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Influencing Factors of Students' Use of New Media Teaching Classes on the Learning Attitude and Learning Satisfaction in Guangdong, China

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Abstract

Purpose: This study aims to explore the factors that influence the satisfaction and attitude of international trade students in Guangdong Province. The conceptual framework proposes causal relationships among teacher-student interaction, students' autonomy, teachers' technical readiness, perceived ease of use, interactivity, satisfaction, and attitude. **Research Design, data, and methods:** Using the quantitative method (N = 500), a questionnaire survey was conducted among sophomores and juniors majoring in international trade at Zhanjiang University of Science and Technology, Guangdong Province. The nonprobability sampling methods include judgmental, quota, and convenient sampling for collecting data. Structural equation modeling (SEM) and confirmatory factor analysis (CFA) were used to analyze the data, including model fit, reliability, and construct validity. **Result:** Teacher-student interaction, teacher technical preparation, and perceived usability significantly affected students' learning satisfaction, and perceived usability and interaction affected students' attitudes. However, student autonomy has no significant effect on students' satisfaction with using new media. **Conclusion:** This study suggests that the management team and teachers of higher vocational colleges provide an assessment to measure the impact of new media classrooms on the development of higher vocational education to improve students' satisfaction and attitude towards using new media classrooms.

Keywords : Perceived Ease of Use, Interactivity, Satisfaction, Attitude, China

JEL Classification Code: E44, F31, F37, G15

1. Introduction

Information technology has infiltrated social life and economic development, personalized learning, lifelong learning, education for all, and quality education, which has become an important feature of education development in the information age. It proposes requirements, construction, advanced, efficient, and practical higher education information infrastructure. A new media classroom, or smart classroom, is not centered on expensive, advanced, intelligent technology or its basic features; it is a humanized teaching space designed for the natural needs of teachers and students. This kind of classroom often gives the teacher and the student free access to rich teaching tools, uses the related material that the student is familiar with, lets the decoration and the arrangement be advantageous to the student's study, makes students feel happy and comfortable, with a family atmosphere of learning, learning space. Therefore, technology will play a lead function, creating a more open communication space (Huang et al., 2012).

Molnar believes that new media classroom design should have flexible space layout, dynamic desk and chair combination, multi-screen display space, and other characteristics (Molnar, 2007). Yau et al. (2003) believes that new media classrooms can dynamically capture classroom situations and use context-aware mobile devices to facilitate teacher-student and student-student interactions. Huang et al. (2012) consider that an intelligent learning environment can create learning situations, provide a wealth of learning resources, enable personalized learning, and facilitate communication and collaboration between students and students, real-time tracking of the student learning process

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and evaluation of student learning results of effective activities or learning space. Chen et al. (2012) consider that an intelligent learning environment is based on relevant technologies and theories, with interaction as the core, and that the role of the various elements of classroom composition is fully developed and can promote people's emotions, cognition and skills of learning and development of the teaching environment. To sum up, the characteristics of a new media classroom can be summed up as follows:

intelligent, providing teachers and students with rich and intelligent teaching equipment, providing a workplace for communication and efficient access to information, improving collaboration, discussion, and learning efficiency.

innovation, the introduction of space design concept through flexible table and chair layout to bring changes in the space layout, using media technology, support a variety of teaching methods and teaching models; personalized, personalized push of resources can be achieved, teachers can use the internet of things technology to achieve the teaching equipment classroom management and network control.

Chen et al. (2012) proposed a model of a learning support system, arguing that future classroom design will be based on classroom environment design and classroom teaching activity design, which can promote learners' learning and development and achieve happy and efficient learning. Based on the universal and diversified model of intelligence education, the new media classroom is gradually moving into the campus, which promotes the change of teaching and learning methods. Therefore, the new media classroom environment can provide rich resources, facilitate access to resources, support personalized, collaborative, and interactive learning, real-time recording of learners' learning process and achieve accurate teaching, let the teacher highly effective teaching and the student individuality, the creativity obtains the comprehensive development.

