# Factors Impacting Behavioral Intention of Animation Major Undergraduates Towards Hybrid Education in Chengdu

# ปัจจัยที่ส่งผลกระทบต่อความตั้งใจเชิงพฤติกรรมในการศึกษาแบบผสมผสานของนักศึกษาระดับปริญญาตรีสาขาแอนิเมชั่นในเฉิงตู

Chaochu Xiang[1*], Somsit Duangekanong[2]

เฉาชู เซียง[1*], สมสิทธิ์ ดวงเอกอนงค์[2]

[1]Ph.D. Candidate, Doctor of Philosophy, Teaching and Technology, Assumption University

[2]Program Director, Doctor of Philosophy Technology, Education, and Management, Assumption University

[*]ผู้นิพนธ์หลัก e-mail: 254494839@qq.com

Received: July 18, 2021; Revised: November 07, 2021; Accepted: November 18, 2021

## ABSTRACT

This study examines the essential factors that significantly impact the behavioral intention of hybrid education among animation undergraduate students from three public universities in Chengdu of China. The researchers conducted the quantitative research methodology with 500 samples and distributed the questionnaire online and offline to the target respondents. The multistage sampling technique was executed and constructed using judgmental sampling and stratified random sampling to gather data. The Confirmatory Factor Analysis (CFA) and Structural Equation Model (SEM) were utilized for statistical analysis, including the goodness of model fits, validity and reliability for each construct's examination and hypotheses test. The results have been proven to accomplish research objectives and revealed that all variables have a significant impact among its pairs in which attitude towards use presented the strongest most influence on behavioral intention. Therefore, office of academic affairs of public universities is recommended to evaluate the essential influencers for the current hybrid education implementation pattern to strengthen students' acceptance and learning achievements.

**Keywords**: Perceived Ease of Use; Perceived Usefulness; Self-Efficacy; Social Influence; Effort Expectancy.

**บทคัดย่อ**

การวิจัยเชิงวิชาการนี้มีวัตถุประสงค์เพื่อตรวจสอบปัจจัยสำคัญที่มีผลกระทบอย่างมีนัยสำคัญต่อความตั้งใจเชิงพฤติกรรมด้วยการศึกษาแบบผสมผสานของนักศึกษาระดับปริญญาตรีสาขาแอนิเมชั่นจากมหาวิทยาลัยของรัฐ 3 แห่งในมืองเฉิงตูของสาธารณรัฐประชาชนจีน ผู้วิจัยใช้วิธีวิจัยเชิงปริมาณโดยการเผยแพร่แบบสอบถามให้กับนักศึกษาจำนวน 500 คนในมหาวิทยาลัยของรัฐ 3 แห่ง การวิจัยนี้ใช้เทคนิคการสุ่มตัวอย่างแบบหลายขั้นตอนโดยการสุ่มตัวอย่างแบบใช้วิจารณญาณและแบบแบ่งชั้นในการรวบรวมข้อมูลจากแจกแบบสอบถามให้กับกลุ่มตัวอย่าง การวิเคราะห์ปัจจัยยืนยัน (CFA) และแบบจำลองสมการโครงสร้าง (SEM) ถูกนำมาใช้สำหรับการวิเคราะห์ทางสถิติซึ่งรวมถึงดัชนีวัดระดับความเหมาะสมพอดี (Goodness of Model Fit) การตรวจสอบคุณภาพเครื่องมือที่ใช้ในการวิจัย (Validity Test) และการวัดความเที่ยง (Reliability Test) ผลวิจัยพบว่าทดสอบว่าตัวแปรแฝงแต่ละตัวมีผลกระทบอย่างมีนัยสำคัญต่อตัวแปรที่เกี่ยวข้อง โดยทัศนคติต่อการใช้งานมีอิทธิพลมากที่สุดต่อความตั้งใจเชิงพฤติกรรม สมมติฐานในงานวิจัยนี้ได้รับการพิสูจน์แล้วว่าบรรลุวัตถุประสงค์ของการวิจัย ทั้งนี้ ผู้วิจัยได้เสนอแนะให้สำนักวิชาการของมหาวิทยาลัยของรัฐประเมินปัจจัยที่มีอิทธิพลสำคัญสำหรับรูปแบบการศึกษาแบบผสมผสานในปัจจุบัน เพื่อเสริมสร้างการยอมรับและผลสัมฤทธิ์ทางการเรียนของนักศึกษาได้อย่างมีประสิทธิภาพยิ่งขึ้น

