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Factors Improving Student's Experiences: A Case of Online Education Live Streaming Platform

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Abstract

This study investigates the factors that influence students' experience with online education platforms. The research adopts a structured questionnaire survey and uses three characteristics of online education live streaming platform as independent variables, namely: quality of teacher, course design and platform function. The dependent variable is the student's experience. Quantitative data was collected through an online questionnaire involving 87 students who had participated in a Chinese online live streaming education platform. The results based on quantitative research show that the course design and platform functions in the online live streaming education platform have a positive impact on the student experience, while the teacher qualifications of the online education platform have no impact on the student experience. It is suggested that online education live streaming platforms pay more attention to time management in course design to make it easy for students to accept. In addition, the platform design team should improve product compatibility.

Keywords: live stream, online learning, education platform, student's experiences

Introduction

Educational live streaming has become an important part of education, and some speculate that online live streaming can enhance the student experience. However, in order to make students feel more comfortable and effective in learning, it is important to examine the quality of teachers, course design, richness and practicality of platform functions of online education platforms. Although research shows that many aspects of the current online education environment or platform still influence the student experience, it is important to explore the configuration and feasibility of online education live streaming platforms (Bridge, 2020; Song & Kong, 2017; Slaski et al., 2020).

This study chose the online education live streaming platform, if the quality of teachers, course design, and platform functions of the online education platform will affect the students'

experience. With growing expectations of quality education, the teacher plays an important role in facilitating and enabling students' learning. Therefore, teacher quality is critical to student satisfaction and outcome (Munteanu et al., 2010). Mtebe and Raisamo (2014) proposed that effective course design will help improve performance through learners' knowledge and skills. Sabbah Khan and Yildiz (2020) elaborated that the platform's function can help teachers explain the teaching content to a certain extent and the practical and interesting, helping to improve the participation and enthusiasm of students. The study takes the popular online education live stream platform in China into consideration as a case to analyze the impact of the configuration of the online education live stream platform on students' experiences.

Statement of the Problem

The purpose of this study was to identify the factors that influence the experience of students participating in an online education live streaming platform. In addition, this research can help online education platforms to find ways to make students feel more comfortable and effective in their learning, thereby helping platforms to provide better education.

Research Objectives

The objective is to determine the influence of three characteristic variables of online education platforms, namely, the influence of teacher qualifications, course design and platform functions on the experience of students participating in the online education live streaming platform.

Definitions of the Term

Quality of teacher

It refers to a professional who understands the students' educational needs, has unique teaching skills, and understands how to meet the students' learning needs (Luekens et al., 2004)

Course design

It refers to curriculum knowledge, organization, teaching objectives, and structure (Wright, 2003).

Platform function

It refers to controlling, suitability, usability, system stability. (Zou & Wang, 2011)

Student's experience

It refers to the feelings of students' feelings before, during and after using a product or system, including emotions, beliefs, preferences, etc. (Law et al., 2009). Zahidi et al. (2014) pointed out that the factors that affect user experience were the driving factors that triggered user satisfaction and dissatisfaction. Moreover, student satisfaction depends on he/she needs, expectations, and existing user experience.

Literature Review & Research Framework

The main content of this chapter is a review of relevant literature and theories and a discussion of relevant variables in the literature. In addition, the following previous studies are discussed to support the research: Quality of teacher, Course Design, and Platform function.

Quality of Teacher

The quality of teacher refers to a professional who understands the students' educational needs, has unique teaching skills, and understands how to meet the students' learning needs (Luekens et al., 2004).

Quality teaching and teacher have been one of the top priorities in the education policy. As stakeholders and policymakers strongly believe that effective teaching is one of the most important school-related factors affecting student performance (Darling-Hammond & Center for American Progress, 2010). Huber and Skedsmo (2018) added that teacher assessment and student evaluation were vital strategies and actions for assuring and developing educational qualities; meanwhile, the quality of teachers with high enthusiasm for students' learning positively impacts students' academic performance and influences the students to do better in their studies (Ladyshewsky, 2013).