2. Literature Review

2.1 Teacher-Student Interaction

Lou et al. (2006) focuses on the content of interaction, that is, practice is the intermediary object of interaction, and that teacher-student interaction can only be formed by the intermediary object of interaction, so the interaction model between teacher and student should be subject-object-subject. Ye and Pang (2001) considered that teacher-student interaction refers to all interactions and influences between teachers and students. Teacher-student interaction can be increased by providing improved online teaching quality, student delivery (Bolliger & Wasilik, 2009), as well as timeliness of teacher responses (Al-Samarraie et al., 2017; Bolliger & Wasilik, 2009). Higher levels of interaction with students lead to teacher satisfaction (Bolliger et al., 2014). A recent Pham and Nghiem (2022) study of 206 teachers' online satisfaction found that teacher-student interaction had the most significant impact on teachers' online satisfaction, compared with technology-related issues and institutional support. Based on people-oriented educational thought, Lou et al. (2006) developed the idea that the interaction between graduate students and tutors should be graduate-centered and promote student development and improvement to improve student satisfaction. Thus, this study hypothesizes that:

H1: Teacher-student interaction has a significant influence on satisfaction.

2.2 Students' Autonomy

Deci and Ryan (1987) define autonomy as the internal approval of one's actions, the awareness of one's actions arising from within, and being one's own. According to Ryan and Deci (2000), teachers' support for autonomy can improve students' motivation for learning and academic success. By meeting students' needs for autonomy, we can increase students' participation and motivation (Wang & Han, 2021). Reeve (2011), in their research work, supports student autonomy as one of the ways to improve teaching and is considered a motivational perspective to make teaching effective. According to the intrinsic motivation resources of Self-determination theory students, it helps to develop their classroom participation and effective Operation (Deci & Ryan, 1985). Of all the intrinsic motivational resources teachers can expect students to have, one aspect of psychology is important for autonomy. It is a psychological structure that collaborates three dimensions: internal trajectories, Volition, and perception to select a single inspiring experience (Reeve et al., 2003). Thus, this study hypothesizes that:

H2: Students' autonomy has a significant influence on satisfaction.

2.3 Teachers' Technical Readiness

Teacher's technological readiness (TTR) means different levels of acceptance and application of techniques (Parasuraman, 2000). Collis et al. (1995) states that lecturers are key to the success of online courses, and teacher preparation is important in delivering virtual courses. For the overall effectiveness of the online course, both teachers and students should be well prepared and prepared for the challenge of real-time interaction. In the online learning model, three basic characteristics of the teacher, namely, attitude to technology, teaching style, and control over technology are critical and influence learning outcomes (Webster & Hackley, 1997). Reshmi (2021) states that when students, their mentors, and mentors are not ready regarding

technology, content, or confidence to deal with real-time online learning platforms, it directly impacts students' academic performance and overall learning. Teacher, technology, and interaction are the main factors affecting American graduates' satisfaction with online courses (Bolliger, 2004). Regarding student satisfaction, the technical preparation of both the teacher and the student is very important because they did not have such a course before; they experienced a completely new setting and transitioned from physical contact to simultaneous online courses (Reshmi, 2021). Research by Dassanayaka et al. (2022) indicates that perceived usefulness and teacher readiness are important determinants of teacher satisfaction with online instruction during COVID-19. Thus, this study hypothesizes that:

H3: Teachers' technical readiness has a significant influence on satisfaction.

2.4 Perceived Ease of Use

Islam (2011) refers to perceived ease of use as a college student's perception of how easy it is to use an online learning platform. Jabali (2022) perceived usefulness and ease of use as important predictors of learner satisfaction, an important mediator of predictive factors and persistence. Chen et al. (2021) states that the effect of perceived usability on the intention to continue moderates perceived usefulness and student satisfaction. Others analyzed the PEU and SAT and found a positive correlation. Jabali (2022) shows that the PEU significantly impacts the SAT in the context of e-learning. Online learner satisfaction mediates between perceived ease of use and willingness to use consistently (Thiruchelvi & Das, 2019). Teachers with experience in online teaching are willing to adopt new technologies and have positive attitudes toward online teaching (Karasneh et al., 2021; Kisanga, 2016). In the COVID-19 era, educators' attitudes toward the use of technology in online instruction were quite good (Rahayu & Wirza, 2020). Institutional support significantly affects online teacher attitudes (Kulal & Nayak, 2020; Panda & Mishra, 2007). As a result, educational institutions, namely universities and colleges, spend large budgets to create and improve digital infrastructure and some virtual opportunities (Sharma & Srivastava, 2019). Thus, this study hypothesizes that:

H4: Perceived ease of use has a significant influence on satisfaction.

