



**FACTORS INFLUENCING COSMETOLOGY: VOCATIONAL
COLLEGE STUDENTS' LEARNING ENGAGEMENT**

BY

WEN FENG

**A DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR
THE DEGREE OF DOCTOR OF EDUCATION
IN EDUCATIONAL STUDIES
SURYADHEP TEACHERS COLLEGE**

**GRADUATE SCHOOL, RANGSIT UNIVERSITY
ACADEMIC YEAR 2024**

Dissertation entitled

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was submitted in partial fulfillment of the requirements
for the degree of Doctor of Education in Educational Studies

Rangsit University
Academic Year 2024

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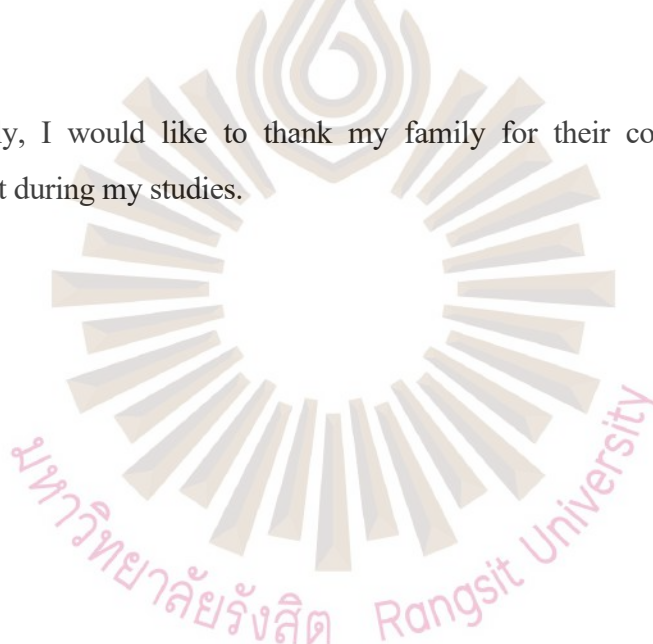
ACKNOWLEDGEMENTS

I would like to express my sincere gratitude to my advisor, Asst. Prof. Dr. Pimurai Limpapath, for her valuable guidance, insightful comments, and thoughtful suggestions throughout my research. I feel greatly appreciated for the committee members' recommendations that help fulfil my work.

I also would like to express my sincere gratitude to the teachers at Chengdu Omandi Technical School, Sichuan Tianyi University, Chengdu Vocational and Technical College, Sichuan Film and Television Academy for their help and support in data collection.

Finally, I would like to thank my family for their continuous support and encouragement during my studies.

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6305004 : Wen Feng
 Dissertation Title : Factors Influencing Cosmetology: Vocational College Students' Learning Engagement
 Program : Doctor of Education in Educational Studies
 Dissertation Advisor : Asst.Prof. Pimurai Limpapath, Ph.D.

Abstract

The purpose of this study was to evaluate the construct validity with the confirmation of a three-factors model of learning engagement in cosmetology in vocational colleges Chengdu. A mixed-method approach with quantitative and qualitative was employed. First, Confirmatory Factor Analysis (CFA) was used to explore the significant relationships between these dimensions of student's engagement in cosmetology classes, while the semi-structured interviews helped with deeper insights into administrators' perspectives to better learning engagement in Cosmetology Education. Questionnaires were distributed to 372 samples of cosmetology students,

The findings revealed that Cognitive and Behavioral Engagement had high significant on Learning Engagement and Academic Performance, while Emotional Engagement had a higher significant impact on Learning Motivation and Academic Performance on the cosmetology students. This study also provided the insights obtained from the administrators with guidelines that could be applied to promote effective cosmetology education in Chengdu Vocational Colleges.

(Total 167 pages)

Keywords: Learning Engagement, Cosmetology, Vocational College Students

Student's Signature Dissertation Advisor's Signature

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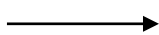
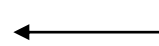


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ABBREVIATIONS

Abbreviations	Meaning
Mean	Arithmetic mean
Sd	Standard Deviation
Corr	Pearson product-moment correlation coefficient
p	Statistical significance
n	Sample size
Max	Maximum
Min	Minimum
χ^2/df	Chi-Square to Degrees of Freedom Ratio
RMSEA	Root Mean Square Error of Approximation
NFI	Normed Fit Index
RFI	Relative Fit Index
RMR	Root Mean Square Residual
CFI	Comparative Fit Index
TLI	Tucker-Lewis Index (or Non-Normed Fit Index-NNFI)
GFI	Goodness-of-Fit Index
AGFI	Adjusted Goodness-of-Fit Index
PNFI	Parsimonious Normed Fit Index
IFI	Incremental Fit Index
AVE	Average Variance Extracted
SQRT	Square Root
SRW	Standardized Regression Weights
	Latent Variable
	Observed Variable
	Directional Relationships
	Correlations

CHAPTER 1

INTRODUCTION

1.1 Background and Significance of the Study

Vocational colleges play a vital role in Chinese higher education since its vocational education helps cultivate high-quality labor, improving employment competitiveness, and promoting sustainable economic development (Ling, Chung, & Wang, 2021). Knowledge and practical skills in vocational colleges are provided through labor force training and talent supply as to meet the needs of economic development and quality of labor force, which in turn, benefits students' career development and employability and (Sublett & Tovar, 2021). That, the teaching content of vocational education as well as the courses must be adjusted to in career trainings that improve students' happiness, values, and lives, in order to meet the needs of emerging innovation-driven industries with less unemployment (Falaschi, 2019).

In recent years, while China is planning to establish approximately 200 new vocational schools and colleges nationwide according to the National Development and Reform Commission (NDRC) with its top economic planner has released a roadmap for integrating the industry development and talent training of vocational education starting from 2023 (Global Time, 2023). The new course such as the Cosmetology Vocational College reflects the cosmetology industry that has been flourished globally, particularly, with opportunities and challenges (Apriana, Kristiawan, & Wardiah, 2019). Thus, with the vigorous development of the global cosmetology industry, more and more of young people are showing strong interest in the cosmetology (Meng, 2022; Palos, Maricutoiu, & Costea, 2019).

However, some uncertainty with the cosmetology vocational education whether it could lead to the good prospects of the industry was revealed (Xiaolei, 2017). This somewhat has impacted the engagement in the learning process of cosmetology (Palos et al., 2019; Xu, Chen, N., & Chen, G., 2020). By studying the current situation and existing problems of cosmetology vocational education, it would help cultivate high-quality labor force, improving employment competitiveness and promoting sustainable economic development (Xu et al., 2020). Hence, it is reinforced in Chinese vocational colleges to focus on the problems existing in cosmetology vocational education and propose some constructive solutions.

One way to solve this problem is to understand students' learning engagement in cosmetology education (Sandgre et al., 2023) that can improve the course content with practical and innovative elements of theoretical and practical operations in the learning process with flexible teaching methods that encourage students' enthusiasm in learning engagement (Lachney, Babbitt, Bennett, & Eglash, 2021) and active participation (Xu et al., 2020). Thus, the factors of students' learning engagement in cosmetology have come into play. While students' learning engagement refers to the students' active involvement and active participation in the learning process, and showing interest and attention to the learning content (Ginting, 2021), it reflects students' attitudes towards learning, motivation and adaptability to the learning environment (El-Sabagh, 2021). Students' learning engagement not only directly affects their learning outcomes and career development, but also has an important role in helping them to develop and compete in the cosmetology industry (Sandgre et al., 2023). Student engagement (Bowden, Tickle, & Naumann, 2021) are divided into three dimensions, namely, behavioral, affective, and cognitive engagement.

First, the behavioral dimension is defined as observable learning performance and engagement, including student attendance, effort to persevere on assignments, contribution, engagement in classroom discussions, engagement in academic and extracurricular activities, and perseverance and resilience in the face of challenging tasks (Kamelifar et al., 2018). Second, the affective dimension of engagement is related to the level of affect and persistence experienced by students, reflecting the

level of enthusiasm students have for their educational experience. While affective or emotional engagement is manifested through heightened positive emotions, both in and out of school, it can be manifested through happiness, pride, joy, enthusiasm, and curiosity (D'Errico et al., 2018). Finally, the cognitive dimension reflects a student's persistent and active mental state. Include levels of active concern and interest in educational communication, and time spent planning and organizing academic pursuits. Cognitively engaged students are more likely to exhibit higher order thinking because they recognize the content, meaning, and application of academic tasks (Ashkzari et al., 2018). While considers the bonds of identity and belonging students and their peers, academic staff, administrators, it creates inclusion, belonging, socialization which include cooperating in class, listening to others, and attending discussions on time (Eldegwy, Elsharnouby, & Kortam, 2018).

Several recent research have been revealed that the more talents with professional quality and innovative ability through students' learning participation, the more professional and innovative cosmetology professionals they can be (Zhang, 2022; Zhao, Li, Liu, M., & Liu, J., 2019). Students who actively participate in learning are more likely to master professional knowledge and skills, develop critical thinking and problem-solving skills, and provide more competitive talents for the development of the cosmetology industry (Tabiinl, 2020).

As can be seen above, since it is very important to understand students' engagement, there is still a lack of comprehensive and systematic research on the construction and development of students' engagement of students studying cosmetology, especially, in vocational education colleges. Accordingly, to fill this gap, it is necessary to develop the measurement scales as to assess students' engagement accurately. Hence, this study focused on scale development of the students' engagement of students studying cosmetology in vocational colleges in Chengdu. In that respect, the testing of validity of the constructs of 1) Behavioral Engagement; 2) Affective Engagement; 3) Cognitive Engagement; and Social Engagement were employed.

Accordingly, the test of the validity of the constructs or factors constituting the students' engagement of the students studying cosmetology in vocational colleges in Chengdu obtained with Confirmatory factor analysis (CFA) as to examine the Four-Factor Model of the students' engagement which helped specify the representation of the variables in a construct in a logical manner with CFA in validating the construct. Thus, the CFA was performed to analyze the factors, variables within factors, variances, and covariance among the elements, relationship with variables, and factors (Dorman, 2003), which is a construct validation technique, followed by testing.

Other than that, as a fast-growing industry, the cosmetology industry needs matching professionals (Xue, Li, & Zeng, 2023). By studying the learning engagement and participation of students in cosmetology vocational colleges, the better understanding of the students' attitudes and expectations towards the cosmetology industry, the more guidance for the development direction of the industry and training can be (Kahu & Nelson, 2018; Palos et al., 2019; Reedy, Farías, Reyes, & Pradilla, 2020; Xiaolei, 2017). Finally, the research on students' learning engagement in vocational cosmetology is relatively limited, so this study will fill up the gap). Through in-depth research on multiple factors such as students, teachers, and teaching environment, new theoretical and empirical support can be provided for the field of vocational education research (Jiang & Liang, 2023). Thus, by achieving these research goals, we will be able to gain an in-depth understanding of the status quo and problems faced by students in cosmetology vocational colleges, reveal the influencing factors, and provide substantive suggestions and strategies for improving students' learning engagement. This will help improve the quality and effect of cosmetology.

1.2 Research Objectives

The research objectives of this paper are as follows:

1.2.1 To evaluate the construct validity using confirmatory factor analysis (CFA), and internal consistency of learning engagement of the students in cosmetology classes in Chengdu vocational colleges; and

1.2.2 To confirm Confirmatory factor analysis (CFA) in supporting the three-factors in the model of learning engagement of the students in cosmetology classes in Chengdu vocational colleges cosmetology administrators, in order to advance the cosmetology vocational education in vocational colleges in Chengdu; and

1.2.3 To confirm the Confirmatory factor analysis (CFA) in supporting the three-factors in the model of learning engagement of the students in cosmetology classes in Chengdu vocational colleges cosmetology by the administrators, in order to advance the cosmetology vocational education in vocational colleges in Chengdu.

1.3 Research Questions

1.3.1 What is the structural validity and internal consistency level of the three factors of student learning engagement in the cosmetology course of Chengdu Vocational College? and

1.3.2 What are the confirmation of Confirmatory factor analysis (CFA) in supporting the three-factors in the model of learning engagement of the students in cosmetology classes in Chengdu vocational colleges cosmetology by the administrators, in order to advance the cosmetology vocational education in vocational colleges in Chengdu?