Furthermore, the literature on teachers' teaching skills and classroom practices, according to, Creemers & Kyriakides (2012), explained that teachers' micro behaviors positively relate to the student experience. These include the amount and pace of teaching, the provision of appropriate levels of work for students to succeed, the smooth organization and management of the classroom environment, systematic assessment and reflective inquiry to improve practice, the clarity of presentations, and good communication with students, as well as using questions and provide feedback wisely to measure understanding.

Research also shows the importance of the classroom environment for high-quality learning. For example, the quality of teacher-student interaction, student-student interaction,

teacher treatment of students, competition among students, and classroom confusion are all considered necessary (Creemers & Kyriakides, 2008). Sammons and Ko (2008) found that effective teachers are more likely to show a supportive curriculum atmosphere, active curriculum management, well-organized, targeted curriculum, environment, and teacher support. Other studies look at students' perceptions of effective teachers (Rudduck & Flutter, 2000, McNess, 2006, Klieme, 2012). McNess (2006) found that students in the United Kingdom, France, and Denmark believe that fairness, good at explaining, and making work interesting are the three most important aspects of teacher quality. As a result, technology-based instruction is brought into impact learners' achievements; however, there are some challenges caused by social and technical barriers when it comes to blending technology and education to fulfill the needs of different educational contexts. (Mellati & Khademi, 2019).

Course Design

Course design refers to curriculum knowledge, organization, teaching objectives, and structure (Wright, 2003). Alvarez, Guasch, and Espasa (2009) identified the course design process as consisting of defining the procedures of instructional design, considering the resources and the assessment in a virtual context, presenting content/questions, translating traditional content into online content with interactive activities for students, and creating of online interactive content.

Effective course design will help improve performance through learner knowledge and skills (Mohammed et al., 2020). However, poorly designed courses can lead to low usage of e-learning platforms by teachers and students (Almaiah & Almulhem, 2018). On the other hand, if the curriculum is properly designed, it will lead to a higher acceptance of the e-learning system by students, and their performance will also improve (Mtebe & Raisamo, 2014).

The course design is expected to be very convincing to students through the curriculum (Liaw, 2008). Compared with traditional design, active curriculum design shows the effective results of students (Black & Kassaye, 2014). Teachers adapt to the online environment by using strategies to mimic the elements of face-to-face lessons. (Baldwin, 2019) Teachers expressed interest in helping students navigate online to actively encourage them to participate in the course. Learning style is essential for effective course design (Wooldridge, 1995). While creating an online course design, it is essential to keep in mind that we generate an experience for students with different learning styles. Similarly, Jenkins (2015) emphasizes that curriculum design attributes can be developed and used to improve student success.

Platform Function

The platform function refers to controlling, suitability, usability, system stability (Zou & Wang, 2011).

The online education live stream platform provides teachers with a primary way to conduct online teaching. The live stream course enriches the teaching methods of online teaching. Technological advancement in education increases the interaction between students and teachers through different types of devices. Students can use the education live stream platform to interact with teachers or join and connect with local schools or learner collaboration groups in other countries (Erjavec, 2013). In addition, teachers can use social media to communicate with colleagues about specific students, share learning resources, and participate in peer guidance and cooperation (Bett & Makewa, 2018).

Ali Kamali & Ladan Kianmehr (2015) made the conclusion that the help of electronic devices and resources on learning and education is limited. In order to give better effect, the priority should be given to provide a network environment that students can adapt. Tawafak et al. (2019) found that the continuance intention depends on the type of technology. Roca et al. (2006) verified that students' continuance intention is determined by satisfaction, which in turn is jointly determined by perceived usefulness, information quality, confirmation, service quality, system quality, ease of use and cognitive absorption.