H5: Perceived ease of use has a significant influence on attitude.

2.5 Interactivity

Interaction refers to the interaction between human beings, the environment, and human beings and machines in certain social backgrounds and specific situations (Ye & Pang, 2001). Research by Sun and Hsu (2013) shows a relationship between the level of interaction and learners' attitudes, learning, and satisfaction. The research also shows that the interaction perception of learners may change with the increase in experience, but different interaction design will affect their learning performance and attitude. Chen et al. (2008) carries on the case analysis of the online communication cooperation situation, pointing out that asynchronous online communication exists in certain interactions, and mutually, prompt feedback will effectively mobilize interactive enthusiasm. Taking college English as an example, Li and Zhou (2011) analyze the communication and interaction between students and teachers and conclude that it is necessary to communicate and interact with teachers in the learning process. Mei and Gu (2011) used a qualitative approach to explore how student interaction can be achieved in a web-based learning environment; the degree of interaction directly impacts students' attitudes toward the curriculum. Thus, this study hypothesizes that:

H6: Interactivity has a significant influence on attitude.

2.6 Satisfaction and Attitude

Alhazmi (2015) proposed that students should have their feelings during the learning process. If the learners' needs are met during the learning process, they can be called learning satisfaction, which has strong subjective emotional factors and personal experience. In previous social studies, attitudes were important determinants of behavioral intent (Ajzen, 1991; Fishbein & Ajzen, 1975). It has also been empirically tested as a powerful mediator of motivational variables predicting behavioral intentions using computer technology (Taylor & Todd, 1995). Learners' attitudes toward e-learning use significantly impact their willingness to continue e-learning (Ho, 2010; Liao et al., 2009; Lin et al., 2011; Teo & Van Schaik, 2012). Individuals' positive attitudes toward e-learning led to an improvement in their intention to use technology (Liaw et al., 2007). Lin et al. (2011) discovered that attitudes are the first prerequisite for users' continuing intentions in e-learning. In the COVID-19 epidemic, teachers' attitudes to technology adoption must also be considered when studying teachers' behavioral intentions for online teaching (Sokal et al., 2021). In the COVID-19 era, educators' attitudes toward the use of technology in online instruction were quite good (Rahayu & Wirza, 2020). User Satisfaction positively and significantly impacts attitudes toward using e-learning services (Ho, 2010; Liao et al., 2009; Lin et al., 2011). Satisfaction significantly determines teachers' attitudes toward using the system (Rahayu & Wirza, 2020). Teachers' exposure to e-learning technologies using computers and their PU significantly contributes to a positive attitude towards online teaching (Kuenzang, 2021). User

satisfaction is the most effective dimension of personal attitudes (Weiss, 2002). The satisfaction of e-learners positively influences their attitudes toward e-learning (Ho, 2010; Liao et al., 2009). Thus, this study hypothesizes that:
H7: Satisfaction has a significant influence on attitude.

3. Research Methods and Materials

3.1 Research Framework

This study aimed to explore the new media classroom learning satisfaction and the factors influencing the attitudes of junior and junior students majoring in international trade at Zhanjiang University of Science and Technology. The researchers used the technology satisfaction model designed by Islam (2011) or the technology acceptance model (TAM) designed by TSM, Davis (1989), and others; social interaction theory, combined with research theory and previous relevant literature, a conceptual framework was established for the learning satisfaction and attitudes of international trade majors in Guangdong province using new media. This study investigated the effects of Teacher-student interaction (TSI), Students' autonomy (SA), Teachers' technical readiness (TTR), Perceived ease of use (PEU), and Interactivity.