**คำสำคัญ**: การรับรู้ถึงความง่ายในการใช้งาน; การรับรู้ถึงประโยชน์; การรับรู้ความสามารถของตนเอง; อิทธิพลทางสังคม; ความคาดหวังของความพยายาม

## Introduction

1. Background of the Study

Hybrid education is defined as the instruction pattern that combines traditional classroom and online tutoring resources (Mansour & Mupinga, 2007). Integrated the superiorities from online and offline instruction, a particular scope of university- level students have been confirmed to be more effective and satisfied with regard to hybrid education process than simply through the traditional or online instruction respectively (Popma, 2012).

Hybrid education has undeniable advantages. However, in China, especially at the colleges and universities level, the current hybrid education system is still under development with the regard to triple issues as follows roughly (Xiang, 2019). Initially, numerous universities over emphasized the superficial form such as the hardware and software for the hybrid education, while ignoring the course content construction to a certain extent. Secondly, there was not precisely discrimination between hybrid and online education to a certain extent (Yang et al., 2020). Finally, the correlational academic research is insufficient which most of them were merely qualitative research.

Due to the COVID-19 epidemic in 2020, entire Chinese universities have shifted

to pure online instruction in a certain period, which has played a role in facilitating the development of hybrid education to a certain extent. According to the experience and benefits acquired from the massive online education practice during the epidemic, many universities began to strengthen the academic research support for hybrid education, especially for quantitative research.

2. Objectives of the Study

a) Examine the factors affecting behavioral intention in hybrid education among animation undergraduate students from three public universities in Chengdu of China.

b) Investigate the relationship between variables that have a significant impact on behavioral intention.

c) Recommend further development of factors that can assure the adoption of hybrid education and enhance the students' learning efficiency.

3. Research Questions

a) How can educators and practitioners improve the learning efficiency of students through hybrid education?

b) What is the influence mechanism of behavioral intention to adopt hybrid education among students in China?

4. Conceptual Framework

The conceptual framework was developed from analyzing antecedent academic research frameworks and was based on TAM and UTAUT theories is shown in Figure 1.

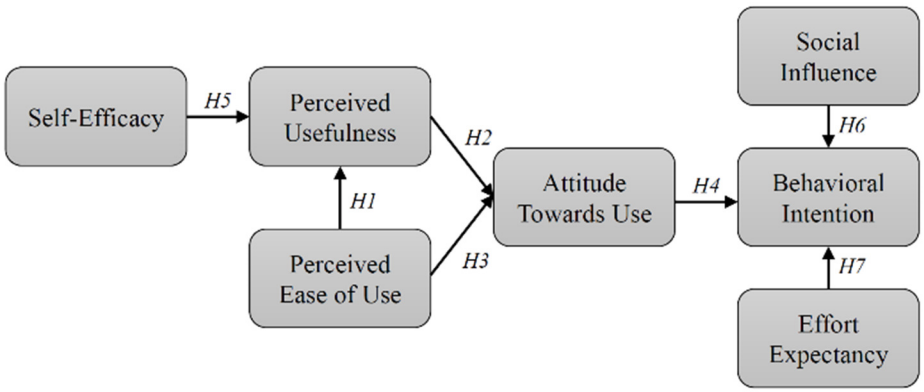


**Figure 1** Conceptual Framework

5. Significance of the Study

This empirical study demonstrates the relationship among factors in which educators and practitioners can consider improving hybrid education's efficiency for students' best study performance. Behavioral

intention (BI) is a vital indicator for estimating whether students accept the specific instruction pattern effectively to a psychological degree (Herbart, 1806). There would be a noticeable in the studying outcome between the positive and the negative learning behavior intention.