1.4 Research Scope

Conceptual Framework

Learning Engagement:

- 1) Cognitive Engagement
- 2) Affective Engagement
- 3) Behavioral Engagement

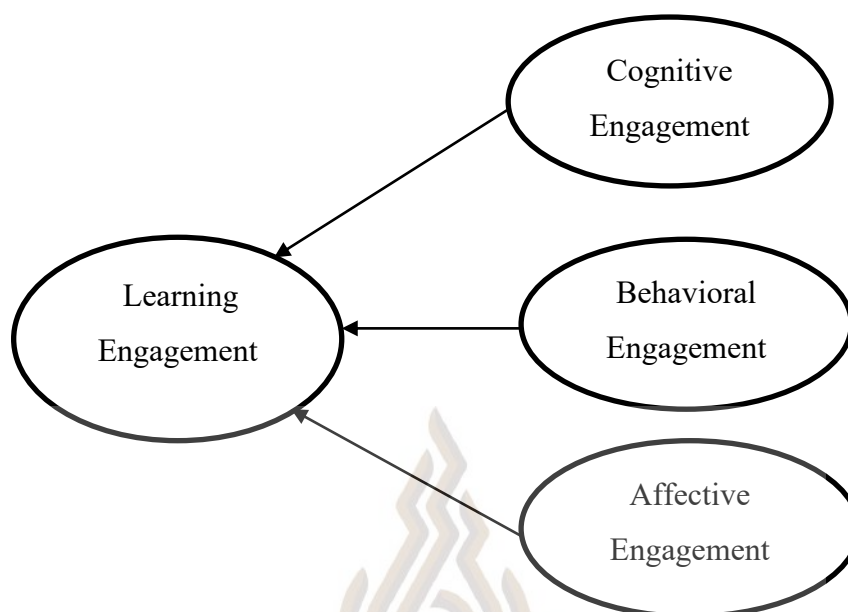


Figure 1.1 Three Confirmatory Factor Structure of Learning Engagement

This study utilized an explanatory sequential design, a commonly employed approach in mixed-methods research (Creswell, 2019). The explanatory sequential design consisted of an initial quantitative phase to explore the phenomenon and analyze data, followed by a qualitative phase to further investigate and explain the quantitative results in greater depth (Johnson & Christensen, 2019; Schoen & Crilly, 2012).

1.4.1 Quantitative Phrase

In the framework of the explanatory sequential design (Creswell, 2019), this research started with a quantitative phase focusing on students taking cosmetology across target vocational colleges in Chengdu,

1.4.1.1 Population

This research group is students majoring in cosmetology in a vocational college. The following is a detailed description of the population of Chengdu's vocational colleges that include cosmetology majors: There are a total of 29 vocational colleges in Chengdu, including 18 public vocational colleges and 11 private

vocational colleges. This study selects 4 private vocational colleges, namely Chengdu Omandi Technical School, Sichuan Tianyi University, Chengdu Vocational and Technical College, Sichuan Film and Television Academy. These schools were all schools in Chengdu that offer cosmetology majors. These 4 colleges all provided a wide range of cosmetology courses and training programs, covering all aspects of cosmetology techniques and theories. Students can learn various professional skills such as hairdressing, cosmetology care, manicure, makeup, etc., and master relevant operating skills and theoretical knowledge.

These colleges represented the cosmetology vocational skills training educational institutions in Chengdu. By selecting these schools as the research sample, cosmetology career students across the region can be better represented and more generalizable conclusions can be drawn. The authors partnered with these schools and obtained research permission, which made it easier to obtain the required data. The school may provide students' basic information, academic performance and other relevant data to facilitate the smooth progress of the research.

1.4.1.2 Sampling

Sample size: In this study, there were 4 vocational colleges in Chengdu that included cosmetology majors: Chengdu Omandi Technical School, Sichuan Tianyi University, Chengdu Vocational and Technical College, Sichuan Film and Television Academy. Each school has grades 1-3, and the total number of cosmetology students in each school is: Chengdu Omandi Technical School has 590 cosmetology students. Sichuan Tianyi University has 35 cosmetology students. There are 128 cosmetology students in Chengdu Vocational and Technical College, and 97 cosmetology major students in Sichuan Film and Television Academy. The above is the number of people in one grade, and the number of people in each grade is the same. The sampling size of the study was calculated and determined through Kanchanawasri, Pittayanon, and Srisukho (2016), with the confidence level at 99 percent with the population size of 850, margin error at ± 5 percent, and the ideal sample size of 372 was gained.

1.4.1.3 Measures

Before distributing the questionnaire, its validity was ensured by conducting the index of Item-Objective Congruence (IOC) with the five experts who are the scholars in the field of Education, and the IOC result was 1.00. A survey research design was employed with the items of the questionnaire that were taken and adapted from previous research in learning engagement. A five-point Likert scale, ranked from Strongly Disagree (1) to Strongly Agree (5), was used to measure the factors of learning engagement of students majoring in cosmetology in vocational colleges in Chengdu. After that the questionnaire was pretested with 30 nonsamples of students majoring in Cosmetology. Cronbach alpha values of 0.7 or higher indicate acceptable internal consistency. The reliability (Cronbach Alpha Coefficient) was 0.918.

1.4.1.4 Instrument

In this study the instrument to collect data was developed by taken and adapted from the literature reviews of the theoretical concepts and previous research conducting to study learning engagement and finally gained a three-dimensional factor structure of students' learning engagement of:

(1) Cognitive engagement examined students' learning strategies and learning methods, as well as the understanding of learning achievements and learning value, mainly include active learning in and out of class, cooperative learning, and learning career planning (Ashkzari et al., 2018; Dowson & Eldegwy, 2018; Elliot, McGregor, & Gable, 1999; Fredricks, Blumenfield, & Paris, 2004; Jimerson, Campos, & Grief, 2003; Greene, Nystrom, Engell, Darley, & Cohen, 2004; Hart et al., 2011; McInerney, 2004; Samuelstuen & Wolters, 2004; Wolters, 2004).

(2) Affective engagement examined student's sense of belonging, pride, self-interest and opportunity with expectation and supports from others (Fredricks et al., 2004; Hart et al., 2011; Hill & Werner, 2006; Jimerson et al., 2003; Rao & Sachs, 1999; Samuelstuen & Bråten, 2007; Skinner & Belmont, 1993). and

(3) Behavioral engagement which reflected the behavioral performance of college students participating in learning inside and outside the classroom comprising of: The study skills, diversified learning behaviors, participation in social practice, and academic improvement training, etc. (Finn, Pannozzo, & Voelkl,

1995; Fredricks et al., 2004; Hart et al., 2011; Jimerson et al., 2003; Kamelifar et al., 2018; Miller, 1996; Skinner & Belmont, 1993).

1.4.1.5 Data Analysis

Statistic computer program was used for a Descriptive Statistics: Frequency; Percentages; Averages; Standard Deviation; Skewness; and Kurtosis. Drawing from Taherdoost (2019), attitudes ranged from Strongly Agree to Strongly Disagree, and were further delineated as Strongly Positive Attitudes (SPA) to Strongly Negative Attitudes (SNA). Within SPSS, the reliability of the survey items was examined using Cronbach's Alpha Coefficient (α). Delving deeper, the study employed AMOS for confirmatory factor analysis (CFA) and structural equation modeling (SEM), ensuring a rigorous examination of the relationships and construct validity as to prove the hypotheses. The quantitative phase then set the foundation for a subsequent qualitative analysis, ensuring a comprehensive and layered understanding of the data.

1.5 Definitions of Terms

Learning Engagement: The active engagement and engagement that students demonstrate in the learning process. It includes the student's attention, interest, effort, and concentration on the learning task, as well as the cognitive and emotional engagement related to the learning task.

Behavioral Engagement: An observable learning performance and engagement, including student attendance, effort to persevere on assignments, contribution, engagement in classroom discussions, engagement in academic and extracurricular activities, and perseverance and resilience in the face of challenging task.

Affective Engagement: The level of affect and persistence experienced by students, reflecting the level of enthusiasm students have for their educational experience. While affective or emotional engagement is manifested through heightened positive emotions, both in and out of school, it can be manifested through happiness, pride, joy, enthusiasm, and curiosity.

Cognitive Engagement: A student's persistent and active mental state. Include levels of active concern and interest in educational communication, and time spent planning and organizing academic pursuits. Cognitively engaged students are more likely to exhibit higher order thinking because they recognize the content, meaning, and application of academic tasks While considers the bonds of identity and belonging students and their peers, academic staff, administrators, it creates inclusion, belonging, socialization which include cooperating in class, listening to others, and attending discussions on time.

Cosmetology: Cosmetology is a comprehensive subject covering aesthetics, physiology, psychology, medicine, social culture and other subjects. It involves many aspects such as individual image, skin, hairstyle, clothing, and body shape.

Students: The students are Technical secondary school students and Junior college students in Chengdu Omandi Technical School, Sichuan Tianyi University, Chengdu Vocational and Technical College, Sichuan Film and Television Academy. They gain relevant knowledge, skills and abilities in the beauty industry by learning theoretical knowledge, technical operations and practical experience in the beauty discipline

Cosmetology Students: Cosmetology Students are defined as students who study and practice the fields of cosmetology, makeup, hairdressing, manicure, etc. These students will receive training in related majors such as cosmetology or hairdressing to learn various knowledge and skills such as makeup techniques, beauty theory, hair design and nail art.

Vocational College: Vocational colleges are educational institutions established and managed by China's education authorities by vocational education laws and regulations to provide various technologies, skills and vocational education and training.

Vocational Colleges in Western China: Chengdu Omandi Technical School, Sichuan Tianyi University, Chengdu Vocational and Technical College, Sichuan Film and Television Academy located in western China, which mainly cultivate various technical skills talents. These schools cover a wide range of majors, including but not limited to machinery, electronics, architecture, transportation, medical care, agriculture and other fields.



CHAPTER 2

LITERATURE REVIEW

This chapter included a comprehensive literature review with an in-depth exploration of the theoretical and conceptual framework that has been employed to investigate the research topic, along with offering an evaluative review of the variables that constituted a part of this investigation. It also concluded with a discussion on the updated related research.

2.1 Cosmetology Vocational Education

2.1.1 The Development of Cosmetology Vocational Schools/Colleges

As a part of the vocational education system, cosmetology vocational schools play an important role in cultivating cosmetology practitioners. Its development process is closely related to China's social and economic changes, the evolution of consumption concepts and the rise of the cosmetology industry (Black & Sharma, 2001). This subsection will trace the history and evolution of Chinese cosmetology vocational schools to explore their status and influence in the Chinese education system.

The development of Chinese cosmetology vocational schools can be traced back to the early 20th century (Lee, 2019). Early cosmetology schools focused on passing on traditional cosmetology techniques such as massage, steaming, and facials. Most of these schools are set up in cities to meet the society's demand for cosmetology services by training professional skills (Manning, 2004). However, the scale of schools at this stage is relatively small and the education system is not perfect.

After the 1980s, with the implementation of China's reform and opening up policy, cosmetology vocational schools received more policy support (Li et al., 2020). The country began to encourage the development of vocational education, and the cosmetology vocational school was able to expand rapidly (Black & Sharma, 2001). At this time, the school's educational content began to diversify, including not only traditional cosmetology skills, but also makeup, hairdressing, nail art and other fields. This period also saw the rise of the cosmetology industry and the increasing demand for cosmetology services, which led to the development of cosmetology vocational schools (Kim, 2018).

After the 2000s, the education system of Chinese cosmetology vocational schools has been further constructed and improved. National and local governments have introduced a series of policy measures to improve the quality of cosmetology vocational education (Chea & Huijsmans, 2020). The school began to introduce advanced teaching equipment, expand the field of education, and promote the transformation of the cosmetology vocational school into a comprehensive cosmetology college (Baffour, 2012). In addition, the cooperation between vocational education and industry is getting closer, and students have more opportunities to participate in practical work and improve their vocational skills.

The curriculum of cosmetology vocational schools is also constantly diversifying (Wu & Yan, 2016). In addition to technical training, the school has also strengthened the professional ethics education, service concept training and innovation awareness of the cosmetology profession. Students not only acquire professional skills, but also better adapt to the demands of the cosmetology market (Sirk, Liivik, & Loogma, 2016).

In the future, the development of Chinese cosmetology vocational schools will still face new opportunities and challenges (Lee, 2019). With the continuous innovation of cosmetology technology and the vigorous development of the cosmetology industry, schools need to constantly update their courses to adapt to emerging cosmetology technologies and trends (Kim, 2018). At the same time, schools

also need to pay attention to the quality of education and the construction of teaching staff to improve students' professional competitiveness. In addition, maintaining close contact with the cosmetology industry and social needs is also the key to future development (Li et al., 2020).

2.1.2 The Current Situation of Chinese Cosmetology Vocational Schools/Colleges

The number of cosmetology vocational schools in China has increased rapidly in the past few years. According to the Ministry of Education, as of 2021, China has more than 500 cosmetology vocational schools (Nong et al., 2023). These schools are widely distributed in urban and rural areas, covering all provinces of the country. The growth of cosmetology vocational schools is indicative of the booming cosmetology industry in China and the increased demand for cosmetology professionals (Chea & Huijsmans, 2020).

The curriculum of China's cosmetology vocational schools is increasingly diversified (Yuan, 2021). In addition to traditional cosmetology technology training, the school has also strengthened education in many fields such as makeup, hairdressing, nail art, and SPA care (Baffour, 2012). This diverse curriculum helps meet the interests and needs of different students and equips them with more comprehensive cosmetology expertise.

Enrollment in cosmetology vocational schools also shows diversity. These schools attract students from a variety of backgrounds and age groups (Huifang & Hao, 2021). Some schools focus on recruiting junior high school graduates, while others provide training opportunities for adults and career changers (Sirk et al., 2016). This diversity contributes to the talent pool in the cosmetology industry while also providing students with more options.