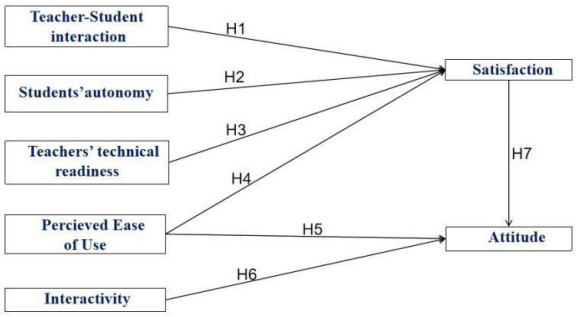

Figure 1: Conceptual Framework

H1: Teacher-student interaction has a significant influence on satisfaction.
H2: Students' autonomy has a significant influence on satisfaction.
H3: Teachers' technical readiness has a significant influence on satisfaction.
H4: Perceived ease of use has a significant influence on satisfaction.
H5: Perceived ease of use has a significant influence on attitude.
H6: Interactivity has a significant influence on attitude.
H7: Satisfaction has a significant influence on attitude in the new media classroom.

3.2 Research Methodology

Using a quantitative Nonprobability sampling method, the researchers conducted an online survey of vocational college students in Guangdong Province and distributed the questionnaire to their target groups. They studied at the Zhanjiang Institute of Science and Technology in Guangdong province and have accumulated rich experience using new media in the classroom. This study aims to discover the key factors that affect students' satisfaction and attitude toward using new media in class. Seven hypotheses were analyzed for seven proposed variables, ranging from strong discordance 1 to strong consistency 5. Questions on demographics, including gender, age, etc., were included in the survey. The researchers conducted preliminary tests on 50 respondents, and expert scores confirmed that the item goal consistency index (IOC) was greater than 0.6 to ensure the accuracy and reliability of the survey data. Overall, the study used a rigorous approach to gather data on the factors that significantly affect student satisfaction and attitudes in a new media classroom. The results can provide valuable insights into how to improve student satisfaction and an effective new media classroom environment.

3.3 Population and Sample Size

The research object of this paper is the international trade students with rich learning experiences in new media classes at Zhanjiang Institute of Science and Technology, Guangdong Province. The researchers used a structural equation sampling computer to calculate an expected effect size of 0.2, an expected statistical power level of 0.8, several potential variables of 7, several observed variables of 27, and a probability scale of 0.05, the minimum sample size of the model structure is 109, and the recommended minimum sample size is 425. The 500 sample sizes and the structural equation modeling (SEM) statistical techniques are appropriate for this study. This study selected 2-3 grade students because first-year students need more experience in college new media classroom learning.

3.4 Sampling Technique

This study conducted a questionnaire survey among sophomores and Juniors majoring in international trade at Zhanjiang University of Science and Technology in Guangdong province using Nonprobability sampling and fixed sampling methods. This distribution was determined based on the proportion of the population in the different grades of the Zhanjiang Institute of Science and Technology: 275 students were drawn from sophomores in international trade and 225 from juniors, for a total of 500 students (Table 1). The researchers then used a convenient sampling method

to distribute questionnaires online and offline.

The 2024 period is approximately one month, from January to February. The data screening process ensures that the international trade sophomores and Juniors at Zhanjiang Institute of Science and Technology in Guangdong Province are the right target group and have at least one year of experience using new media in the classroom. Online versions were spread through social networks, including WeChat, Questionnaire Stars, e-mail, and so on. The paper version of the questionnaire was distributed directly to students by teachers.

Table 1: Sample Units and Sample Size

Exhibition	Population Size	Proportional Sample Size
Sophomore majoring in International Trade	1780	275
Junior majoring in International Trade	1445	225
Total	**3225**	**500**