Through the live stream course, teachers and students can be synchronized in the classroom, increasing teacher and student interaction opportunities. The check-in function is helpful for teachers to manage students and improve the quality of teaching; the question bank test papers help understand students' learning conditions and timely adjustment of teaching methods. The marketing function is conducive to the enrollment of educational institutions and teachers, attracting the attention of parents or students, and doing a good job in course promotion and marketing. In addition to these, platform functions such as educational administration, post-technical support and technical guidance, shop decoration, and transaction management can help educational institutions and individual teachers to carry out online teaching activities.

The high-quality functional design provides excellent convenience for teachers in lesson preparation, homework, and exams, saving time and improving efficiency (Zhang, 2021). Furthermore, the rich functional design can increase students' interest in online classrooms, increase students' interest in learning, and promote the teacher-student relationship.

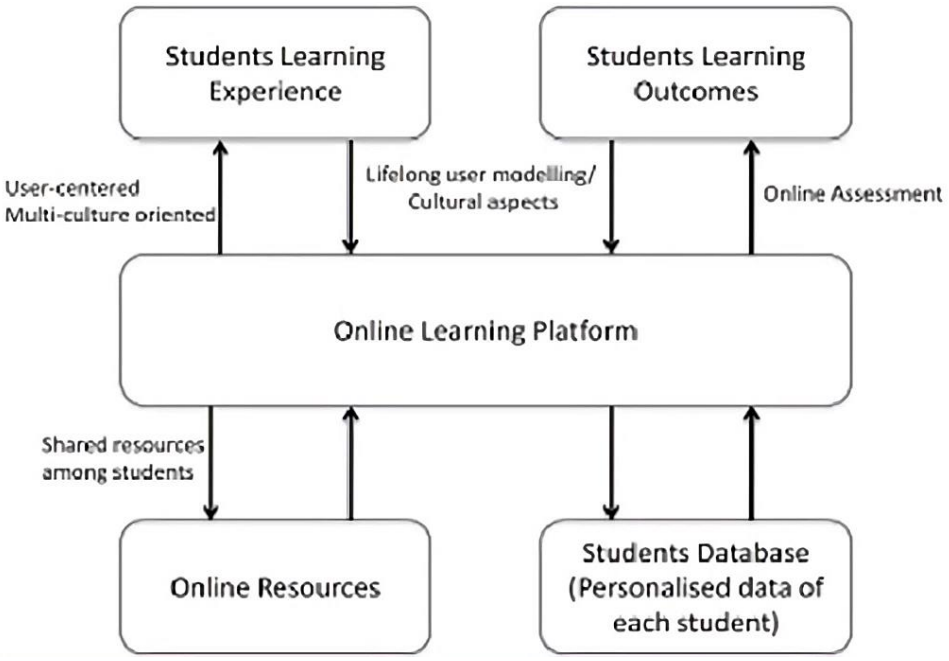
Theoretical Framework I

The Portal in this framework can improve students' learning outcomes and experiences, especially “project-based learning” and online assessment, which will drive and motivate students with self-learning. The online resources developed from this project will help student learning such that to take the online assessment tasks and conduct online discussions.

Information and communication technology (ICT) has been widely used in education in recent years in terms of online resources, interaction and communication (Alexander, 2006; Kolo & Breiter, 2009). The use of digital portal can significantly improve students’ learning outcomes and experiences as shown in the conceptual framework depicted in Figure 1. It aims at improving students‟ learning experience and outcomes via the online learning platform, which stores and shares online resources among students. Furthermore, the platform also collects data from students‟ learning style, learning behavior and learning outcomes and therefore builds a student database, which can provide a personalized database to each individual student.