## Literature Review

1. Perceived Ease of Use

Perceived Ease of Use is determined as the degree that an individual believes the utilization of the system should be more effortless and productive (Bashir & Madhavaiah, 2015). Perceived Ease of Use was determined, which has significantly impacted the students' attitude towards the utilization of the hybrid education and also has been proven to influence perceived usefulness significantly. The previous literature from Davis (1989) has been confirmed the relationship among these variables.

H1: Perceived Ease of Use has a significant impact on Perceived Usefulness.

H3: Perceived Ease of Use has a significant impact on Attitude Towards Use.

2. Perceived Usefulness

Davis (1989) defined perceived usefulness as the level for a specific group of individuals who assure that the employment of the technology would facilitate their working productivity (Davis, 1989). The degree to which the person assumes which the utilization for the target system would enhance his or her working performance (Chauhan, 2015). Perceived usefulness towards a specific technical approach is potentially the vital determination of attitude towards the utilization of the technology. (Davis, 1989).

H2: Perceived Usefulness has a significant impact on Attitude Towards Use.

3. Attitude Towards Use

Attitude towards use can be explained as the extent for a certain population's adoption or refusal to utilize a particular technology. (Ajzen & Fishbein, 1977). In this term attitude towards use also reflects the preference of a confident person for the system. (Ozgen & Kurt, 2013). This term was a vital indicator connected with the latent variable behavioral intention (Golnaz et al., 2010). Attitude is also the crucial judgmental indicator of the students whether they would utilize the blended instructional technique or not in their learning process. (Celik & Ye**Ş**ilyurt, 2013).

H4: Attitude Towards Use has a significant impact on Behavioral Intention.

4. Behavioral Intention

Behavioral intention demonstrates the cognitive presentation for humankind whether to employ the specific system rapidly or not (Asadi et al., 2016). This notion also illustrates the degree to which an undergraduate student's volition to perform a regulation behavior. (Wang et al., 2016). Behavioral

intention is the degree to estimate an individual's willpower to insist on a particular behavior in the future (Benjangjaru & Vongurai, 2018). Cigdem & Ozturk, 2016). Additionally, this term illustrates how much effort an individual has to implement the specific behavior (Ajzen & Fishbein, 1977).

5. Self-Efficacy

Self-efficacy could be identified as evaluating individuals' specific scope regarding their competence to accomplish a specific pursuit within the particular field with the expected intention (Bandura, 1986). This concept is the faith or willpower of the student on their capability which resoundingly enforces the behaviors to generate a positive consequence or efficiently accomplish a specific learning task (Pintrich, 1999). Self-efficacy had been examined to have a significant effect on perceived usefulness. Preacher and Hayes (2008) convinced that the individuals' high-level self-efficacy could enhance their perceived usefulness towards the specific technical system.

H5: Self-Efficacy has a significant impact on Perceived Usefulness.

6. Social Influence

Social influence demonstrates the degree to which a certain number of social scientists have examined how vital it is for the individual to pursue the adoption of information technology or a system (Venkatesh et al., 2003). This variable is the judgment of intention from the specific scope of the behaviors which are influenced by the other individual or social atmosphere (Mazman et al., 2009).

H6: Social Influence has a significant impact on Behavioral Intention.

7. Effort Expectancy

The definition of effort expectancy is the degree that demonstrates the level of establishment and facility connected with acceptance and utilization of the specific technology (Venkatesh et al., 2003). Several social scientists also defined this term as the extent of the ease associated with the learning through to the hybrid instructional system for the university level students (Onaolapo & Oyewole, 2018). This conception is also the crucial and decisive influencer for behavioral intention to using the particular technology (Teo & Noyes, 2014).

H7: Effort Expectancy has a significant impact on Behavioral Intention.