Source: Constructed by author

4. Results and Discussion

4.1 Demographic Information

The study used a quota sampling method, with 500 questionnaires for all target students. Screening questions help to screen out unqualified participants. Our final sample included 492 students majoring in international trade at the Zhanjiang Institute of Science and Technology in Guangdong Province. In Table 2, most participants were men (52.44%) and women (47.56%). The age range of this study was 18-20 years old (51.82%) and 21-22 years old (47.76%). The survey shows that there are 293 students in the Pearl River Delta Economic Zone (Guangzhou, Foshan, Zhaoqing Shenzhen, Dongguan, Huizhou, and Zhuhai), accounting for 59.55% of the total population, the number of students in the Yangtze River Delta (41 cities including Shanghai, Jiangsu, Zhejiang and Anhui) was 156, accounting for 31.7% of the total population; The number of students in Beijing-tianjin-hebei region (including 11 prefecture-level cities in Beijing-tianjin-hebei region) is 28, accounting for 5.7% of the total population; the number of students in other regions accounts for 3.05% of the total population. Among the target group of college students, the proportion of living expenses per month is mostly between 1,001- and 2,000-yuan, accounting for 54.7%, of which 269; between 501 and 1,000,126, accounting for 25.6%; and above 2001, 37, accounting for 7.5%.

Table 2: Demographic Profile

Demographic and General Data (N=492)		Frequency	Percentage
Gender	Male	258	52.44%
	Female	234	47.56%
When were born	under 18 years of age	0	0%
	18-20	255	51.82%
	21-22	235	47.76%
	23 or older	2	0.42%
Grade	sophomore	255	51.83%
	junior	237	48.17%
Occupation	Yangtze River Delta Economic Zone	156	31.7%
	Pearl River Delta	293	59.55%
	Beijing-Tianjin-Hebei region	28	5.7%
	none of the above	15	3.05%
Living expenses per month	500below	60	12.20%
	501-1000	126	25.6%
	1001-2000	269	54.7%
	2001 above	37	7.5%

4.2 Confirmatory Factor Analysis (CFA)

Confirmatory factor analysis (CFA) was used in this study. All items in each variable are significant and represent factor loads to test for discriminant validity. Significance and acceptable values for factor loads for each item indicate goodness of fit (Hair et al., 2006). The factor load value is greater than 0.30, and the P value is less than 0.05.

The cut-off point in Table 3 is reliably greater than 0.7, and the mean-variance of extraction is greater than 0.5 (Fornell & Larcker, 1981).

Table 3: Confirmatory Factor Analysis Result, Composite Reliability (CR) and Average Variance Extracted (AVE)

Variables	Source of Questionnaire (Measurement Indicator)	No. of Item	Cronbach's Alpha	Factors Loading	CR	AVE
Teacher-Student Interaction (TSI)	Marx and Bornmann (2015)	3	0.723	0.626-0.803	0.734	0.482
Students' Autonomy (SA)	Deci and Ryan (1985)	3	0.809	0.743-0.789	0.809	0.586
Teachers' Technical Readiness (TTR)	Collis et al. (1995)	3	0.799	0.673-0.812	0.801	0.574
Perceived Ease of Use (PEOU)	Islam (2011)	4	0.819	0.643-0.822	0.821	0.536
Interactivity (IN)	Sun and Hsu (2013)	4	0.834	0.699-0.808	0.836	0.562
Satisfaction (SAT)	Alhazmi (2015)	6	0.865	0.687-0.746	0.865	0.517
Attitude (AT)	Fishbein and Ajzen (1975)	4	0.850	0.721-0.793	0.852	0.589

The cut-off point in Table 3 has a reliability greater than 0.7 and a mean-variance of extraction greater than 0.5 (Fornell & Larcker, 1981). All the indicators are up to standard. The square root of the extracted mean variance determines that all correlation coefficients are greater than the corresponding correlation values for the variable in Table 4. In addition, GFI, AGFI, NFI, CFI, TLI, and RMSEA were used as model-fitting indexes in the CFA test.

Table 4: Goodness of Fit for Measurement Model

Fit Index	Acceptable Criteria	Statistical Values
CMIN/DF	< 5.00 (Al-Mamary & Shamsuddin, 2015; Awang, 2012)	3.963
GFI	≥ 0.85 (Sica & Ghisi, 2007)	0.868
AGFI	≥ 0.80 (Sica & Ghisi, 2007)	0.836
NFI	≥ 0.80 (Wu & Wang, 2006)	0.815
CFI	≥ 0.80 (Bentler, 1990)	0.854
TLI	≥ 0.80 (Sharma et al., 2005)	0.831
RMSEA	< 0.08 (Pedroso et al., 2016)	0.078
Model Summary		**Acceptable Model Fit**

Remark: CMIN/DF = The ratio of the chi-square value to degree of freedom, GFI = goodness-of-fit index, AGFI = adjusted goodness-of-fit index, NFI = normalized fit index, CFI = comparative fit index, TLI = Tucker Lewis index, and RMSEA = root mean square error of approximation

In this study, the values shown in Table 5 are all larger than the acceptable values, verifying the convergence and discriminant validity of the algorithm. Therefore, the algorithm's convergence validity and discriminant validity are guaranteed. In addition, the results of these models can also be used to verify the validity of subsequent structural model estimates.