Figure 1

Proposed framework of the interactive online learning portal



Source: Zou, P.X., & Wang, X. (2011). *A Conceptual Framework of Web 2.0-based Interactive Portal for Improving Learning and Teaching in Construction Curriculum.*

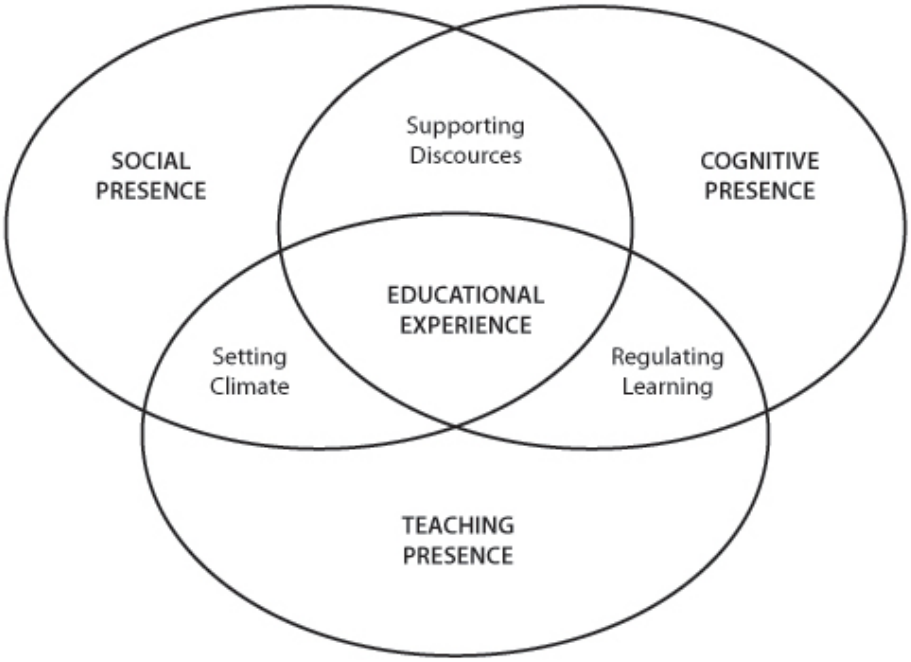
Theoretical Framework II

The Community of Inquiry (CoI) theoretical framework is unique in framing our discussion of the practical implications of blended learning in higher education. The premise of the CoI framework is that higher education is both a collaborative and an individually constructivist learning experience. As such, we have this seemingly paradoxical but essential connection between cognitive independence and social interdependence.

The three key elements or dimensions of the CoI framework are social, cognitive, and teaching presence (Figure 2). It is at the convergence of these three mutually reinforcing elements that a collaborative constructivist educational experience is realized. Social presence creates the environment for trust, open communication, and group cohesion. Cognitive presence has been defined "as the extent to which learners are able to construct and confirm meaning through sustained reflection and discourse in a critical community of inquiry" (Garrison et al., 2001). It has been operationalized through the developmental phases of inquiry – a triggering event, exploration, integration, and resolution. The third and cohesive element, teaching presence, is associated with the design, facilitation, and direction of a community of inquiry. This unifying force brings together the social and cognitive processes directed to personally meaningful and educationally worthwhile outcomes.