## Research Methodology

The researcher conducted the quantitative investigation through a questionnaire distributed online and offline to the undergraduate students in animation form three target universities with the hybrid education experience. The investigation has been divided into three sections: the screening question, five-point Likert scale measurement and demographic information.

Prior to the data collection, index of item-objective congruence (IOC) was tested by three experts and all items were reserved at a score at least 0.6. The Cronbach's alpha (CA) reliability test score of 30 participants showed that the perceived ease of use was 0.958, the perceived usefulness was 0.945, the behavioral intention was 0.892, and the effort expectancy was 0.916, the attitude towards using was 0.892, the self - efficacy was 0.843, and the social influence was 0.859. All values are acceptable at 0.70 or above (Nunnally, J. C., & Bernstein, 1994).

1. Population and Sample Size

The target population of this academic research was the undergraduate students who were animation majors in three representative universities which include Chengdu University (CDU), Sichuan Conservatory of Music (SCM), and Southwest Minzu University (SMU) in Chengdu of China. The calculation of A-priori Sample Size Calculator for Structural Equation Models (SEM) by Soper (2019) was applied to the recommended minimum sample size of 425. After the filtration of data, 500 qualified participants were chosen.

2. Sampling Technique

The researcher conducted the nonprobability and probability sampling technique. The multistage sampling technique was employed and separated into two steps. Initially, the researchers conducted judgmental sample to select 900 animation students with at least one month of experience with hybrid education in the top 3 public universities in Chengdu, China. Secondly, the stratified random sampling was conducted to select 500 sample is shown in Table 1.

**Table 1** Sample Units and Sample Size

| Target Universities | Sampling Units | First Stage Sample Size Total = 900 | Proportional Secondary Stage Sample Size Total = 500 |
|---|---|---|---|
| Chengdu University | Freshman | 79 | 44 |
| | Sophomore | 86 | 47 |
| | Junior | 89 | 50 |
| | Senior | 88 | 49 |
| Sichuan Conservatory of Music | Freshman | 70 | 40 |
| | Sophomore | 93 | 52 |
| | Junior | 110 | 61 |
| | Senior | 86 | 47 |

| Target Universities | Sampling Units | First Stage Sample Size Total = 900 | Proportional Secondary Stage Sample Size Total = 500 |
|---|---|---|---|
| Southwest Minzu University | Freshman | 40 | 23 |
| | Sophomore | 53 | 29 |
| | Junior | 53 | 29 |
| | Senior | 53 | 29 |

Source: Created by the author

**Results and Discussion**

1. Demographic Information

The detail of the demographic profile for 500 respondents includes the male accounted as 36.60% and the female respondents represented as 63.40%. For the affiliation of the college, 38.00% of students came from the Chengdu University (CDU), 39.80% students belonged to Sichuan Conservatory of Music (SCM), and 22.20% students pertained to Southwest Minzu University (SMU). For the organization of academic years, 21.40% of respondents were freshmen, 26.60% were sophomores, 28.00% were juniors, and 25.00% were seniors. Additionally, 20.80% of students choose the 2D animation, 24.20% for the 3D animation, 4.60% for the stop motion animation, 29.00% for the comic design, and 21.40% of students had not been divided their major direction yet.

2. Confirmatory Factor Analysis (CFA)

Confirmatory factor analysis (CFA) was performed to explore the confirmation whether the number of the constructs and loadings for the observed variables are per expected based on the theories or hypothesis (Malhotra et al., 2004). The significance for the factor loading of each observed variable and admissible values demonstrated the goodness of fits for the research matrix (Hair et al., 2006). The results by SPSS AMOS version 18 were adjusted and exposed the chi-square value to the degree of freedom (CMIN/DF) was 1.122, which lower than 3.00 (Hair et al., 2010), the goodness-of-fit index (GFI) was 0.941, which is greater than 0.90 (Bagozzi & Yi, 1988), the adjusted goodness-of-fit index (AGFI) was 0.929 which more than 0.80 (Filippini et al., 1998), the comparative fit index (CFI) was 0.994 which over 0.90 (Hair et al., 2006), the normalized fit index (NFI) was 0.950 which equal to 0.95 (Hair et al., 2006), and the root mean square error of approximation (RMSEA) was 0.016 shown fewer than 0.05 (Browne & Cudeck, 1993). As a result, all these indicators for the goodness

of fits in CFA testing of this academic study were acceptable.