Table 5: Discriminant Validity

	TSI	SA	TTR	PEOU	IN	SAT	AT
TSI	**0.694**						
SA	0.383	**0.766**					
TTR	0.289	0.267	**0.758**				
PEOU	0.249	0.204	0.403	**0.732**			
IN	0.174	0.165	0.127	0.217	**0.750**		
SAT	0.429	0.243	0.460	0.599	0.379	**0.719**	
AT	0.482	0.366	0.384	0.499	0.345	0.557	**0.767**

Note: The diagonally listed value is the AVE square roots of the variables
Source: Created by the author.

4.3 Structural Equation Model (SEM)

According to Hair et al. (2010), structural equation modeling (SEM) validates the random relationship between variables in the proposed model and incorporates measurement errors of the structural coefficients. The Index of goodness of fit evaluates the model fitting of the structural model fit Index is the same as CFA; it includes chi-square statistic (CMINDF), goodness of fit Index (GFI), adjusted goodness of fit Index (AGFI), Norm Goodness of fit Index (NFI), comparative goodness of fit Index (CFI), Tuck-lewis index (TLI) and root mean square error (RMSEA). The indices will assess six potential variables: Teacher-student interaction, Students' autonomy, Teachers' technical readiness, Perceived ease of use, Interactivity, satisfaction, and attitude. The modified structural equation model (SEM) fit index measurements are shown in Table 6. The statistical results were CMIN/DF = 3.577, GFI = 0.865, AGFI = 0.838, NFI = 0.827, CFI = 0.818, TLI = 0.853, RMSEA = 0.072. The fit of the structural model is verified

Table 6: Goodness of Fit for Structural Model

Fit Index	Acceptable Criteria	Statistical Values Before Adjustment	Statistical Values After Adjustment
CMIN/DF	< 5.00 (Al-Mamary & Shamsuddin, 2015; Awang, 2012)	4.526	3.577
GFI	≥ 0.85 (Sica & Ghisi, 2007)	0.841	0.865
AGFI	≥ 0.80 (Sica & Ghisi, 2007)	0.811	0.838
NFI	≥ 0.80 (Wu & Wang, 2006)	0.779	0.827
CFI	≥ 0.80 (Bentler, 1990)	0.818	0.868
TLI	≥ 0.80 (Sharma et al., 2005)	0.799	0.853
RMSEA	< 0.08 (Pedroso et al., 2016)	0.085	0.072
Model Summary		**Unacceptable Model Fit**	**Acceptable Model Fit**

Remark: CMIN/DF = The ratio of the chi-square value to degree of freedom, GFI = goodness-of-fit index, AGFI = adjusted goodness-of-fit index, NFI = normalized fit index, CFI = comparative fit index, TLI = Tucker Lewis index, and RMSEA = root mean square error of approximation

4.4 Research Hypothesis Testing Result

In the hypothesis, the degree of correlation between the proposed independent and dependent variables is measured by a regression or standardized path coefficient. As shown in Table 7, six of the seven proposed hypotheses are supported, and perceived ease of use strongly affects student satisfaction during classroom learning using new media and then affects students' use attitude. Students' satisfaction with new media classrooms mainly depends on teacher-student interaction, teachers' technical readiness, and interactivity.

The study model determined the importance of each construct from the normalized path coefficient (β) and T values shown in Table 7. As the significance hypothesis was supported at P = 0.05, the effect of student satisfaction on attitude was greatest at β= 0.193 and T= 3.383. There was no

significant correlation between student autonomy and student satisfaction (β = 0.070, T = 1.530).