The Chinese government and education departments have put forward higher requirements for the quality of education in cosmetology vocational schools (Gaskell,

Eichler, Pan, Xu, & Zhang, 2004). Schools need to meet certain educational standards and accreditation requirements to ensure the quality of education and the professional competence of students (Zhou, 2017). In addition, some schools are actively cooperating with the cosmetology industry to provide practical opportunities to enhance students' professional competitiveness.

To adapt to the ever-growing cosmetology industry, China's cosmetology vocational schools are also constantly upgrading and improving their educational facilities and technical equipment (Nong et al., 2023). Modern cosmetology courses usually require high-quality makeup tools, hairdressing equipment, cosmetology equipment, and SPA care equipment (Lin, 2020). Schools are investing in these areas to ensure students are trained in the latest cosmetology techniques and are able to adapt to the needs of a rapidly changing cosmetology market (Zhou & Cho, 2010).

Some cosmetology vocational schools in China have also begun to actively participate in international cooperation and exchanges. They have established cooperative relationships with international cosmetology schools and institutions and introduced international cosmetology education concepts and courses. This kind of international cooperation helps broaden students' international horizons and improve their international competitiveness.

Students from cosmetology vocational schools often have a wide range of employment opportunities after graduation (Yuan, 2021). They can find employment in cosmetology salons, cosmetology SPA, cosmetics companies, hair salons, fashion industry and self-employment (Huifang & Hao, 2021). With the upgrading of consumption in China and the continuous expansion of the cosmetology industry, the demand for cosmetology professionals will continue to increase, providing students with rich career development prospects (Zhou, 2017).

2.1.3 Career Development of Students in Cosmetology Vocational Schools/ Colleges

Cosmetology Vocational School is an educational institution dedicated to training students who wish to become cosmetology professionals (Ajithkumar & Pilz, 2019). These schools usually offer a variety of courses, including professional directions such as beautician, hairdresser, and manicurist (Lindstrom & Benz, 2002). Students can learn various skills in these schools, such as makeup, hairdressing, skin care, manicure, massage, etc. These skills are needed in the cosmetology industry (Eisenman, Hill, Bailey, & Dickison, 2003).

Cosmetology vocational school training usually includes theoretical courses and practical operations (Atkins & Flint, 2015). Students learn about skin texture, facial structure, cosmetics and cosmetology tools, while also performing hands-on exercises to hone their skills. This comprehensive training equips students to succeed in the cosmetology industry and provides them with a solid foundation for career advancement (Ajithkumar & Pilz, 2019).

The cosmetology industry offers a variety of career opportunities, especially for those who have received professional training in cosmetology vocational schools. Some common career paths in the cosmetology industry include:

Beautician: A beautician is one of the most common careers in the cosmetology industry. They are responsible for providing makeup, skin care, facial care and other services to customers. Estheticians can choose to work in cosmetology parlors, spas, cosmetic stores or open a cosmetology salon themselves.

Hairdresser: A hairdresser focuses on cutting, coloring, styling, and more. They can work in a hair salon, salon or cosmetology salon, or they can choose to be freelance.

Manicurist: A manicurist is a professional who is responsible for treating, trimming, and painting a client's nails. Manicurists may be employed in cosmetology salons, nail salons, or nail studios.

Masseuse: Massage therapists use massage and body therapy to help clients reduce stress, relieve muscle pain, and promote physical well-being. They can work in spas, gyms, resorts or medical facilities.

Cosmetology Product Sales Representative: Some students may choose to work in the sales and promotion of cosmetology products. They may represent cosmetic companies or cosmetology appliance brands, selling products to cosmetology professionals and consumers.

Educational trainers: Some experienced cosmetology professionals choose to enter the field of education and become educational trainers in cosmetology vocational schools, passing on their knowledge and experience to the new generation of cosmetology students.

The cosmetology industry has huge employment opportunities across the globe. Students of the Cosmetology Vocational School can quickly find employment opportunities after graduation, such as:

Cosmetology salons and salons: Estheticians, hairdressers, manicurists and masseurs can work in cosmetology salons and salons to provide professional grooming services to clients.

Spa: The spa offers a variety of body and facial treatments and is an ideal workplace for masseurs and beauticians.

Gyms and Resorts: Many gyms and resorts employ masseurs and estheticians to provide body care and relaxation services.

Self-employment: Some cosmetology vocational school students choose to open their own cosmetology salon, hair salon or nail studio. Entrepreneurship is a challenging but potentially promising option.

Cosmetology Product Companies: Some students may become sales representatives or makeup artists for cosmetology product companies, marketing products to professionals and consumers.

Medical aesthetics: The field of medical aesthetics also offers career opportunities, such as skin care practitioners can work in plastic surgery clinics, assisting doctors in cosmetic treatments.

2.1.4 The Influence of Cosmetology Vocational School Education on Students

The educational content of a cosmetology vocational school usually includes theoretical courses and practical training (Inayat, ul Amin, Inayat, & Salim, 2013). Theoretical courses cover skin care, makeup, hairdressing, nail art, etc., and students build a solid cosmetology foundation through studying these courses (Tee et al., 2022). Practical training is the core of cosmetology vocational school education, and students have acquired the necessary skills and experience through practical operations (Ajithkumar & Pilz, 2019). This well-rounded education enables students to find immediate employment in the cosmetology industry and provides the foundation for future career development.

A cosmetology vocational school education provides students with the opportunity to enter the cosmetology industry quickly (Nurhayati, Khumaedi, & Yudiono, 2018). Students build professional skills and knowledge while at school, making it easier for them to find work. Beauticians, hairdressers, manicurists and other occupations are in high demand in the cosmetology industry, and graduates are usually able to find employment quickly (Ju-Hsuan, 2021). In addition, cosmetology vocational school education also provides opportunities for students to advance in

career development, such as becoming a senior cosmetologist or cosmetology salon manager. These career paths promise higher salaries and career satisfaction.

Cosmetology vocational school education not only imparts knowledge, but also emphasizes the improvement of practical skills (Inayat et al., 2013). Through hands-on and simulated exercises, students gain professional skills that are crucial in real work (Ajithkumar & Pilz, 2019). A cosmetology vocational school education enables students to master various skills such as hair cutting, makeup, nail design, etc., which provide them with a solid foundation for career development (Fadigan, 2004). Students also have the opportunity to participate in competitions and presentations to further develop their skills (Tee et al., 2022).

Cosmetology vocational school education cultivates students' entrepreneurial potential. Many students choose to start their own cosmetology salon, hair salon or nail studio after graduation (Nurhayati et al., 2018). The knowledge and skills they acquire through their schooling, as well as the professional networks they build during their schooling, help them succeed in starting a business (Ju-Hsuan, 2021). Additionally, schools may offer entrepreneurship training and resources to help students realize their entrepreneurial dreams. Entrepreneurship is a challenging but promising field, and a Cosmetology Vocational School education provides students with the foundation they need to start a business (Fadigan, 2004).

A cosmetology vocational school education is not just about imparting skills and knowledge, it also helps students build confidence and self-awareness (Tee et al., 2022). Students continue to improve their skills and enhance their self-confidence in practice (Inayat et al., 2013). In addition, interactions with fellow students, faculty, and clients foster students' interpersonal and communication skills. A cosmetology vocational school education also develops students' work ethic and sense of responsibility, enabling them to better understand their roles and responsibilities in the cosmetology industry (Ajithkumar & Pilz, 2019).

The Cosmetology Vocational School also cooperates with the cosmetology industry to provide students with more practical experience and internship opportunities (Nurhayati et al., 2018). This will help students better understand the needs of the industry and increase employment opportunities (Ju-Hsuan, 2021). In addition, some cosmetology vocational schools also pay attention to the trend of sustainable cosmetology and green cosmetology, and cultivate students' awareness of environmental protection and sustainability. In addition, cosmetology vocational schools also cooperate with industry associations and organizations to provide students with more career support and resources (Fadigan, 2004). These associations often provide professional certification and training opportunities that can help students further their careers.

The impact of cosmetology vocational school education on students is multifaceted, including career development, skill improvement, entrepreneurial potential and self-awareness (Inayat et al., 2013). This education provides students with the opportunity to succeed in the cosmetology industry while also preparing them to become professional cosmetology professionals. However, the cosmetology industry also faces challenges, including changing market trends and a highly competitive environment (Tee et al., 2022). Therefore, cosmetology vocational schools need to constantly update their courses to ensure that students acquire the latest knowledge and skills to adapt to changes in the industry.

2.2 Learning Engagement

2.2.1 Definition of Learning Engagement

The research on student learning engagement mainly starts from the evaluation of the quality of higher education (Yang, Lavonen, & Niemi, 2018). Since the 1930s, American academic circles have systematically studied the relationship between university education practice and student learning effects. Ralph Taylor believes that the time spent by learners in completing learning tasks has a positive relationship with learning effects. That is to say, if you invest more time in learning,

you can achieve better results. On the contrary, if you spend less time in learning, the learning effect will also decrease (Alexander, Entwisle, & Kabbani, 2001). Robert Pace pointed out that it is far from enough to pay attention to the length of students' learning, and more importantly, to pay attention to students' learning efficiency, that is, to care about students' engagement activities and engagement behaviors (McCormick, Kinzie, & Gonyea, 2013). Alexander (1999) further enriched Perth's research and believed that only when students fully participate in the school environment can they have better learning effects.

Learning Engagement is an important and complex concept in the field of educational psychology, which is widely used to study and evaluate students' attitudes, behaviors and cognitive investment in the learning process (Deng, Benckendorff, & Gannaway, 2020). Learning engagement is not only concerned with whether students are present in class, but more concerned with their involvement in learning tasks, learning autonomy, and active pursuit of learning goals (Yang et al., 2018). Learning engagement is recognized in educational research and practice as one of the key determinants of learning quality and academic achievement.

Learning engagement spans multiple dimensions, including cognitive, affective, and behavioral dimensions. Cognitive engagement refers to the thinking and knowledge building process of students in learning (Halverson & Graham, 2019). This includes comprehension, analysis, evaluation and integration and application of learning content. Cognitive engagement emphasizes the depth of thinking and academic engagement of students (Yang et al., 2018). Emotional engagement focuses on students' emotional experiences and attitudes in learning. This includes student interest, motivation, self-confidence, and emotional engagement (Hiver, Al-Hoorie, Vitta, & Wu, 2021). Emotional engagement emphasizes the affective dimension of learning, such as the impact of learning enjoyment, motivation, and emotional engagement on learning (Deng et al., 2020). Behavioral engagement refers to the actual behavior of students during the learning process, such as attending class, completing assignments, participating in group discussions, and participating in extracurricular activities (Alexander et al., 2013). Behavioral engagement emphasizes

students' learning behavior and the completion of learning tasks.

2.2.2 Learning Engagement Theory

Since the 1991, based on the research of past scholars, the American professor George Kuh proposed the theory of learning engagement (Kuh, 2001), thinking that it refers to the time and energy that students spend on effective learning activities, as well as how students learn (Kearsley & Shneiderman, 1998). Treat the support provided by the school. As long as the learning and development factors of college students are affected by George Kuh in two aspects, that is, the life experience before the university and the experience of studying in the university, the previous experience of the university includes the admission willingness, opportunity, family background, study preparation, these are the main factors and conditions that affect the learning and development of college students (Yang et al., 2018). The university experience is divided into learning behavior and school conditions. The former mainly includes learning habits and motivation, energy invested, and learning time. Contacts with other students and teachers, etc. School conditions include the learning resources provided by the school and the learning opportunities given, such as campus courses, activities, environment, resources, etc. The mainstream views of learning engagement theory are as follows:

First, the important value and significance of learning investment to student learning outcomes and the quality of university education (Yang et al., 2018). Students' effective learning time and energy input are the only best indicators that can predict students' academic and development conditions (Kuh, 2001). Compared with the same type of institutions, those that are attractive to students make them more the quality of school education and teaching involved in the activities is very high, to put it another way, the main factor in the level of education is the degree to which students are engaged in learning (Kearsley & Shneiderman, 1998). It can be seen from this that the learning engagement theory highlights the importance of learning effect by students' effective input, whether students' learning goals are clear, whether their learning motivation is strong enough, whether students can adopt learning methods that are in

line with their actual situation, and whether students can actively invest to the point where they can In the projects and courses that help self-development, whether students can consistently participate in meaningful learning activities has a direct impact on their academic achievements and personal development (Groccia, 2018).

Second, the learning engagement theory emphasizes the important role of effective school support on students' learning outcomes (Groccia, 2018). The school can provide effective support to students in many aspects, such as excellent school conditions, strong learning atmosphere, good campus environment, strong campus culture, harmonious teacher-student relationship, perfect life services, rich curriculum items, professional Academic activities, etc., the school provides students with an ideal campus environment and high-quality educational resources, attracting students to invest time and energy in learning activities, thereby improving students' academic achievements and development levels (Yang et al., 2018). George Ku regards teacher-student interaction and peer interaction as the main aspects of student behavior and believes that teacher-student interaction and peer interaction are the main factors that affect students' academic performance, so only the relationship between students and teachers and between students and students can achieve Only with better cooperation can the quality of undergraduate education and teaching be guaranteed (Kuh, 2001).