Figure 2

Community of Inquiry framework



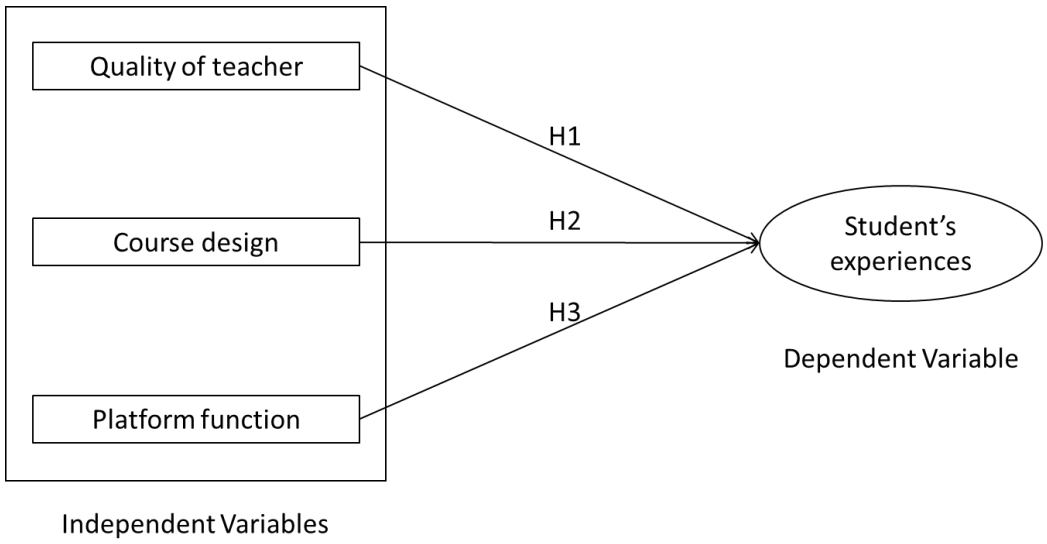
Source: Lipman, M. (1991). *Thinking in education.* Cambridge: Cambridge University Press.

Conceptual Framework

The researchers developed a conceptual framework based on the models discussed in Theoretical Framework. Figure 3 shows the conceptual framework of the study. This conceptual framework will demonstrate the three main factors that influence the student experience. The three independent variables are quality of teacher, course design, and platform functionality.

Figure 3

Conceptual Framework of the Study



Note: Constructed by the author (2022).

Research Hypotheses

H_1: Quality of teachers has a significant influence on students' experience.
H_2: Course design has a significant influence on students' experience.
H_3: Platform functions has a significant influence on students' experience.

Research Methodology

This study utilizes quantitative methods to determine the impact of three characteristics of online live education platforms on student experience.

As only 127 questionnaires were sent out for this questionnaire, 40 of them did not submit the survey, probably because they had never participated in online education platforms or submitted overtime. According to the CNNIC (2020) report, the size of online education users in China reached 342 million, accounting for only 34.6% of internet users as a whole, resulting

in only a small sample size being obtained for this survey. Although the Wilkins et al, (2005) survey provides evidence of the validity of using smaller sample sizes to develop norms where necessary, this should not be taken for granted as an excuse to reduce the sample size and if the test can support a larger number of respondents, then it should still be done.

Quantitative data were obtained through a self-administered online questionnaire with a sample of 87 learners who participated in live online educational courses. The questionnaire's reliability was verified using Cronbach's alpha, and Item Objective Congruence (IOC) with three experts validated the validity of the questionnaire. Quantitative data analysis used multiple linear regression to determine the impact of three variables on student experience. The model was designed based on the quantitative results of the study.

Research Design

This study uses quantitative research to accomplish the research purpose. Quantitative data analysis used multiple linear regression to determine the three variables of online live streaming platforms' influence on student's experience. Data was collected through self-administered questionnaires for learners who participated in live online educational courses.

The data collection tool consists of three main parts (a) demographic characteristics, (b) The quality of teachers on the online live streaming platform, course design, platform function and (c) student experience. A five-point Likert scale was used, ranging from 1 to 5 (1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree). In this study, quantitative data was collected through a questionnaire using Questionnaire Star, with questions consisting of three variables and questions about the student's experience. The questionnaire is measured using 20 questions.

Target Group Respondents in this Study

According to the research objectives of this survey, purposive sampling was used to determine that the respondents were those who had participated in online education live streaming platform. A total of 127 respondents were selected to participate in this questionnaire survey, of which 87 were valid, with an effective rate of 68.5%. Among them, there were 14 respondents aged 6 to 12, 18 respondents aged 13 to 15, 15 respondents aged 16 to 18, and 40 respondents aged 19 and above. The relationship between online live education platforms and student experience is investigated.

Reliability test results

Table 1 shows that the reliability test results based on Cronbach's Alpha were above 0.70 and have obtained internal consistency.