Table 7: Hypothesis Results of the Structural Equation Modeling

Hypothesis	(β)	t-value	Result
H1: TSI→SAT	0.267	5.381*	Supported
H2: SA→SAT	0.070	1.530	Not Supported
H3: TTR→SAT	0.263	5.474*	Supported
H4: PEOU→SAT	0.484	8.948*	Supported
H5: PEOU→AT	0.269	5.722*	Supported
H6: IN→AT	0.449	7.133*	Supported
H7: SAT→AT	0.193	3.383*	Supported

Note: * p<0.05
Source: Created by the author

H1 shows that the interaction between teachers and students positively affects students' satisfaction in the learning process of using new media, and β= 0.267, T = 5.381. The results of the H2 study show that the standard coefficient value = 0.070, T value = 1.530, so H2 is not supported. The results of this study are consistent with those of Ryan and Deci (2017) and Reeve et al. (2003). When using new media, the change in student autonomy has little effect on satisfaction. H3 has proved that the teacher's technical preparation positively affects the students' empty seat satisfaction in the new media classroom, β = 0.263, T = 5.474. The teacher's technical attitude and proficiency have a direct impact on the teaching process and are an important determinant of students' satisfaction with the curriculum; the findings of this study are consistent with those of numerous previous literature (Bolliger, 2004; Collis et al., 1995; Dassanayaka et al., 2022; Reshmi, 2021; Webster & Hackley, 1997). H4 and H5 show that perceived usability has a positive effect on students' attitudes and satisfaction in the process of learning using new media in the classroom. β= 0.484, T = 8.948, β = 0.269, T = 5.722. Perceived ease of use is the most important predictor of learner satisfaction, which has been confirmed many times in previous studies (Chen et al., 2021; Davis, 1989; Jabali, 2022; Kulal & Nayak, 2020; Panda & Mishra, 2007). The results of the H6 study show that β = 0.449, T = 7.133. The findings of this study are consistent with those of previous literature, confirming that highly interactive new media classrooms lead to higher levels of student learning willingness in the context of higher education services strongly influence student attitudes (Li & Zhou, 2011; Chen et al., 2008; Mei & Gu, 2011; Sun & Hsu, 2013). The results of the H7 study show that β = 0.193, T= 3.383. Confirming that student satisfaction is considered to be a consequence of attitudes and an effective tool for monitoring and improving the quality of education, as student satisfaction with learning increases, their positive attitudes toward using new media in the classroom also increase (Ho, 2010; Kuenzang, 2021; Liao et al., 2009; Lin et al., 2011; Rahayu & Wirza, 2020; Teo & Van Schaik, 2012).

5. Conclusion and Recommendation

5.1 Conclusion

This research investigates the factors that influence students' satisfaction and attitude toward the use of new media in second and third-year international trade students at Zhanjiang University of Science and Technology, Guangdong Province, China. These hypotheses are proposed as a conceptual framework to study Teacher-student interaction in classroom learning using new media, students' autonomy, Teachers' technical readiness, Perceived ease of use, and interactions that affect student satisfaction and attitudes. The questionnaire was developed and distributed to a target sample of second and third-year international trade students at the Zhanjiang Institute of Technology. Confirmatory factor analysis (CFA) was used to measure and test the validity and reliability of the conceptual model. Therefore, this paper uses structural equation modeling (SEM) to analyze the factors influencing students' satisfaction and attitude toward new media classroom learning.

The results are as follows. First of all, students' perceived ease of use strongly influences their satisfaction and attitude toward using new media. Davis (1989) noted that perceived usefulness and ease of use in the TAM model are two major determinants of user attitudes and behaviors and are the most important predictors of satisfaction. The higher the perceived ease of use, the more satisfied the students were with the new devices and technologies, which in turn increased the students' positive attitudes towards continuous use (Kulal & Nayak, 2020; Panda & Mishra, 2007; Sharma & Srivastava, 2019).