George Ku proposed that learning engagement is the intersection of student behavior and institutional behavior, which is the core concept of the theory®. Based on the understanding of learning engagement, Kuh (2001) organized and developed the "National Survey of Student Engagement, NSSE". From 2000 to 2012, NSSE proposed five benchmarks of learning input; after 2013, the NSSE team made major revisions to the indicator system, revising the original five benchmarks into 10 learning input indicators. It can be seen that George Ku believes that learning input needs to be measured and investigated in two aspects: one is what students do (what students do), that is, the effective time and energy students have invested in learning activities; the other is what the school has done (what institutions do), That is, whether the school supports students' engagement in various educational teaching and campus activities, and whether they take active and effective measures (Jiang, Li, Wu, & Wang, 2010).

2.2.3 Classification and Measurement of Learning engagement

Learning engagement is a multidimensional concept, which was first proposed by Mosher et al. in the 1980s (Mosher & MacGowan, 1985). According to Finn's research on dropouts and students' completion of studies, learning engagement can be divided into engagement, affirmation, non-engagement, unsatisfactory performance, achievement and emotional withdrawal (Finn, 1989). Kim 's research believes that learning engagement includes actively participating in discussions, engaging in discussion topics, persistence and communication (Kim, Park, Yoon, & Jo, 2016). Based on the influencing factors of the learning process, some scholars divide learning input into two dimensions: cognitive input and behavioral input. Behavioral engagement (Martin, 2008). According to Bloom's taxonomy of educational objectives, some scholars have proposed that the positive state of learners in learning is learning engagement, which should contain three dimensions, namely emotional, behavioral, and cognitive engagement (Fredricks et al., 2004). By sorting out the relevant literature and models of learning input, most of the current views believe that learning input includes learning emotion, learning cognition and learning behavior (Jimerson et al., 2003). From the perspective of the relationship between the above three learning dimensions, there is a relationship between learning emotional input, learning cognitive input, and learning behavioral input. The basis of learning emotional input and learning cognitive input is learning behavioral input (Li et al., 2013).

According to the evaluation method of learning engagement, the current literature is based on the analysis framework of learning engagement. The specific measurement methods include teacher reporting to students, learning engagement, classroom behavior observation, regular reporting of learning engagement, self-contained scale, work analysis, etc. Around the measurement of learning engagement, there are some relatively mature scales. For example: Fredricks et al. developed the Classroom Learning Engagement Scale to evaluate the classroom performance of elementary school students from three measurement dimensions, namely, cognitive investment, emotional investment and behavioral investment (Fredricks, 2004). Put into the questionnaire (the National Survey of Student Engagement , NSSE for short), centering on the school's

educational activities, evaluates the quality of education in colleges and universities from five aspects, namely academic achievement, campus environment, educational experience, cooperative learning, and educational activities: the Academic Engagement Scale proposed by Schaufeli et al. (Utrecht Work Engagement Scale-Student, UWES-S for short), from the three measurement dimensions of vitality, dedication and concentration, et al. proposed the academic engagement scale, which is evaluated from three measurement dimensions, namely highly concentrated attention, Devotion and energy performance (Schaufeli, Salanova, Gonzalez-Roma, & Bakker, 2002). Among them, the classroom learning engagement scale he compiled has been affirmed and cited by many scholars, and examines three dimensions to measure learning engagement, namely behavior, emotion and cognition.

In view of the above, this study still divides learning input into three aspects, that is, behavior, emotion and cognition, for analysis and measurement. The existing research analyzes the above three dimensions as follows:

1) Cognitive Investment in Learning

Cognitive input in learning includes deep cognitive input and shallow cognitive input, in which deep cognitive input includes in-depth processing of information and the application of self-adjusting learning strategies, such as forming cognitive structures by building connections between new knowledge and old knowledge, The application of learning strategies such as self-reflection, planning, etc., superficial cognitive input includes only processing superficial information and simple learning skills, such as rote memory (Ravindran, Greene, & DeBacker, 2005). Based on Bloom's classification theory of educational objectives, some scholars divide learning cognitive input from concrete to abstract into six aspects: memory, comprehension, application, analysis, evaluation and creation, and point out that cognitive input to online learning is commonly used at home and abroad. The analysis is based on content analysis (Liu & Yi, 2021). Li established a cognitive engagement subscale, allowing learners to self-report their cognitive level from four aspects, namely emotion, resource management, cognition, and metacognition (Li, 2015). Zhu (2006) encodes cognitive input as questions, statements, Five aspects of reflection, guidance and scaffolding.

2) Learning Emotional Engagement

In the classic emotional engagement scale, emotional engagement in learning is divided into emotional responses such as curiosity, happiness, boredom, and sadness (Skinner & Belmont, 1993). Based on previous studies, some studies have further subdivided learning emotional input into four dimensions: curiosity, pleasure, belonging, and boredom for evaluation; among them, curiosity refers to the fact that learners are very curious about classroom resources, content, etc. And the teaching form: the sense of pleasure refers to the physical and mental pleasure of the learners for the course resources, content and teaching form; the sense of belonging refers to the fact that the learner actively interacts with the teacher or other students during learning, and has a sense of the target content and process of the interaction. Sense of belonging; Boredom refers to the fact that learners are very tired of teaching forms, courses, resources, content, and emotions (Liu, 2021). Pang et al. divide learning emotional input into three aspects of positive, negative and neutral for measurement (Pang, 2008). On the basis of Pang 's research, Harris et al. further subdivided learning emotional engagement into six categories for measurement: positive, negative, neutral, insightful, confused, and joking (Harris, Cu, & Kumamoto, 2014). There are also scholars who measure value from whether learners are satisfied with the course (Lee et al., 2015).

3) Investment in Learning Behavior

As far as the analysis framework of learning behavior input is concerned, the first is to classify learning behavior input through the learning process and divide it into four stages, which are the learning stage, the knowledge acquisition stage, the interactive self-reflection stage, and the learning consolidation stage (Sun, 2015).

It is still based on previous studies to divide the indicators of learning behavior input, which are divided into 6 dimensions, namely concentration, engagement, Persistence, academic challenge, interaction, and self-monitoring each include several secondary indicators (Li, 2016). There are also scholars from engagement, concentration, The four dimensions of regularity and interaction establish an analytical framework for learning behavior input (Zhang, 2017). The third is the

orientation of learning behavior, which is defined as problem-solving behavior, cooperative behavior, cognitive behavior, and operational behavior (Peng, 2013).

At present, there is no unified opinion on the measurement indicators of learning behavior input. Birch and Ladd (1997) carried out the measurement of learning behavior engagement through four aspects: listening carefully, undertaking tasks assigned by teachers, seeking challenges and learning independence (Birch, 1997). Fredricks et al. took the initiative to implement according to the relevant regulations, and measured the learning behavior input in violation of discipline specific classroom performance and national regulations (Fredricks et al., 2004). Martin measures three aspects of persistence, planning and task management around learning input (Martin, 2007). Skinner, Kinferran, and Furrer (2009) measured learning behavior input in seven aspects, including effort, learning action starting point, persistence, learning concentration, learning absorption level, task intensity and learning engagement. Mahatmya et al. carried out research on learning behavior engagement based on learning task time, learning behavior, classroom engagement and discussion (Mahatmya, Lohman, Matjasko, & Farb, 2012). Hamane According to teacher-student interaction, students actively learn to cooperate and communicate, try to provide feedback and task time to measure investment in learning behavior (Hamane, 2014). Chinese scholars have evaluated the level of learning behavior input based on the dimensions of enthusiasm, concentration, reflection and continuity (Zhang, 2018).

2.2.4 The Role of Learning Engagement

Learning engagement is widely recognized as an important predictor of student academic success, with profound implications for the educational process and student development. Learning engagement can reflect the initiative and effort of students to participate in effective teaching activities, so it has attracted widespread attention in the academic circles. The research based on 16 classes in the first grade of the experimental school shows that all the dimension indicators of learning input are obviously positively related to the learning results, among which the secondary index of "after-class test scores" in the reflective indicators explains the learning results

44.6% difference (Zhang, 2018).

A large number of literatures point out that learning input can predict learners' academic achievement (Li et al., 2011). Studies have shown that there is a significant positive correlation between cognitive input and behavioral input and academic performance. Among them, learners with a medium level of cognitive input account for the largest proportion, and most of the cognitive types of learning are summative (Wang et al., 2019). In order to verify that online learning investment can reflect learning quality through learning performance, some scholars selected MOOC courses in Chinese universities for analysis. The study found that cognitive investment in online learning has a significant positive correlation with learning performance: in terms of behavioral investment and learning performance Only the publishing site showed an obvious positive relationship. It can be seen that the learning behavior in the online learning process is not very related to the learning performance. In terms of emotional investment, the sense of belonging, pleasure and curiosity all show a clear positive relationship with learning performance. relationship, while dislike of men is a negative relationship (Liu & Yi, 2021). It greatly affects academic performance. According to the analysis, it is found that students who are highly engaged will achieve better grades. In terms of cognitive investment, shallow learning before class is closely related to academic performance, while anxiety and frustration are closely related to emotional investment. Course grades have an inverse relationship (Liu, 2021). Focusing on the school's teaching and learning activities, evaluate the quality of education in colleges and universities from five aspects, namely academic achievement, campus environment, educational experience, cooperative learning, and educational activities (Kuh, 2009), In addition, learning input can also evaluate the educational level of higher education institutions, and is an important factor that affects the results of teaching reform (Guthrie, Wigfield, & VonSecker, 2000).

According to the research on English online learning, the dimension of learning cognitive investment is mainly reflected in the students' application of sound learning strategies and active self-adjustment to improve the effect of learning English, especially the selection and application of metacognitive strategies, such as setting

learning goals, make plans, conduct self-evaluation, create opportunities for learning, etc. (Yang, Lavonen, & Niemi, 2018). Some scholars have pointed out that learning engagement is the key factor for students' learning fatigue box to solve the problems of loneliness and drop out of school (Fredricks, 2004). The higher the degree of cognitive engagement in learning engagement, the more learning opportunities are created, which helps to fully realize the potential of students to use cognitive regulation strategies in activities such as learning design (McNaught, Lam, & Cheng, 2012). Based on the internal feedback mechanism of teacher-student interaction, some scholars have found that by integrating the promotion strategy of active investment in learning input into teaching design, students' active input is conducive to their English learning effect (Winstone, Nash, Parker, & Rowntree, 2017).

There is a strong relationship between learning engagement and learning achievement. Individuals who are actively engaged in learning are more likely to maintain focus, think deeply, solve problems, and master knowledge. They are more likely to do well on tests and quizzes and to achieve better academically. Therefore, learning engagement is the key to individual academic success (Fredricks et al., 2004). Active learning engagement helps develop study skills such as independent learning, problem solving, critical thinking and information processing. These skills are not only useful in the academic field, but also have great value in professional life. Through active engagement in learning, learners can develop these skills and make them more competitive in the face of future challenges (Zimmerman & Schunk, 2001). Learning engagement can enhance learners' motivation and interest in learning. When learners feel recognized and rewarded for their engagement and efforts, they are more motivated to explore new knowledge, face challenges and continue learning. Active learning engagement helps to form a positive learning cycle, making individuals more willing to invest in learning (Deci, 1991).

2.2.5 Influencing Factors of Learning Engagement

1) Sociocultural Factors

Sociocultural factors include family background, cultural values, and social support. The study found that a family's educational background can influence learning engagement. At the same time, different cultural values also have an impact on learning engagement. Some cultures focus on collective cooperation, while others focus on individual competition (Anderman, 1994). Family background is important influencing factor of learning engagement. Family education background can affect students' academic expectations and attitudes, and the family's emphasis on education will also have a positive impact on students' learning engagement (Eisenman, Hill, Bailey, & Dickison, 2003). Cultural values and social identity also influence learning engagement. Students from different cultural and social backgrounds may have different expectations and attitudes towards schooling. Educational institutions need to respect diverse cultural and social identities in order to create an inclusive learning environment (Phinney, 1996). Socioeconomic factors also affect learning engagement. Students' family economic status and social status may affect their learning opportunities and access to resources. Socioeconomic inequality may lead to learning gaps between different groups (Sirin, 2005).

Zhou (2018) based on a survey of 400 students in 6 secondary vocational schools in Zhejiang Province, showed that there is a significant relationship between communication to learning. higher the educational expectations, the greater the positive impact on secondary vocational students' learning input. Zhao, Shuai, and Zhu (2018) posited that education methods have a significant positive impact on migrant children's learning input. Educational expectations are closely related to learning input, Wu and Yao (2013), Wu, Liu, and Sun (2021) found that, the higher the matching degree of low-level of education expectations is, the easier it is to increase students' learning input.

With regard to the relationship between family socioeconomic status has a positive relationship with learning investment (Zhou & Zhang, 2018). Some data show that college students with different family cultural capital have different learning input (Zhao et al., 2018). Other studies have found that there is a clear relationship between family socioeconomic status and learning (Li, 2018; Tian, 2019; Wu et al., 2021).