According to the statistical consequences summarized in Table 2, all the values of Cronbach's Alpha more than 0.80, factor loadings more than 0.30, t-value more than 1.98, p-value less than 0.50, composite reliability (CR) more than 0.70 and Average variance extracted (AVE) more than 0.50 (Sarmento & Costa, 2016), all the evaluates were significant

**Table 2** Confirmatory Factor Analysis Result, Composite Reliability (CR) and Average Variance Extracted (AVE)

| Latent Variables | Source of Questionnaire | No. of Items | Cronbach's Alpha | Factors Loading | CR | AVE |
|---|---|---|---|---|---|---|
| Perceived Ease of Use (PEOU) | Vululleh (2018) | 5 | 0.889 | 0.579-0.886 | 0.894 | 0.632 |
| Perceived Usefulness (PU) | Oh et al. (2003). | 6 | 0.853 | 0.702-0.987 | 0.920 | 0.661 |
| Attitude Towards Use (ATU) | Bashir and Madhavaiah (2015) | 5 | 0.921 | 0.783-0.896 | 0.923 | 0.707 |
| Behavioral Intention (BI) | Bashir and Madhavaiah (2015) | 5 | 0.864 | 0.589-0.828 | 0.869 | 0.574 |
| Self-Efficacy (SE) | Fokides (2017) | 4 | 0.899 | 0.749-0.917 | 0.904 | 0.703 |
| Social Influence (SI) | Mtebe and Raisamo (2014) | 4 | 0.895 | 0.730-0.898 | 0.897 | 0.685 |
| Effort Expectancy (EE) | Mtebe and Raisamo (2014) | 4 | 0.880 | 0.772-0.853 | 0.881 | 0.649 |

Source: Created by the author

The convergent validity was determined when the value of CR is greater than AVE, while the AVE is higher than 0.50 (Hair et al., 2009). And the values of the discriminant validity which were examined and demonstrated in Table 3 exceeded the critical point values. Consequently, the convergent validity and the discriminant validity of this research were assured. Additionally, these matrix evaluation consequences consoled discriminant validity and the validation to assess the validity of succeeding structural model estimation.

**Table 3** Discriminant Validity

| | BI | PEOU | PU | ATU | SE | SI | EE |
|---|---|---|---|---|---|---|---|
| BI | **0.758** | | | | | | |
| PEOU | 0.311 | **0.795** | | | | | |
| PU | 0.419 | 0.320 | **0.813** | | | | |
| ATU | 0.277 | 0.322 | 0.386 | **0.841** | | | |
| SE | 0.329 | 0.272 | 0.367 | 0.296 | **0.838** | | |
| SI | 0.372 | 0.275 | 0.390 | 0.361 | 0.311 | **0.828** | |
| EE | 0.309 | 0.229 | 0.352 | 0.249 | 0.243 | 0.281 | **0.805** |

**Note:** The diagonally listed value is the AVE square roots of the variables

Source: Created by the author

3. Structural Equation Model (SEM)

After the CFA process, the structural equation model (SEM) was conducted to estimate a particular system of linear equations and verify model's fit. Furthermore, SEM determines the causal connection among each variable in a particular matrix and encompasses estimation inaccuracy or unfaithfulness in the corresponding coefficient (Jaruwanakul, 2021). The results were illustrated in Table 4 adjusted by SPSS AMOS version 18, with all the values of CMIN/DF, GFI, AGFI, CFI, TLI and the RMSEA. Consequently, each indicator of the goodness of fits in SEM verification for this research was acceptable.