Table 1

Reliability Statistics for the Factors in the Study

Variables	Cronbach Alpha Results	No. of Questions	Internal Consistency
Quality of teacher	0.911	3	Acceptable
Course design	0.768	4	Acceptable
Platform function	0.734	4	Acceptable
Student's experiences	0.759	2	Acceptable

IOC and reliability testing of each item

Table 2

The Result of Item Objective Congruence (IOC) and reliability testing (Cronbach alpha) of each item.

Main variable	**Quality of teacher**	**IOC results**	**Cronbach Alpha Co-Efficient**
Quality of teacher	Q1. Teachers communicate with students effectively.	0.67	0.801
	Q2. Teachers manage to finish class within timely manner.	1.00	0.935
	Q3. Teachers are knowledgeable on their teaching subjects.	1.00	0.932
Course design	Q4. The course design is attractive.	1.00	0.707
	Q5. The course duration is appropriate.	1.00	0.739
	Q6. The arrangement of the course meets my needs.	1.00	0.710
	Q7. The course design helps me create an efficient learning environment	1.00	0.695
Platform function	Q8. The function of the platform is easy to use.	1.00	0.624
	Q9. The platform has interactive functions that make learning interesting.	1.00	0.705
	Q10. The platform displays well, no delay, no freeze.	1.00	0.671
	Q11. The platform has a wealth of functions, such as raising hands in class, asking questions and homework publishing, uploading, grading and other functions.	1.00	0.690

The Item Objective Congruence (IOC) Index was used as a basic measure of the effectiveness (quality) of the questionnaire items. For this study, the researchers invited three experts to participate in the IOC process to assess the content validity of the questionnaire. The evaluation method is as follows. In addition, the standard score for acceptable items in the

questionnaire must be greater than or equal to 0.67 (the average score is calculated from the sum of the assessment scores of the three experts).

+1 = consistent

0 = there is a problem

-1 = inconsistent

Reliability analysis tests a scale that consistently reflects the construct it is measuring. A total of 87 responses were used to conduct the reliability analysis.

According to the empirical education journals and international common statistic criteria, Cronbach's alpha acceptability value is around 0.7, and the value reaches 0.8, or greater is better (Cortina, 1993). In Table 3, Cronbach's alpha for the factors ranged from 0.624 to 0.935, around the acceptable value 0.7. It indicates that all items in each factor are reliable and consistently reflect the relevant concept.

Scope of Data Analysis

The data analysis treatment is presented in the table below:

Table 3

Data analysis treatment

Main variable	Analysis Type	Expected outputs	Software
Part I Demographic Profile	Descriptive Statistics	Means, S.D. Frequency	IBM SPSS Statistics 26 version
Part II Statements in the questionnaire	Multiple regressions	B, S.E., Beta, Sig.	IBM SPSS Statistics 26 version

Data Analysis and Results

Demographic Characteristics

A total of 87 who had participated in the education live streaming platform participated in this survey. In terms of gender, forty-four people (50.6%) were female, and 43 (49.4%) were male. In terms of the age, the main portion is 19 years old or older (n=40), accounting for 46.0%, 6-12 years old (n=14), accounting for 16.1%, 13-15 years old (n=18), accounting for

20.7%, and lastly in term of the educational backgrounds showed 14 primary school students (16.1%), 14 junior high school students (16.1%), 25 senior high school students (28.7%), and 34 college students (39.1%).

Descriptive Analysis of the Variables

The weighted mean refers to the calculated mean multiplied by the pertinent frequency (Rédei, 2008).

In a weighted mean, the final average number reflects the relative importance of each observation and is thus more descriptive than a simple average. It also has the effect of smoothing out the data and enhancing its accuracy. (Ganti, 2005).

Quality of teacher: On average, respondents with a weighted average score of 3.96 rated teacher quality as excellent. However, when the second question was asked, the results showed that teachers might be late in leaving to get out of class, with a weighted average score of 3.86.