2) Educational Environment

Educational environmental factors include teachers, teaching materials, classroom atmosphere, teaching methods, etc. Research has found that teachers' teaching methods and interaction styles have a significant impact on learning engagement. Motivating students' interest, providing interesting teaching materials and creating a positive classroom atmosphere can promote learning engagement (Skinner, 1993). Lombardi et al. (2019) have also found that school climate can affect students' learning engagement. Taking 1,411 migrant children in grades 3-6 as the subjects, it was found that most of the migrant children have high learning input, and there is a significant positive correlation between school atmosphere and children's school happiness and learning input (Fatou & Kubiszewski, 2018). Zhou et al. (2021) showed that 41.65 % of middle school students had low behavioral investment, 37.19% of middle school students had low learning investment, and school happiness played a regulating role between middle school students' academic pressure and learning investment. Among them, academic pressure is more sensitive to the impact of learning engagement.

Teaching methods and educational resources are important factors affecting learning engagement. Teachers' teaching methods, classroom atmosphere, and textbook design all affect student engagement in learning. Active interactive teaching methods, rich educational resources and interesting teaching materials can stimulate students' interest and improve their engagement (Hattie, 2009). Västfjäll and Slovic (2013) show that learners' perceived social Sense of presence, sense of teaching presence, and sense of cognitive presence are respectively related to behavioral inputs of learners' cognitive input and emotional input, and the order of influence from strong to weak is social presence, teaching presence, and cognitive Sense of presence, which

means teachers' selection, organization and presentation of course content, the creation of a social environment that facilitates emotional exchange and communication, and the active engagement of students in critical and persistent encouragement of reflection and dialogue can effectively increase the level of learner engagement in learning. Learning support and feedback also play a key role in learning engagement (Divaris et al., 2008). Students need timely learning support and targeted feedback to help them overcome learning difficulties and improve their academic performance. Educational institutions and teachers should provide personalized support and feedback to meet the different needs of students (Black & Wiliam, 1998).

Class goal structure promotes the development of learning affect. Baudoin and Galand (2017) divided teacher support into autonomous support, cognitive support and emotional support, the study found that all three dimensions have a significant positive impact on various factors of online learning input. Ciani, Middleton, Summers, and Sheldon (2010) have also shown that students' cognitive and behavioral engagement in learning increases when teachers play a supportive role. Studies have shown that the guidance and motivation that students experience from teachers can significantly promote the development of emotional engagement in learning.

Classroom climate and peer interaction also had a significant impact on learning engagement. A positive classroom atmosphere can encourage students to participate in classroom activities, while cooperation and interaction among peers can promote learning (Roorda, Koomen, Spilt, & Oort, 2011). Research has found that classroom format is closely related to learning engagement. Violante and Vezzetti (2014) show that most students point out that more modern online learning requires more time and energy than traditional learning, and they are uncomfortable participating in online learning for the first time. This not only increases the burden on students, but is also detrimental to students' physical and mental health.

Relevant studies have shown that effective interaction between peers can further promote students' enthusiasm, which is the core element of improving learning engagement (Hastie & Wallhead, 2016). You (2022) found that the

communication between students can positively predict students' learning behavioral investment, cognitive investment and emotional investment, and the interaction between students positively regulates teaching interaction and behavioral investment. The relationship between cognitive investment and emotional investment. Students communicate with each other and understand their peers' learning progress, and adjust their learning behavior accordingly, which reflects the impact of peer communication on learning behavior investment (Yang, 2010). Between learners the process of continuous consultation, co-construction and improvement of knowledge is also a process of continuous strengthening of knowledge construction, which reflects the impact of peer communication on learning and cognitive investment (You, 2022).

3) Individual Characteristics

Studies have found that learners' individual characteristics affect their learning engagement. Individual factors include learners' age, gender, academic ability, interests, motivation, etc. The study found that age and gender may influence learning engagement, with younger students and female students likely to be more likely to participate. In addition, academic ability and interest are also related to learning engagement, and students who have a strong academic interest are more likely to actively participate (Pintrich, 1990). Li (2015) took the distance students of Peking University School of Medicine and Peking University Jade Bird as an example, and found that differences in gender, occupation, marriage, and family background among students may lead to learning problems. The investment situation has risen slightly.

Taking age as an example, older students can increase their investment in learning, and vice versa, students under the age of 25 have a relatively lower level of learning investment. Wan (2021) conducted a systematic study on the level of online learning engagement of 4841 college students and found that gender, grade, and study time will directly affect the online learning engagement of relevant groups.

Academic ability is one of the important factors of learning engagement. A student's academic level and subject ability directly impact their level of engagement. Zimmerman (2001) research found that students with higher academic

ability are more likely to actively participate in educational activities, because they are more likely to understand and master the content of textbooks, and feel confident in learning. Learning motivation is one of the key factors of learning engagement. Students' learning motivation can be divided into intrinsic motivation and extrinsic motivation. Intrinsic motivation includes an interest in knowledge, a desire for personal growth, and a need for self-actualization. Extrinsic motivation includes rewards and punishments from family, social and educational institutions. Deci (1991) found that intrinsic motivation has a more positive impact on learning engagement because they are associated with individual autonomy and self-determination.

Learners' interests and attitudes also affect their learning engagement. For topics of interest, students are more willing to study in depth, participate in class discussions, and actively explore knowledge in related fields. Positive attitudes and learning attitudes help to create a positive learning environment and stimulate students' enthusiasm for learning (Ainley, Hidi, & Berndorff, 2002). Self-regulated learning strategies are also one of the key factors for student engagement in learning. This includes learning strategies such as goal setting, planning, time management, self-monitoring and self-evaluation. Students use these strategies to manage their own learning process, improve learning efficiency and motivation (Pintrich & De Groot, 1990).

2.3 Teaching Equipment and Class Activities on Learning Engagement

The impact of teaching equipment on learning engagement has always been an important topic of concern in the field of education (Kamaruddin & Sulaiman, 2017). As technology continues to evolve, so does the education community's understanding of how teaching devices can shape student engagement and academic achievement, both in and out of the classroom. Existing research explores the impact of teaching equipment on learning engagement from multiple perspectives, covering various types of educational technology tools, such as electronic whiteboards, computers, tablets, mobile devices, etc. (Wang, Rajan, Sankar, & Raju, 2016) Teaching equipment refers to the various tools and technologies used to support teachers and students during the educational process, with the aim of enhancing

learning and academic achievement of students. The relationship between instructional devices and learning engagement is a complex and multidimensional issue that involves the effective integration of technology, the improvement of educational strategies, and the individual differences of students.

Electronic whiteboards are a popular educational technology tool that combines traditional whiteboards with computer technology to provide interactivity and multimedia capabilities. Campbell, Detres, and Lucio (2019) have shown that electronic whiteboards can stimulate students' interest and increase their engagement in learning. Through the dynamic display of teaching materials, real-time interaction and the use of multimedia resources, electronic whiteboards can attract students' attention and improve their engagement. In addition, teachers can more easily personalize instruction to meet the needs of different students, thereby promoting greater learning engagement.

The use of computers in education has also had a profound impact. Computer-assisted instruction (CAI) systems can provide students with a personalized learning experience, adjusting instructional content according to their academic level and learning speed. Nazimuddin (2014) has found that computer-assisted instruction can increase student engagement in learning because they allow students to learn at their own pace and receive immediate feedback when needed. In addition, the computer also provides an interactive learning environment, which stimulates students' curiosity and academic interest through simulation experiments and virtual reality.

In recent years, the popularity of tablets and mobile devices has enabled students to access educational resources anytime, anywhere. These devices provide convenient learning tools, but also spark discussions about learning engagement. On the one hand, tablets and mobile devices can provide a personalized learning experience, encouraging students to actively explore and learn (Huang, Liang, Su, & Chen, 2012). On the other hand, excessive use of these devices can lead to distraction and inattention of students, reducing learning engagement. Advances in artificial intelligence and big data analytics offer new opportunities to personalize education

(Cox et al., 2016). Teaching devices can collect student learning data and provide personalized learning advice based on their needs and progress (Liu & Reed, 2017). This personalized approach to teaching helps to meet the academic level and learning speed of different students, motivating them to be more actively involved in learning. Kamaruddin and Sulaiman (2017) have found that intelligent education systems can improve students' learning efficiency and reduce learning barriers, thereby enhancing their learning engagement.

2.4 Learning Interest and Learning Engagement

Learning is a complex process, which is affected by many factors, among which learning interest, as one of the important psychological factors, has always attracted the attention of scholars. Learning interest is not only closely related to the learning process, but also has a profound impact on learning engagement and academic achievement. Learning interest refers to learners' subjective emotional experience of learning content, tasks or activities, usually including positive emotions towards subjects, topics or activities, such as liking, enjoyment and devotion (Ainley et al., 2002). Learning interest is closely related to students' emotion, motivation and academic performance, and it can be regarded as an important driving force in the learning process, affecting learners' learning attitude and engagement.

There is a close relationship between learning interest and learning engagement. Research shows that students are more likely to be actively engaged in learning in subjects or topics that interest them (Yang et al., 2018). When learners are interested in learning content, they are more inclined to invest more time and energy, actively participate in learning activities, and actively explore relevant knowledge. This active learning engagement contributes to improved academic achievement and learning outcomes.

Learning interest can also promote the use of deep learning strategies. Deeper learning strategies include active thinking, understanding concepts, and making connections with learning content, not just memorizing (Flowerday & Shell,

2015). When students are interested in learning content, they are more inclined to adopt in-depth learning strategies to better understand and apply what they have learned. This multidimensional theory helps to better understand the impact of learning interest on learning engagement (Dewan, Murshed, & Lin, 2019). For example, studies have found that emotional interest can promote students' positive emotional experience, increase their learning satisfaction, and thus improve learning engagement (Pekrun & Linnenbrink-Garcia, 2012). Cognitive interest is associated with the use of deep-level learning strategies, and students are more willing to think deeply about and understand learning content (Calalb, 2019).

Moreover, learning interest can also improve learners' sense of self-efficacy. Self-efficacy refers to an individual's confidence in his or her ability to complete a specific task (Ainley, 2011). When students are interested in learning content and can successfully master it, their sense of self-efficacy increases, they are more confident to face the challenges in learning, and they are more willing to put in more effort.

However, interest in learning does not always arise spontaneously, and sometimes requires the guidance and support of educators. Educators can stimulate students' interest in learning by designing an attractive educational environment, providing interesting learning materials, and encouraging students to participate in interesting learning activities (Yang et al., 2018). Therefore, educators play an important role in educational practice and can cultivate students' interest in learning by creating a positive learning atmosphere. Existing research provides a wealth of evidence supporting the positive impact of learning interest on learning engagement. For example, one study found that students were more likely to devote more time and energy to subjects of interest and exhibit higher academic achievement (Flowerday & Shell, 2015). Another study found a significant positive correlation between learning interest and students' learning motivation and academic performance (Ainley et al., 2011).

In addition, studies have shown that interest in learning can improve a student's learning experience. When students are interested in the learning content, they are more willing to actively participate in classroom discussions, ask questions, and interact with

teachers and classmates, thus promoting the positive development of the learning atmosphere (Ainley et al., 2011). This active learning engagement contributes to deeper and more sustained learning. However, learning interest is not static, it may change with time and learning experiences. Some studies have found that learning interest can be affected by external factors, such as teaching methods, teaching material design and learning environment (Yang et al., 2018). Therefore, educators need to make continuous efforts to maintain and stimulate students' interest in learning.

In conclusion, in terms of the factors affecting students' engagement, research revealed that support by others, teaching equipment, and students' interests are believed to be the prominent factors that impacts students' learning engagement (Alamri, Lowell, Watson, & Watson, 2020; Meng, 2022; Xie, Heddy, & Greene, 2019). While others' support is often divided into several dimensions: emotional support, academic support, structural support, and social support (Hill & Tyson, 2009), over the past few decades, researchers have explored, for example, how family members can affect learning engagement and how it shapes students' academic achievement and development (Leung & Shek, 2019). As this kind of support includes the resource, emotional, and educational support that families provide to their children it may positively or negatively affect student engagement in learning (Nouwen' 2019; Winstone, Nash, Parker, & Rowntree, 2017; Zheng & Li, 2020). Encouragement and recognition from others can boost students' self-confidence and make them more willing to participate in classroom discussions and activities (Mishra, 2020). Moreover, the atmosphere and values of the support will influence students' positive learning attitudes, making them more willing to invest time and energy in learning, thereby increasing learning participation (Bonal, 2020).

Second, teaching equipment and class activities of the cosmetology vocational college is salient in stimulating students' learning engagement and participation (Hamidi & Chavosh, 2018; Kamaruddin & Sulaiman, 2017; Lachney et al., 2021). While the teaching equipment refers to the various tools and technologies used to support teachers and students during the educational process, with the aim of enhancing learning and academic achievement of students, the relationship between

instructional devices and learning engagement is a complex and multidimensional issue that involves the effective integration of technology, the improvement of educational strategies, and the individual differences of students (Wang et al., 2016). Good teaching facilities, professional nursing rooms, and teaching places similar to actual work scenes can all increase students' learning engagement (Omar, Zahar, & Rashid, 2020).