Secondly, the influence of teacher-student interaction on student satisfaction is also significant. This supports that in the learning process of new media classrooms, classrooms with higher teacher-student interaction led to higher levels of student motivation and improved learning satisfaction, in turn, it improved satisfaction and use attitude (Al-Samarraie et al., 2017; Bolliger & Wasilik, 2009; Pham & Nghiem, 2022). The frequency and quality of teacher-student interaction can be greatly improved using new media classroom equipment and technology. Positive and positive teacher-student interaction can improve students' learning quality, increase teachers' and students' feelings, and be beneficial to the smooth progress of the classroom.

Third, teachers' technical readiness significantly positively affects students' learning satisfaction in the new media classroom. The degree of readiness of teachers to teach online means the degree to which teachers are mentally and technically (easy to use) able to take on challenges (Webster & Hackley, 1997). The results show that teachers' full technical preparation is conducive to successfully

mastering curriculum teaching and general education strongly impacts students' curriculum teaching and learning. Research by Dassanayaka et al. (2022) shows that perceived usefulness and teacher readiness are important determinants of teachers' attitudes to online COVID-19, with strong positive effects on student satisfaction.

Fourthly, in this study, student autonomy does not significantly affect students' learning satisfaction in the new media classroom. In previous studies, student autonomy in the curriculum has an impact on students' satisfaction, this has been confirmed by several scholars (Deci & Ryan, 1985; Reeve, 2011; Ryan & Deci, 2017). In this study, student autonomy as an important variable has little effect on student satisfaction, and the reason is that the new media classroom learning model has a great influence on perceived usability and teacher-student interaction; however, for sophomores and juniors, learning autonomy has little effect on learning satisfaction at the stage of higher learning self-efficacy, which is related to new technology intervention in new media classroom.

Finally, the students' learning satisfaction with using new media strongly influences their attitude toward using it. This result is supported by several literature studies showing that learners' attitudes toward e-learning use significantly affect their willingness to continue e-learning (Ho, 2010; Liao et al., 2009; Lin et al., 2011; Teo & Van Schaik, 2012). Satisfaction significantly determines students' attitudes toward using the system (Rahayu & Wirza, 2020). Students' exposure to learning technologies that use computers and their perceived ease of use are important to a positive attitude toward online teaching (Kuenzang, 2021).

The aim of this study is to show that teacher-student interaction, perceived usability, teacher technical preparation, and interaction are the key influencing factors of students' learning satisfaction and attitude.

5.2 Recommendation

Researchers at the Zhanjiang Institute of Science and Technology in Guangdong Province, China, found key determinants of students' satisfaction and attitudes toward using new media in the classroom: teacher-student interaction, teacher technical readiness, student autonomy, perceived ease of use, and interactivity. Therefore, these aspects should be developed and promoted throughout private educational institutions to generate better student satisfaction and sustained use attitudes, thereby improving student learning effectiveness. In order to obtain the willingness to learn in the new media classroom in higher education, the above-mentioned key factors should be developed and promoted, in addition to the student autonomy that results from its insignificant adoption. In this study, perceived ease of use is the strongest predictor of student satisfaction and attitude in the new media classroom learning process. Therefore, students need to have a sense of ease of use with new technologies and devices. If undergraduates see the new media classroom as an easy-to-use way to improve their learning outcomes, they will use it and engage deeply. Course developers, teachers, and senior executives at higher education institutions should ensure that students perceived usability, teacher-student interaction, teacher technical readiness, and key aspects of interactivity are in place as they focus on new media classroom development. To sum up, this study explains in detail the key factors that affect college students' satisfaction and attitude in the new media classroom learning process. Satisfaction in the learning process of new media classrooms, which provides new media classroom developers and senior managers of higher education institutions with the ability to identify variables that affect the use of new media by college students in the classroom, can be applied to projects and investments, and make full use of new equipment and new technology to improve the service quality and effectiveness of educational institutions.

5.3 Limitation and Further Study

The limitation of this study is that the subjects and samples are sophomore and junior international trade students of Zhanjiang University of Science and Technology in Guangdong Province. The analysis results may vary depending on the organization, field of study, culture, or country. In addition, future studies could use experimental methods to control for other variables that might confound causality, such as defining a specific quality factor and observing the effect of that independent variable on the intention to act on the dependent variable. Finally, to better understand the satisfaction and attitude of college students learning through new media classrooms, we can increase qualitative research so that research is richer and more in-depth.

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