------------------|----------------|-------|--------|----------|-------------------|-------|---------------|
| learning material transfer                    | 47             | 92    | 44     | 59       | 19                | 261   | 3.34          |
| Learning atmosphere                           | 29             | 63    | 69     | 65       | 35                | 261   | 2.95          |
| Platform design                               | 37             | 76    | 56     | 61       | 31                | 261   | 3.10          |
| Teacher-student interaction                   | 36             | 75    | 57     | 64       | 29                | 261   | 3.10          |
| Student-student interaction                   | 32             | 76    | 58     | 62       | 33                | 261   | 3.05          |
| Homework                                      | 42             | 60    | 75     | 51       | 33                | 261   | 3.10          |
| Final assessment                              | 32             | 82    | 55     | 65       | 27                | 261   | 3.10          |

From the data in Table 3, we can see that online learning get better marks in most aspects than offline learning, especially in learning material transfer. Offline learning only got advantage in learning atmosphere.

4.4. Multivariate Regression Analysis of Overall Satisfaction of Online Learning

We can also use the marks of seven influencing factors got above as independent variables and overall satisfaction of online learning as dependent variables for multiple linear regression analysis.
Table 4. The regression coefficient of each factor on overall satisfaction of online learning.

| Model         | Non-standardized Coefficients | Standardized Coefficients | t     | Sig.  |
|---------------|-------------------------------|---------------------------|-------|-------|
|               | B                | Std. Error  | Beta  |       |       |
| 1 (Constant)  | 0.103             | 0.120         | 0.858 | 0.392 |
| Learning material transfer | 0.163             | 0.068         | **0.151** | 2.383 | **0.018** |
| Learning atmosphere | 0.226             | 0.062         | **0.218** | 3.641 | **0.000** |
| Platform design | 0.145             | 0.063         | **0.144** | 2.314 | **0.021** |
| Teacher-student interaction | 0.064             | 0.063         | 0.063 | 1.018 | 0.309 |
| Student-student interaction | -0.024            | 0.067         | -0.023 | -0.355 | 0.723 |
| Homework      | 0.143             | 0.083         | 0.131 | 1.738 | 0.083 |
| Final assessment | 0.273             | 0.073         | **0.263** | 3.730 | **0.000** |

a. Dependent variable: Overall satisfaction of online learning

According to the data in Table 4, we can see that the SIG values of learning material transfer (0.018), learning atmosphere (0.000), platform design (0.021) and final assessment (0.000) are all less than 0.05. Therefore, the linear relationships between these four influencing factors and the overall satisfaction are significant and should be retained in the regression equation.

Among the four factors retained in the regression equation, the corresponding value of learning material transfer was 0.151, learning atmosphere was 0.218, platform design was 0.144, and final assessment was 0.263. Therefore, we can concluded that final assessment had the greatest influence on the overall satisfaction of online learning, followed by learning atmosphere, learning material transfer and platform design.

5. Conclusions and Suggestions

From the analysis above, we can conclude that:

1. Platform design, student-student interaction, homework and final assessment are influential factors of online learning perceived value, and platform design has the greatest influence.

2. After comparing online learning with offline learning in seven aspects, including learning material transfer, learning atmosphere, platform design, teacher-student interaction, student-student interaction, homework, and final assessment, the results show that only in the aspect of learning
3. Learning material transfer, learning atmosphere, platform design and final assessment are influential factors of overall satisfaction of online learning, and final assessment has the greatest influence.

We can get some suggestions from the concluding of the study.

1. Improve the learning atmosphere and the efficiency of learning material transfer in offline classroom learning. The classroom atmosphere affects the efficiency of students’ knowledge and information transfer in class. In normal teaching in colleges, students can study in a classroom in a concentrated atmosphere, and can communicate and interact face to face. Each student receives little interference from the outside world. On the contrary, in online learning, it is difficult for teachers to receive students’ feedback in the first time when teaching, which may also lead to low enthusiasm of teachers, thus affecting the classroom atmosphere. Therefore, it is suggested that teachers should initiate online discussion, arrange online contact, answer online, summarize courses and other activities at appropriate times, so as to improve the classroom atmosphere, improve students’ learning enthusiasm, and enable students accept and absorb knowledge and information.

2. The course platform is the most important learning tool for online learning. A good course platform can help students learn better to some extent. Therefore, the function of the course platform should be improved to meet students’ needs for learning, and the design should be as beautiful and simple as possible, so that students can use it. Teachers can also choose a course platform that students prefer based on their feedback.

3. The efficiency of student-student interaction affects students’ process perception, and the interaction with peers is helpful to students’ learning. Therefore, teachers can use appropriate methods, such as designing homework in groups, to strengthen the communication and interaction between students. Furthermore, in the design of online learning platform, it is necessary to help teachers and students interact in a timely and labor-saving manner to improve the efficiency of teacher-student interaction.

4. In the study based on the purpose of learning, the survey showed that students were very concerned about both the homework and the final assessment scores. Therefore, teachers should pay attention to the learning effect of learning and help students consolidate and digest what they have learned in class through classroom questions, homework, short quizzes, etc. Teachers should improve students’ ability of acquiring knowledge and using knowledge to analyze and solve problems through constant practice and testing, and help students get higher marks under the of teachers’ careful preparation, correct guidance and timely evaluation.

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