In the education of cosmetology majors, the use of cosmetology care rooms can not only increase the fun of the classroom, but also improve the participation and interaction of students (Xu et al., 2020). Modern teaching equipment such as electronic whiteboards, multimedia projections, etc., can present abstract concepts in the form of images and sounds, making it easier for students to understand and master. Studies have shown that the use of teaching equipment can stimulate students' curiosity and increase their interest in learning content, thereby enhancing their participation in the classroom (Archambault, 2022). In addition, the interactivity of teaching equipment can also promote the communication and cooperation between students, teachers and classmates, and further stimulate the enthusiasm and initiative of learning. Therefore, the use of reasonable teaching equipment may affect the learning participation of cosmetology students to a certain extent, thereby improving their academic performance (Alamri et al., 2020).

Third, students' learning interest also has an important impact on learning participation (Palos et al., 2019). Learning is a complex process, which is affected by many factors, among which learning interest, as one of the important psychological factors, has always attracted the attention of scholars. Learning interest is not only closely related to the learning process, but also has a profound impact on learning engagement and academic achievement. Learning interest refers to learners' subjective emotional experience of learning content, tasks or activities, usually including positive emotions towards subjects, topics or activities, such as liking, enjoyment and devotion (Ainley et al., 2002). The more learning interest with high emotion, motivation, and performance, the more willingness to engage in learning engagement will increase, particularly, in makeup, hairdressing, skin care, etc. (Almasri, 2022).

2.5 Related Research

2.5.1 Affective/Expectations and Learning engagement

It is found that students' academic performance and career development (Pascual, 2014) were affected by affective/expectations of student engagement (Farrell & Brunton, 2020; Khlaif, Salha, & Kouraichi, 2021; Muir et al., 2019). For example, with high expectations, one can motivate him or herself to be more active in school (Wood, Oh, Park, & Kim, 2020; Triventi, Vlach, & Pini, 2022; Xie et al., 2022). While affective engagement is a degree to which the students actively and effectively participate in their learning activities (Nanney, 2023), the positive emotion can cause effective academic tasks and social interactions both on campus and off campus (Zhao, F. & Zhao, W., 2024).

2.5.2 Behavior Learning Engagement

Behavior engagement is the actual behavior that can be observed by students' exhibition in learning activities, including participation in online class, discussion, completion of assignment, attendances of classes (Knudsen, et al., 2020; Van Braak, et al., 2021). With the popularity of the Internet, for example, even cosmetology classes can be online learning (Adedoyin & Soykan, 2023; Liu et al., 2020; Pham & Ho, 2020). Students can participate in online courses through computers, tablets or mobile devices, interacting with educational resources and teachers around the world (Weller et al., 2018) have found that distance education increases students' flexibility, allowing them to better balance study and other life demands, thereby enhancing learning engagement. In addition, online learning encourages students to participate more actively in discussions, share resources, and work collaboratively, thereby developing their collaborative and social skills (Sadeghi, 2019).

Virtual Reality (VR) and Augmented Reality (AR) technologies are gradually being applied in the field of education (Gómez et al., 2023). Teaching devices can provide access to these new technologies, creating immersive learning experiences for

students (Majid et al., 2021). Through virtual reality, students can explore virtual environments, such as historical scenes, science laboratories, or plots of literary works, thereby enhancing their learning engagement and understanding (Ozdemir, 2021). Augmented reality superimposes virtual elements on the real world to provide a richer learning experience (Sadiku et al., 2023). Studies have found that virtual reality and augmented reality can stimulate students' curiosity and desire to explore and improve their academic achievement (Sünger and Çankaya, 2019).

2.5.3 Cognitive Learning Engagement

In recent years, scholars have conducted in-depth research on the impact of learning interest through different research methods and theoretical frameworks (Hiver et al., 2021) such as learning interest which is regarded to a dimensional concept, including emotional interest, cognitive interest and value interest (Dewaele & Li, 2021; Krapp, 2002). Affective interest involves students' emotional experience of learning content, such as fun and enjoyment (Lan & Hew, 2020); Cognitive interest involves students' desire and exploration of knowledge (Dong et al., 2020); Value interest involves students' perception of the importance and usefulness of learning content to them (Wang et al., 2022).

Value interest is related to the setting and persistence of learning goals (Miao et al., 2022). When students think that the learning content is important to their future development, they are more motivated to participate in learning (Kallio & Halverson, 2020). Scholars have also paid attention to the formation and development process of learning interest (Rustamov & Mamaziyayev, 2022). The study found that the formation of learning interest is a gradual process, which is affected by many factors (Bovill, 2020). Individual interests may be affected by family background, social environment, school education, and individual internal characteristics (Renninger & Hidi, 2011). Several studies have highlighted the role of learning experiences in shaping interest. For example, through active learning experiences, students may develop an interest in a particular subject or topic (DeMink et al., 2022). With the in-depth understanding of learning interest, some educational methods have also begun to

adopt interest-oriented strategies (Liu, 2023). These strategies include personalized learning, inquiry learning and project-based learning (Schweder & Raufelder, 2021). Personalized learning emphasizes designing educational content according to students' interests and needs to stimulate learning motivation and active engagement (Ryan & Deci, 2000). Inquiry-based learning and project-based learning encourage students to conduct in-depth research and practice according to their own interests, thereby increasing learning engagement (Hidi & Renninger, 2011). In addition, the interest-oriented educational method also emphasizes the autonomy of learning (DeMink et al., 2022). Students are more likely to show active learning engagement when they make autonomous choices of learning content and activities because they feel more in control of the learning process (Hiver et al., 2021).

2.6 Learning Engagement Constructs

The followings were the Three-Factors Constructs of the Students' Learning Engagement which included:

Cognitive engagement examined students' learning strategies and learning methods, as well as the understanding of learning achievements and learning value, mainly include active learning in and out of class, cooperative learning, and learning career planning (Ashkzari et al., 2018; Dowson & Eldegwy, 2018; Elliot et al., 1999; Fredricks et al., 2004; Jimerson et al., 2003; Greene et al., 2004; Hart et al., 2011; McInerney, 2004; Samuelstuen & Wolters, 2004; Wolters, 2004).

Affective engagement examined student's sense of belonging, pride, self-interest and opportunity with expectation and supports from others (Fredricks et al., 2004; Hart et al., 2011; Hill & Werner, 2006; Jimerson et al., 2003; Rao & Sachs, 1999; Samuelstuen & Bråten, 2007; Skinner & Belmont, 1993).

Behavioral engagement which reflected the behavioral performance of college students participating in learning inside and outside the classroom comprising of: The study skills, diversified learning behaviors, participation in social practice, and

academic improvement training, etc. (Finn et al., 1995; Fredricks et al., 2004; Hart et al., 2011; Hart et al., 2011; Jimerson et al., 2003; Kamelifar et al., 2018; Miller et al., 1996; Skinner & Belmont, 1993).

Table 2.1 Students' Learning Engagement Constructs

Content	Sources
Cognitive Engagement	
1. Learning, Understanding, Seeing the similarities and differences, Associating and comparing what have been learnt that match the previous knowledge	Ashkzari et al. (2018) Dowson and McInerney (2004)
2. Challenging oneself to think beyond,	Elliot et al. (1999)
3. Enjoy exploring new ideas and concepts Promote understanding through discussion.	Fredricks et al. (2004)
4. Compare information to enhance my memory. Learning new information Put the ideas in one's own words Combining different pieces of information from course material in new ways.	Greene et al. (2004)
5. Interested in learning. Enjoy learning new things Earning to learn new knowledge Reviewing what has been learnt	Hart et al. (2011)
6. Finding way to figure out things. Making sure to understand before moving on to the next thing. Seeking out additional resources to deepen understanding	Jimerson et al. (2003)
7. Putting the new and the old knowledge together Figuring out how the information might be useful in the real world.	Ashkzari et al. (2018) Samuelstuen and Bråten (2007)
8. Trying to connect what has been learnt with experiences. Making up examples to help understand the important concepts has been learnt	Ashkzari et al. (2018) Wolters (2004)

Table 2.1 Students' Learning Engagement Constructs (Cont.)

Content	Sources
Affective Engagement	
Feeling motivated to do well in school.	
Feeling excited about participating in school activities	
1. Feeling positive about my academic achievements	D'Errico et al. (2018)
Feeling optimistic about future prospects	Fredricks et al. (2004)
Able to complete task	
Self-worth in school	
Having a deep affection for the school	
2. Feeling supported by others	Hart et al. (2011)
Looking forward to joining others	
Feeling encouragement by participating in learning	
Enjoying to express personal thoughts and opinions	
Getting the opportunities from others to develop ones' interests	
Getting supports about free learning and exploration	
3. Liking the school	Hill and Werner (2006)
Being happy to at school	
Looking forward to going to school	
4. Being proud to be the part of the school	Jimerson et al. (2003)
Feeling safe and inclusive at school	
Willing to share feelings with others at school	
Having a strong sense of loyalty to school	
Being able to build a long-lasting-friendships at school	
5. Learning is not boring	Rao and Sachs (1999)
Liking what learning in school	
Learning in school is interesting	
6. Learning new things in school	Skinner and Belmont
Learning new things in class	(1993)
Behavioral Engagement	
1. Collaborating with others on group projects	Finn et al. (1995)
Actively participate in class discussions and activities	
Taking an active role in extra-curricular activities in school	

Table 2.1 Students' Learning Engagement Constructs (Cont.)

Content	Sources
Volunteering to help with school activities Being active in participating school activities	
2. Being involved in extracurricular activities outside the class Helping others when in need Taking pride in schoolwork and accomplishments Trying to make connections out of things Reflecting one own learning and set goals for improvement	Fredricks et al. (2004)
3. Feel comfortable to be the part of the group Feel comfortable to ask for help from the group Being the part of rules setting for the group Seeking opportunities to participate in decision-making	Hart et al. (2011)
4. Being responsible in learning Contributing to the school community Following group's rules and expectations Being punctual Attending classes regularly	Jimerson et al. (2003) Kamelifar et al. (2018)
5. Completing homework and study tasks on time Participating in various competitions and activities organized by school Working together with classmates to prepare for the exam Keeping up with difficult problems Trying to understand the process of fixing the problem	Miller et al. (1996)
6 Try to participate with the class even when feeling bored Constantly, paying attention in class. Constantly, participating in class activities Working in class as hard as it can be Trying hard to do well in school	Skinner and Belmont (1993)

CHAPTER 3

RESEARCH METHODOLOGY

In this chapter, the researcher explained the research population and samples, research instrument, research location, data collection process and data analysis in details.

3.1 Research Design

This study employed a mixed method approach integrating with both quantitative and qualitative methods of exploratory (Creswell, 2011) to investigate the constructing a three-dimensional factor structure, the Confirmatory Factors Analysis of student engagement among cosmetology vocational school students at Chengdu Omandi Technical School, Sichuan Tianyi University, Chengdu Vocational and Technical College, and Sichuan Film and Television Academy.

Quantitative

To answer the Objective1: The constructing a three-dimensional factor structure, the Confirmatory Factor Analysis of student engagement among cosmetology vocational school students

3.2 Population and Samples

3.2.1 Population

The study was conducted among cosmetology students in vocational colleges from 4 private vocational colleges in Chengdu, Chengdu: 1) Omandi Technical School; 2) Sichuan Tianyi University; 3) Chengdu Vocational and Technical College; 4) and Sichuan Film and Television Academy. These 4 colleges are all beauty professional

schools and provide a wide range of Cosmetology courses and training programs, by selecting these schools as research samples, could better represent the cosmetology vocational students in Chengdu and draw more generalizable conclusions.

Each school has grades 1-3. The total number of students majoring in beauty in each school was: Chengdu Omandi Technical School has 590 metology students. Sichuan Tianyi University has 35 cosmetology students. There are 128 cosmetology students in Chengdu Vocational and Technical College, and 97 cosmetology major students in Sichuan Film and Television Academy.

The table below showed the number of students in one grade, and the number of students in each grade. The sampling size of the study is calculated and determined through Kanchanawasri, Pittayanon, and Srisukho (2016), with the confidence level at 95 percent with the population size of 850, margin error at ± 5 percent, and the ideal sample size of 372 was gained. This study used a stratified sampling method to select 372 students majoring in beauty majors in these four vocational colleges as the research sample. This made the selected sample more comprehensive and facilitate the development of empirical research.

Table 3.1 Number of Students in Each Grade of Chengdu Beauty Vocational College

Serial Number	School's name	Number of students
1	Chengdu Omandi Technical School	590
2	Sichuan Tianyi University	35
3	Chengdu Vocational and Technical College	128
4	Sichuan Film and Television Academy	97
Total population		850

3.2.2 Sampling

For the quantitative research method, the sampling size of the study was calculated and determined through Kanchanawasri, Pittayanon, and Srisukho (2016),

with the confidence level at 95 percent with the population size of 850, margin error at ± 5 percent, and the ideal sample size of 372 was gained.