**Table 4** Goodness of Fit for Structural Equation Model

| Index | Criterion | Source | After Adjustment Values |
|---|---|---|---|
| CMIN/DF | < 3.00 | Hair et al. (2010) | 1.788 |
| GFI | ≥ 0.90 | Bagozzi and Yi (1988) | 0.900 |
| AGFI | ≥ 0.80 | Filippini et al. (1998) | 0.883 |
| CFI | ≥ 0.90 | Hair et al. (2006) | 0.962 |
| TLI | ≥ 0.90 | Hair et al. (2006) | 0.958 |
| RMSEA | < 0.05 | Browne and Cudeck (1993) | 0.040 |

Source: Constructed by the author

4. Hypothesis Testing Result

The research matrix was computed as significance for each variable from the regression weights and $R^2$ variances. According to each calculated results illustrated in Table 5. Attitude Towards Use has the greatest impact on Behavioral Intention which with the standardized path coefficient ($\beta$) result as 0.779 (t-value = 6.190***), and Self-Efficacy has influenced Perceived Usefulness with $\beta$ as 0.314 (t-value = 6.588***), Perceived Ease of Use has impacted Attitude Towards Use with $\beta$ as 0.295 (t-value = 5.754***), Perceived Usefulness has influenced Attitude Towards Use with $\beta$ as 0.276 (t-value = 6.387***), Perceived Ease of Use has impacted with Perceived Usefulness with $\beta$ as 0.240 (t-value = 5.069***), Social Influence has influenced with Behavioral Intention with $\beta$ as 0.225 (t-value = 4.761***), and Effort Expectancy has impacted with Behavioral Intention with $\beta$ at 0.137 (t-value = 2.908*). Therefore, all of the hypotheses have been supported with a significance which the p-value less than 0.05.

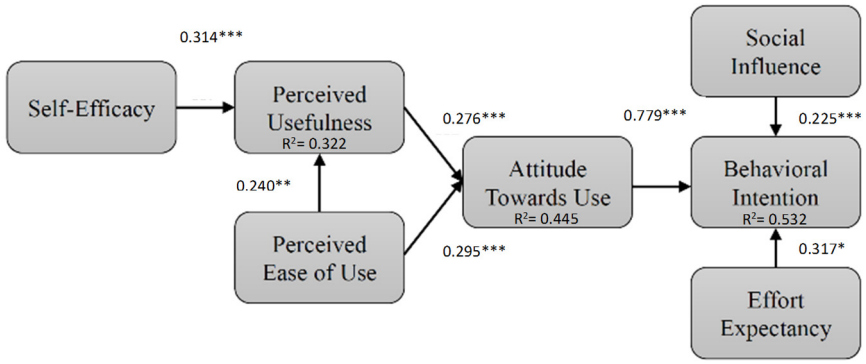


**Figure 2** Structural Equation Model (SEM)

**Table 5** Hypothesis Result of the Structural Equation Model

| Hypotheses | Paths | Standardized Path Coefficient ($\beta$) | S.E. | T-Value | Tests Result |
|---|---|---|---|---|---|
| H1 | PEOU → PU | 0.240 | 0.057 | 5.069*** | Supported |
| H2 | PU → ATU | 0.276 | 0.038 | 6.387*** | Supported |
| H3 | PEOU → ATU | 0.295 | 0.041 | 5.754*** | Supported |
| H4 | ATU → BI | 0.779 | 0.124 | 6.190*** | Supported |
| H5 | SE → PU | 0.314 | 0.052 | 6.588*** | Supported |

| Hypotheses | Paths | Standardized Path Coefficient (β) | S.E. | T-Value | Tests Result |
|---|---|---|---|---|---|
| H6 | SI → BI | 0.225 | 0.042 | 4.761*** | Supported |
| H7 | EE → BI | 0.137 | 0.043 | 2.908* | Supported |

Note: *** p<0.001, ** p<0.01, * p<0.05

Source: Created by the author

According to the data in Figure 2 and Table 5, it could obtain the following extensions.

H1 has confirmed that perceived ease of use is one of the essential factors for the perceived usefulness, with the standardized path coefficient value at 0.240 in the structural approach. Vululleh (2018) was convinced that perceived ease of use could facilitate the students' positive evaluation of the perceived usefulness toward the target learning system.