Course design: On average, respondents with a weighted average score of 3.95 rated the course design as excellent. When the 4th question was asked, the results showed that the course was not attractive enough for students, with a weighted average score of 3.86, and the 5th question reflected the unreasonable scheduling of online courses, which made the student experience poor, with a weighted average score of 3.91.

Platform functions: On average, respondents with a weighted average score of 3.96 rated platform functionality as excellent. However, when asked the 10th question, the results showed that the quality of the platform's graphics might make the students' experience not very good, and the weighted average score is 3.84. Finally, the 11th question reflects that the platform's functions are not rich enough and perfect, making the students feel that the experience is not good, with a weighted average score of 3.93.

Student experiences: On average, respondents with a weighted average score of 3.81 rated the student experience as excellent. However, when the 12th question was asked, the results showed that the platform did not improve all students' scores, with a weighted average score of 3.78.

VIF Analysis

The variance inflation factor (VIF) quantifies the severity of multicollinearity in ordinary least squares regression analysis.

The smallest possible value for VIF is 1, which indicates the complete absence of

collinearity. Typically, in practice there is a small amount of collinearity among the predictors. As a rule of thumb, a VIF value that exceeds 5 or 10 indicates a problematic amount of collinearity. If R^2 is close to one, then collinearity is present, and so the VIF will be large (James et al., 2014).

Vittinghoff, Glidden, Shiboski and McCulloch (2011) preferred that VIF greater 10 is problematic.

The VIF indicator for Quality of teacher is 5.609, the Course design is 8.468, and Platform function is 6.432. These figures indicate that there is no high correlation (multicollinearity) between all the factor independent variables in this study and that then the model is reliable because other factors do not influence these factors.

Results of Hypotheses Testing of the Variables

Table 4 shows the results of quantitative data analysis using multiple linear regression. The adjusted R square is 0.818, which explains that the three independent variables can explain the change in student experience by 81.8%.

The value of significant influence on dependent variable based on p value is 0.05. Based on the statistical data, p value of Quality of teacher is 0.493 which is greater than 0.05, "Quality of teacher (p value) = 0.493>0.05". Course design's p value is 0.000 which is less than 0.05, "Course design (p value) = 0.000<0.05". Platform function's p value is 0.006 which is less than 0.05, "Platform function (p value) = 0.005<0.05".

The result indicates that the p-value of Course design and Platform function is less than 0.05. Therefore, Course design and Platform function have a significant influence on the student experience.

Table 4

The Influence of online live streaming factors on Students' experience

Independent variables	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	VIF
	B	Std. Error	Beta			
(Constant)	-0.749	0.236		-3.172	0.002	
Quality of teacher	0.091	0.132	0.075	0.688	0.493	5.609
Course design	0.669	0.168	0.532	3.98	0.000	8.468
Platform function	0.393	0.141	0.325	2.792	0.006	6.432
Adjusted R Square		0.818				
a Dependent Variable: SE						

Table 5

Summary of Hypotheses Testing

Hypotheses	Sig.	Conclusion	Beta	Result
H_1: Quality of teachers has a significant influence on students' experience.	0.493	Not supported		
H_2: Course design has a significant influence on students' experience.	0.000	Supported	0.669	1st
H_3: Platform functions has a significant influence on students' experience.	0.006	Supported	0.393	2nd

Table 5 provides the overall summary of the hypothesis testing, showing that proposed hypotheses H_2 and H_3 were supported but proposed hypotheses H_1 is not supported by the findings.

Discussion and Conclusion

Discussion

The results of this study may help online education platforms to improve and refine their current education models and methods. Implementing new strategies such as quality teachers, interesting courses, and improved functionality to enhance the student experience of participating in live online courses will make education in China more relevant. Today's epidemic issues and progressively stricter online regulations have facilitated the implementation of optimized online live education platforms.