Since the scope of this study was mainly concentrated in Chengdu, the sampling frame included students from the most influential beauty vocational colleges in Chengdu. Sample list for the sampling frame. Considering that the sample selected for this study was relatively concentrated, the stratified sampling method, thus, finally chosen. This made the selected sample more comprehensive and facilitate the development of empirical research.

In this study, the application process of the sampling method is: first, in each selected college, students are divided into 3 grades, and 5 classes are randomly selected from each grade and major to ensure that all grades and majors are covered. To ensure the diversity of the sample, the first level of sampling was completed. Secondly, within each selected class, cluster random sampling is conducted based on the gender of the students. At this point, the second layer of sampling was completed.

3.2.3 Research Instruments

The main objective for quantitative part of this study was the analysis of the factors of students' learning engagement in cosmetology and beauty vocational colleges.

When constructing a three-dimensional factor structure, it is first necessary to classify the items on the basis of clarifying the meaning of the three-dimensional. This study mainly drawn on the three dimensions of students' learning engagement in the questionnaire of Cognitive engagement examined students' learning strategies and learning methods, as well as the understanding of learning achievements and learning value, mainly include active learning in and out of class, cooperative learning, and learning career planning (Ashkzari et al., 2018; Dowson & Eldegwy, 2018; Elliot et al., 1999; Fredricks et al., 2004; Jimerson et al., 2003; Greene et al., 2004; Hart et al., 2011; McInerney, 2004; Samuelstuen & Wolters, 2004; Wolters, 2004).

Affective engagement examined student's sense of belonging, pride, self-interest and opportunity with expectation and supports from others (Fredricks et al., 2004; Hart et al., 2011; Hill & Werner, 2006; Jimerson et al., 2003; Rao & Sachs, 1999; Samuelstuen & Bråten, 2007; Skinner & Belmont, 1993).

Behavioral engagement which reflected the behavioral performance of college students participating in learning inside and outside the classroom comprising of: The study skills, diversified learning behaviors, participation in social practice, and academic improvement training, etc. (Finn et al., 1995; Fredricks et al., 2004; Hart et al., 2011; Jimerson et al., 2003; Kamelifar et al., 2018; Miller et al., 1996; Skinner & Belmont, 1993).

Table 3.2 Student Engagement Construct

Item content	Sources
Cognitive Engagement	
1 When learning things for school, I try to see how they fit together with other things I already know.	Ashkzari et al. (2018) Dowson and McInerney (2004)
2 I try to match what I already know with things I am trying to learn for school.	Elliot et al. (1999)
3 I try to understand how the things I learn in school fit together with each other.	Fredricks et al. (2004)
4 I try to see the similarities and differences between things I am learning for school and things I know already.	
5 When learning things for school, I often try to associate them with what I learnt in other classes about the same or similar things.	
6 I challenge myself to think beyond what is taught in class.	Elliot et al. (1999)
7 I enjoy exploring new ideas and concepts.	
8 I promote understanding through discussion.	Fredricks et al. (2004)
9 I modeled the characters to understand the concepts.	

Table 3.2 Student Engagement Construct (Cont.)

Item content	Sources
10 I compare information to enhance my memory.	
11 When learning new information, I try to put the ideas in my own words	Greene et al. (2004)
12 When studying, I try to combine different pieces of information from course material in new ways.	
13 I am very interested in learning.	Hart et al. (2011)
14 I think what we are learning in school is interesting.	
15 I enjoy learning new things in class.	
16 I am eager to learn new knowledge.	
17 I often review what I learned in class.	
18 When I have difficulty understanding something, I try different ways to figure it out.	Jimerson et al. (2003)
19 I make sure to understand the material before moving on to the next topic.	
20 I actively seek out additional resources to deepen my understanding of the material.	
21 I test theories through experiments.	Ashkzari et al. (2018)
22 When I study, I try to understand the material better by relating it to things I already know.	Samuelstuen and Bråten (2007)
23 When I study, I figure out how the information might be useful in the real world.	
24 When I study, I try to connect what I am learning with my own experiences.	Ashkzari et al. (2018) Wolters (2004)
25 I make up my own examples to help me understand the important concepts I learn from school.	
Affective Engagement	
26 I feel a sense of belonging at this school.	D'Errico et al. (2018)
	Fredricks et al. (2004)
27 I feel motivated to do well in school.	
28 I feel valued as a member of the school community.	
29 I feel excited about participating in school activities.	

Table 3.2 Student Engagement Construct (Cont.)

	Item content	Sources
30	I feel positive about my academic achievements.	Hart et al. (2011)
31	I feel optimistic about my future prospects.	
32	I complete my assignments on time.	
33	I can reflect my self-worth in school.	
34	I have a deep affection for the school.	
35	I feel supported by my teachers and classmates.	
36	Most mornings, I look forward to going to school.	Hill and Werner (2006)
37	The school encouraged me to express my personal thoughts.	
38	The school provides opportunities to develop my interests.	
39	The school supports free learning and exploration.	
40	I like my school.	
41	I am happy to be at this school.	
42	Most mornings, I look forward to going to school.	Jimerson et al. (2003)
43	I am proud to be at this school.	
44	The school is a safe and inclusive place.	
45	I trust and am willing to share my feelings with teachers and classmates.	Rao and Sachs (1999)
46	I have a strong sense of loyalty to my school.	
47	School helps build lasting friendships.	
48	I think learning is boring.	
49	I like what I am learning in school	
50	I think what we are learning in school is interesting	Skinner and Belmont (1993)
51	I enjoy learning new things in class.	
Behavioral Engagement		
52	I collaborate with my peers on group projects.	Finn et al. (1995)
53	I actively participate in class discussions and activities.	
54	I take an active role in extra-curricular activities in my school.	
55	I volunteer to help with school activities such as sport day and parent day.	

Table 3.2 Student Engagement Construct (Cont.)

Item content	Sources
56 I am an active participant of school activities such as sport day and school picnic.	
57 I am involved in extracurricular activities outside of class.	Fredricks et al. (2004)
58 I help my classmates when they need assistance.	
59 I take pride in my schoolwork and accomplishments.	
60 I try to make connections between different topics and subjects.	
61 I reflect on my learning and set goals for improvement.	
62 I ask for help when I need it.	Hart et al. (2011)
63 I help set the rules for my class or study group.	
64 I proactively seek opportunities to participate in school decision-making.	
65 I take responsibility for my own learning.	Jimerson et al. (2003)
66 I contribute positively to the school community.	Kamelifar et al. (2018)
67 I follow classroom rules and expectations.	
68 I am punctual and attend classes regularly.	
69 I complete my homework and study tasks on time.	Miller et al. (1996)
70 I participate in various competitions and activities organized by the school.	
71 I prepare and review for exams together with my classmates.	
72 When I run into a difficult homework problem, I keep working at it until I think I've solved it.	
73 If I have trouble understanding a problem, I go over it again until I understand it.	
74 When I'm in class, I just act like I'm working.	Skinner and Belmont (1993)
75 I pay attention in class.	
76 When I'm in class, I participate in class activities.	
77 In class, I work as hard as I can.	
78 I try hard to do well in school.	

The questionnaire contained 78 questions with a 5 Likert-Scale to comprehensively assessed students' engagement in school. After defining student engagement, the questionnaire was developed to cover multiple aspects of the constructs. These questions were derived from existing research to ensure the content validity of the questionnaire (Hart et al., 2011).

Learning Engagement Questionnaire:

Part 1: Personal information. Gender, Age, and Education level

Par 2: Questionnaire Items:

- 1) Cognitive Engagement (25 items);
- 2) Affective Engagement (26 items); and
- 3) Behavioral Engagement (27 items)

3.3 Data Collection

3.3.1 Questionnaire

The data collection process for the questionnaire will proceed as follows: Preparation stage: establish contact with beauty vocational schools in Chengdu, obtain support from school leaders, ensure that the schools cooperate with the investigation, and train investigators to ensure that they understand the background, purpose and methods of the investigation, and master appropriate investigation skills.

3.3.2 Validity and Reliability

Validity

Validity, accuracy and truthfulness, refers to the degree to which a measurement instrument or tool can be accurately measured what needs to be measured,

The IOC scores were classified as followed (Turner & Carlson, 2003):

- +1 Means the questionnaire is consistent with the research objectives.
- 0 The means questionnaire has problems with the research objectives.

-1 Means that the questionnaire is inconsistent with the research

Objectives.

The average score on the questionnaire from the 5 experts to determine the overall score of the validity of the questionnaire content of 0.93, where questions with an IOC value between 0.50 and 1.00 indicated that the questionnaire had a level of consistency. It is a very high precision or confidence value that can be used to query a sample accurately and precisely. Corrections were then made based on expert recommendations, and the questionnaires were sent to a consultant to be rechecked for correctness before being distributed.

After passing the IOC, the back-translation method was used to check the accuracy of the language used in data collection, in this case translation from English version to Chinese and Chinese back to English. The translation in cross-cultural studies recommended at least three bilinguals as translators (Cha et al., 2007). The IOC result for this study was 1, indicating that the questionnaire had a level of consistency.

Reliability

Reliability that the stability or reliability of the measurement results, refers to the same method of repeated measurements of the same object, the results are consistent with the degree of the previous measurement results, that is, the test method is not subject to random error interference. For the analysis of reliability, Cronbach's Alpha Coefficient (Cronbach, 1951) was used with the result of .933.

The higher the Alpha-coefficient will refer to the higher the reliability. The following criteria of acceptable and unacceptable of Cronbach's Alpha Coefficient in Table 3.2 was used in this study.

Table 3.3 Acceptable and Unacceptable Levels of the Cronbach's Alpha Coefficient

Alpha Coefficient	Implied Reliability
Lower than 0.60	Unacceptable
Between 0.60 and 0.65	Undesirable

Table 3.3 Acceptable and Unacceptable Levels of the Cronbach's Alpha Coefficient
(Cont.)

Alpha Coefficient	Implied Reliability
Between 0.65 and 0.70	Minimally acceptable
Between 0.70 and 0.80	Respectable
Between 0.80 and 0.90	Very good
Higher than 0.90	Consider shortening the scale

3.4 Data Analysis

Software Package for Social Sciences (SPSS Version 25.0) was used to examine descriptive analysis with frequency, percentages, means, standard deviations, skewness and kurtosis. Analysis Moment of Structures (AMOS Version 25.0) was also utilized to analyze the CFA.

Step 1: Construct Design: The step designed construct theoretically to test the model. The construct considered the pre-defined items from the existing literature and a measurement model to validate the model through confirmatory factor analysis (CFA).

Step 2: Develop a model of measurement: The model applied certain numbers of variables in each construct of the group of three. Also, the model considers the uni-dimensionality principle of error between constructs and constructs error variance (Hagell, 2014).

Step 3: Design the model of research to estimate outcome: The model specified single loading estimates per construct. The model identification methods available were rank and order condition.

Step 4 Research Model Validation: The Goodness-of-fit index indicators in the study are: Chi-square goodness-of-fit (ideal, 0.05), Goodness-of-fit index (GFI), Adjusted Goodness-of-fit index (AGFI), Comparative Fit Index (CFI), Normed Fit Index (NFI), Relative Fit Index (RFI), Incremental Fit Index (IFI), and Tucker-Lewis Fit Index (TLI) (Kline, 2023; Piaw, 2009). Further, for the badness of fit index is Root mean square error of approximation (RMSEA) and Root mean squared residual (RMR) (Stevens, 2009).

The Level of Attitudes and Perceptions:

The Score of 4.5-5.00 = Strongly Positive Engagement

The Score of 3.50-4.49 = Positive Engagement

The Score of 2.5-3.49 = Moderately Positive Engagement

The Score of 1.50-2.49 = Negative Engagement

The Mean scores 1.00-1.49 = Strongly Negative Engagement

The Level of Agreement:

The Score of 4.5-5.00 = Strongly Agree

The Score of 3.50-4.49 = Agree

The Score of 2.5-3.49 = Moderately Agree

The Score of 1.50-2.49 = Disagree

The Mean scores 1.00-1.49 = Strongly Disagree

3.4.1 Confirmatory Factor Analysis (CFA)

In this investigation, CFA was carried out after the data collecting procedure to ascertain if the quantity of structures and loadings for every observed variable. CFA is a category of specific advanced factor analysis strategies that is normally utilized in social science research which facilitates in discriminating the factor structure which the phenomena follow.

3.4.1.1 Construct Validity

According to Bolarinwa (2015), construct validity is the degree to which an instrument accurately predicts the construct that will be examined. Construct validity is certified according to determining the internal structure. The scale aligns with the correlation variables. As Furr and Heuckeroth (2019) note, the main aim of construct validity is to ensure the dependability of findings in social science research. Furthermore, Sjoberg and Bergersen (2021) highlight that construct validity is essential for forming effective deductions about conceptual connections, which are evaluated using specific indices. Construct validity includes two subcategories: convergent validity and discriminant validity. Ginty (2013) indicates that for optimal

construct validity, there must be a robust connection with convergent validity and minimal to no correlation with discriminant validity.