For the H2, the correlational statistics consequence supported the hypothesis for the significant impact of perceived usefulness on attitude toward use which was describing the standard coefficient value at 0.276. Oh et al. (2003) determined that perceived usefulness is the important influencer for the range of the individuals' attitude for the specific action.

In the term of H3, the outcomes have illustrated that perceived ease of use effectively influences attitude towards use which was representing the standard coefficient value at 0.295. Bashir and Madhavaiah (2015) have confirmed that perceived ease of use is also the vigorous factor determining the psychological intention.

In addition to the H4 demonstrated that attitude towards use is the strongest influencer on behavioral intention in this research, describing the standard coefficient value at 0.779 which is the highest number among results. Bashir and Madhavaiah (2015) supported this statement that attitude towards use has exerted an extreme influence on their behavioral intention toward a specific technology system.

Furthermore, in the condition of H5, the research results supported that self-efficacy has significantly affected perceived usefulness with the standard coefficient value at 0.314 and is the second-highest score for this study. Fokides (2017) examined that self-efficacy as the exogenous variable that certain individuals towards the specific learning system have actively impacted the endogenous variable perceived usefulness.

H6 determined that social influence

influences behavioral intention that resulting the standard coefficient value at 0.225. Mtebe and Raisamo (2014) confirmed that the social influence for the students on hybrid instruction in university education would exert a significant effect their behavioral intention.

Finally, effort expectancy supported behavioral intention which illustrated the statistic value of 0.137 on the standard coefficient which examined the active impact of H7. According to the academic achievement from Mtebe and Raisamo (2014), the effort expectancy for the blended education system would directly impact the undergraduate students' psychological intention.

## Conclusions and Recommendations

1. Conclusions

This article achieved to verify the significant impact of behavioral intention among animation major undergraduate students in the representative public universities in Chengdu of China. The hypotheses have been proposed in the conceptual framework. The questionnaires were circulated to 500 undergraduate students with at least one month of experience in hybrid instruction. The statistical analyses were performed by Confirmatory Factor Analysis (CFA) to examine the validity and reliability with regard to the conceptual matrix. In addition, Structural Equation Model (SEM) was utilized to verify the predominant influencers for the factors which impacted the behavioral intention.

The results demonstrated that attitude towards use had the strongest influence on the behavioral intention of hybrid education among undergraduate students. The results aligned with previous studies that students who like the hybrid system potentially adopt it in their learning process (Ozgen & Kurt, 2013; Golnaz et al., 2010; Celik & Yeşilyurt, 2013). Other factors such as social influence and effort expectancy of the hybrid education have been verified to exert significant influence on behavioral intention. This finding confirmed that the influence of instructors and classmates (Mazman et al., 2009) and ease of learning (Onaolapo & Oyewole, 2018) effect the intention to use the hybrid instructional system of students. In addition, both perceived ease of use, and perceived usefulness significantly impacted the students' attitude towards the utilization of the hybrid education which explains that the increase of engagement can be derived from ease of use, benefits and positive attitude (Davis, 1989). Finally, self-efficacy also been had a significant impact on perceived usefulness as students believe that they would have a better study result by using hybrid education (Pintrich, 1999).

2. Recommendations

Researchers have explored the core factors for behavior intention among animation major undergraduates in Chengdu. Therefore, the recommendations are to promoting these aspects in the design and reformation of the future hybrid education courses for animation majors to achieve more ideal teaching effects and achievements. For the literature and practical instructional connotations, the designers of teaching plans for the higher education in animation major should pay full consideration to students' behavioral intention to enhance learning efficiency.

3. Limitation and Further Research

The limitation of this study implied that the population and sample selection were merely targeted to the three public universities in Chengdu in China. Further research can consider two schemes. The first is to extend the research scope to other regions in China. Secondly, other latent variables such as trust, perceived interaction, learning motivation, performance expectancy, and facilitating conditions and so on could be explored further to the extent of the research framework.

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