The results of the study showed that primary, middle and high school students accounted for 60.9% of the total number of respondents and 39.1% of respondents with a university degree or higher. Primary, middle and high school students preferred online tutoring in English and mathematics, while respondents with a university degree or higher preferred career and skills tutoring. Furthermore, by comparing the change in student achievement after participating in online webcast courses, it can be seen that there is a significant increase in the 91 to 100 band and a small decrease in the remaining achievement bands.

The results of this study show that:

Course design

First, course design had a statistically significant impact on the student experience. The mean values for course attributes indicate that respondents were not particularly satisfied with the course design.

Among other things, respondents felt that live online education courses were weakly engaging. In addition, respondents also felt that the timing of the live online education courses

was poor, possibly because the platform did not consider the student's level of acceptance. As a result, it is not a good option for students to receive instructional content for a long period.

Platform function

Secondly, platform functionality was another important factor affecting students' experience. The highest average score for this factor was the ability to function easily. Clearly, as a medium for disseminating knowledge, it is enough for the platform to be simple and easy to use without too many complexities or cumbersome features. Another factor is the inclusion of interactive features; this would enhance teacher-student interaction. The lowest rating is that there may be delays and short freezes, and this may be due to network bandwidth and device configuration. The platform's openness team should improve the product's compatibility to enable students to have a good online learning experience.

Overall, online education live broadcast platforms have a positive impact on improving student experience. Some previous studies have shown that technology-enabled courses are positively related to student performance (Cho & Schelzer, 2000). Online teachers must be passionate about developing authentic teaching resources that actively connect with learners and encourage skilled performance. In order to achieve better results in learning, teachers and students have equal responsibility. When the learner has any problem in understanding the concept, he needs to ask the teacher for the solution (Bangert, 2004). Therefore, we can conclude that "effective course design and platform functionality" significantly affects students' online learning process and experience.

Conclusion

This study aims to determine the impact of three characteristic variables of online education platforms, namely, teacher qualifications, curriculum design, and platform functions, on students' experience of participating in online education live broadcast platforms.

While many studies have been conducted on the factors that influence the student experience in online or offline educational settings, there is little research on the impact of live online educational platforms on the student experience.

Course design

Course design needs to be effectively designed to be easily understood. If the instructor plans the course well, students will be able to comprehend the content smoothly and improve their performance effectively, making for a better student experience. Teachers need to be more creative in designing and delivering course content to stimulate students' learning emotions and positively impact online courses.

Platform functions

The functions of the online education platform need to be designed so that teachers find it easy to use and students enjoy using it. As a result of COVID-19, many teachers who have never been involved in online education are forced to use live online education platforms, which is a new challenge. In addition, it is not easy for senior lecturers, so teachers' difficulty adapting to the technology should be a priority when designing the platform's features.

The conceptual framework of characteristic factors of online education live broadcast platforms proposed by this study can help online education platforms to find ways to make students feel more comfortable and effective in their learning, thereby helping platforms to provide better education.

Limitation of Research

The study sample size was small and may not be fully representative of the entire survey sample. The data collected in this study is not inherently causal. In addition, the data came from only one type of respondent, namely students. Therefore, the results of this study cannot be generalized to other samples and this study is limited to examining students' experiences. Also, students may encounter problems such as limited internet access or disruptions caused by weak signals. Some students may face problems with their home environment, such as interference from family members, which may lead to negative performance.

Recommendations for Further Studies

Future research should obtain a larger number of respondents and, in addition, could include the perspectives of teachers and policy makers to provide more generalizations about the results. The design of online courses should be studied in depth to understand how to structure online courses more effectively, including minimizing disadvantages. In addition, the study only looked at Chinese students; if data had been collected from different countries, it would have provided better comparative results and understanding of students' perspectives. This study was limited to examining student performance, so teachers' performance could be examined under similar conditions in the future. The above points could be taken into account in future studies.

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