3.4.1.2 Convergent Validity

Convergent validity, a key component of construct validity, measures the degree to which two assessments of the same construct are correlated (Brandt et al., 2016). It evaluates how multiple high-level indices relate to a single construct (Churchill, 1979) and assesses the characteristics of a tool where it represents several question statements (Kock, 2020). Indicators such as factor loading, average extracted variance (AVE), and composite reliability (CR) are used to establish convergent validity (Pallant, 2010).

(1) Factor Loading

Factor loading represents the fundamental latent variable's parameter within question statements. Factor loading tests are widely used in social science, particularly in behavioral research. A comprehensive understanding and application of factor loading and its corresponding matrix would enhance research outcomes. The acceptable threshold for factor loading should be greater than 0.50. Hair et al. (2020) also emphasized that the factor loading value should be at least 0.50, with values over 0.70 being preferable.

(2) Average Variance Extracted (AVE)

The average variance extracted (AVE) represents the mean variance explained by the construct for the target variables. It is calculated by dividing the total squares of the standardized factor loadings by the sum of these results and the error variances for all indicators. Experts agree that the AVE should be between 0 and 1.00, with a minimum of 0.50 necessary for convergent validity (Hair et al., 2013).

(3) Composite Reliability

Composite reliability, also known as construct reliability, indicates the relationship between the true value variances and covariances of a composite for correlated variables. Composite reliability is similar to Cronbach's Alpha as it measures the internal consistency of observed variables or scale items.

Composite reliability as the sum of all individual score variances relative to the individual value variances for all observed variables. Gu et al. (2019) suggested that the threshold for composite reliability should be above 0.60, indicating strong internal consistency. Srinivasan (2002) found that a composite reliability value of 0.70 or higher signifies an appropriate level for scale items.

3.4.1.3 Discriminant Validity

Discriminant validity, a verification method based on a long-established concept. Reichardt and Coleman (1995) describe discriminant validity as the degree to which the absolute threshold of the relationship between two constructs is one. Schwab (2013) states that discriminant validity is established when the results of examining a specific construct produce distinct outcomes, rather than being influenced by other constructs. According to Hair et al. (2010), discriminant validity confirms that the construct under examination is unique and demonstrates the phenomenon of interest that prior estimates could not capture. Discriminant validity is present when there are at least two trait correlation assessments and the standard errors are less than 1.00 (Schmitt & Stults, 1986).

3.4.2 Goodness of Fit

Goodness of fit refers to how well a statistical model matches a set of observations. This fit is often assessed by measuring the discrepancy between the anticipated and actual thresholds within the statistical framework. Goodness of fit (GOF) estimates are utilized in Structural Equation Modeling (SEM) and Confirmatory Factor Analysis (CFA) to evaluate model fits. These tests determine whether the data originates from the specified distribution (Kesemen, Tiryaki, Tezel, & Ozkul, 2021). Maydeu-Olivares and Forero (2010) explain that goodness of fit indices measures the variance between expected and actual values within the statistical matrix. Hair et al. (2010) identifies several categories of goodness of fit estimates, including absolute fit indices and incremental fit indices, which were calculated in this study.

3.4.2.1 Absolute Fit Indices

Absolute fit indices measure how well the priori matrix fits the research data (McDonald & Ho, 2002). Some researchers suggest that absolute fit estimates can be used as alternatives. The study utilized statistical measures to assess how well the model fit the data. The similarity between the population covariance and the matrix-implied covariance in terms of absolute fit suggests that the explanation of the findings may be both valid and credible.

The research employed absolute fit measures, including several key indicators such as the Chi-Square Value to Degree of Freedom (CMIN/DF), Root Mean Square Error of Approximation (RMSEA), the Adjusted Goodness of Fit Index (AGFI), and the Ratio of the Goodness of Fit Index (GFI).

(1) Chi-Square Value to Degree of Freedom (CMIN/DF)

The chi-square test of independence is used to examine the relationship between two categorical nominal variables. The chi-square test indicates whether there is a significant difference between the expected and observed covariance matrices. In structural equation modeling, this test serves as a statistical check for the various matrix types. Hair et al. (2010) stated that a chi-square index value of less than or equal to 3.00 is considered acceptable.

(2) Goodness of Fit Index (GFI)

Baumgartner and Homburg (1996) explained that the Goodness of Fit Index (GFI) is a specific measure used to evaluate how well the hypothesized model fits the observed covariance matrix. GFI calculates the proportion of variances and covariances in the empirical covariance matrix that are accounted for by the model. The GFI value ranges from 0 to 1.00, with a value of 0.90 or higher considered excellent (Bagozzi et al., 1991; Baumgartner & Homburg, 1996). While a GFI value over 0.9 is ideal, values above 0.8 are still acceptable according to Baumgartner and Homburg (1995). Wijanto (2008) also noted that GFI values between 0.8 and 0.9 still meet the required threshold, even if they do not exceed 0.9. A GFI value greater than 0.9 indicates a good fit, while values between 0.8 and 0.9 are considered to represent a suitable or acceptable fit for the model.

(3) Adjusted Goodness of Fit Index (AGFI)

However, as more parameters are added to the model, the GFI tends to increase. To correct for this, Jöreskog and Sörbom (1996) introduced the Adjusted Goodness of Fit Index (AGFI). According to Baumgartner and Homburg (1996), the number of indices for each statistical study construct influences the goodness of fit, which is adjusted by the AGFI. The AGFI theoretically ranges from 0 (indicating a poor fit) to 1 (indicating a perfect fit), with values of 0.90 or higher considered satisfactory (Tanaka & Huba, 1985).

(4) Root Mean Square Error of Approximation (RMSEA)

The Root Mean Square Error of Approximation (RMSEA) is a specific statistical indicator used to address issues related to sample size. RMSEA is based on the differences between the hypothesized matrix and the best-fitting arguments. The RMSEA value ranges from 0 to 1.00, with lower values indicating better model fit. A threshold of 0.06 or lower suggests an acceptable fit level, while an RMSEA value below 0.05 indicates an ideal fit.

3.4.2.2 Incremental Fit Indices

Incremental fit indices (IFIs) demonstrate how closely the tested model aligns with the baseline model, according to Byrne (2016). IFIs are commonly used to adjust for sample size and degrees of freedom. A good fit is indicated by values above 0.9, though the index can exceed 1. The study examines three specific indices:

(1) Comparative Fit Index (CFI)

The Comparative Fit Index (CFI) adjusts the chi-square test for model fitting (Gatignon, 2014) and considers the sample size inherent in the normed fit index to assess model fit by comparing the differences between the data and a hypothetical model, with values ranging from 0 to 1, where higher values indicate a better fit. Traditionally, a CFI value of 0.90 or above has been considered indicative of a good model fit (Hu & Bentler, 1999).

(2) Normed Fit Index (NFI)

The Normed Fit Index (NFI) compares the chi-square value of the hypothetical model with that of a null model (Bentler & Bonett, 1980). An NFI value of 0.95 or higher suggests that the model fits the data well, with acceptable values typically falling between 0 and 1 (Hu & Bentler, 1999). For academic research, Hair et al. (2006) recommended that the NFI should ideally be at or above 0.90 to indicate a good fit.

3.5 Qualitative Research

To answer objective 2 of to confirm the factor model of the Cosmetology vocational college Students' learning engagement, the qualitative method was employed to gain perspectives of the administrators to better Cosmetology Education at the Vocational Colleges in Chengdu.

Accordingly, the initial phase involved gathering and analyzing quantitative data, which was subsequently complemented by the collection and analysis of qualitative data. The aim was to offer a qualitative interpretation, enhance understanding, and validate the findings from the quantitative phase. Semi-structured interviews were conducted in this study and analyzed through thematic analysis.

This study applied focus group interviews in the qualitative research phase to illustrate how they view and confirm the factors model of the learning engagement of cosmetology vocational students. The number of focus groups should be large enough to produce consistent themes. In one study, it was found that approximately 80% to 90% of the themes would be identified in one to three focus groups. Focus groups using semi-structured interviews were used to confirm the factors that affect the learning engagement of beauty students. The qualitative phase of this study aims to answer the following research questions through focus group interviews: What are the views and attitudes of beauty vocational college administrators to better learning engagement in cosmetology education in vocational colleges in China.

3.5.1 Interview participants

In this study, semi-structured interviews involved nine administrators from four cosmetology vocational colleges. This number proved to be effective in reaching saturation, ensuring that a wide variety of insights were captured without overwhelming the data collection process. Thus, the focus group interviews were performed to collect data. The interview was conducted in Chinese, recorded, transcribed, and translated into English. Through interview invitations, the contact information of a total of 9 managers, including their email addresses or phone numbers, was confirmed. These interviewees showed different levels of diversity in terms of age, gender, and position.

The collection of interview data included the following processes:

3.5.1.1 Introduce the purpose and process of the interview

Interview transcripts were collected and organized into a format suitable for analysis. The interviewer introduced the purpose and process of the interview to the participants, clearly stating that the interview content was used to study the factors generating the engagement of cosmetology students, and emphasizing respect for the privacy and confidentiality of the participants.

3.5.1.2 Make suggestions for improvements

Finally, participants were asked to make suggestions for enhancing their impact on engagement and explore expectations and prospects for future cosmetology education.

To confirm the quantitative results, this study followed the research tradition of sequential explanatory design by using the results of the questionnaire to compile questions for interviews with 9 managers outside the sampling group (Thornberg et al., 2022). The interviews not only deepened the understanding of the research questions, but also supplemented and explained the research results of the quantitative research part.

To ensure interviewee privacy, written consent was obtained from all participating students before conducting interviews. The interview was conducted in a secluded environment to ensure confidentiality. With randomly select interviewees from four universities, design an interview outline based on the research questions and purposed as the basic framework for the interview, and then conducted the interview. This study used an interview outline based on the theoretical model and research questions as well as issues that emerged from quantitative data analysis (Thornberg et al., 2022). Interview logs and conversation memos would help facilitate next steps in data collection and high research validity (Creswell & Plano, 2011).

3.6 Ethical Considerations

The important ethical consideration is the protection of the privacy and confidentiality of the participants. The researcher should take steps to ensure that participants' privacy and confidentiality are protected. In this study, all information related to names was represented using codes. and only the community was allowed to access the data, participants had the right not to answer any questions that make them feel uncomfortable. It was also possible to decide to withdraw from the study at any time without penalty or consequence, and participants was not received any financial compensation or be required to pay any fees. All data collected from participants would be deleted as soon as the publication of this study came out as to ensure that participants' privacy and confidentiality were protected.

CHAPTER 4

RESULTS OF DATA ANALYSIS

The goal of this chapter is to conduct a comprehensive analysis of the data, including general information analysis, confirmatory factor analysis, descriptive statistics, and correlation analysis. Through detailed tables and statistical data, we will gain an in-depth understanding of the basic situation of the respondents and the main characteristics of the data.

Table 4.1 Symbols and Abbreviation of Statistics in Data Analysis

Abbreviation and Symbols	Full Term
Mean	Arithmetic mean
Sd	Standard Deviation
Corr	Pearson product-moment correlation coefficient
p	Statistical significance
n	Sample size
Max	Maximum
Min	Minimum
χ^2/df	Chi-Square to Degrees of Freedom Ratio
RMSEA	Root Mean Square Error of Approximation
NFI	Normed Fit Index
RFI	Relative Fit Index
RMR	Root Mean Square Residual
CFI	Comparative Fit Index
TLI	Tucker-Lewis Index (or Non-Normed Fit Index-NNFI)

Table 4.1 Symbols and Abbreviation of Statistics in Data Analysis (Cont.)

Abbreviation and Symbols	Full Term
GFI	Goodness-of-Fit Index
AGFI	Adjusted Goodness-of-Fit Index
PNFI	Parsimonious Normed Fit Index
IFI	Incremental Fit Index
AVE	Average Variance Extracted
SQRT	Square Root
SRW	Standardized Regression Weights
	Latent Variable
	Observed Variable
	Directional Relationships
	Correlations

4.1 Descriptive Analysis

4.1.1 General Information Analysis: Demographics of Respondents

The analysis in this section focused on the gender, age and grade distribution of the sample. The results show that among the 372 respondents, males accounted for 4.6% (17 people) and females accounted for 95.4% (355 people). This data showed that female respondents accounted for the vast majority of the sample, which may be related to the target group or survey subjects of this study being beauty majors. In terms of age distribution, respondents aged 16-17 accounted for 72.8% (271 people), 18-19 accounted for 17.7% (66 people), 20-21 accounted for 8.3% (31 people), and 22-23 accounted for 1.1% (4 people). This showed that most of the respondents in the sample are teenagers or young adults. In terms of grade distribution, first-year students accounted for 59.1% (220 people), and second-year and third-year students accounted for 20.4% (76 people each).

Table 4.2 Number and proportion of samples

(n=372)

Frequency and percentage of users			
Demographics of respondents		Frequency	Percentage
Gender	Male	17	4.6%
	Female	355	95.4%
Age Period	Under 18	271	72.8%
	18-19	66	17.7%
	20-21	31	8.3%
	22-23	4	1.1%
Grade	First Year	220	59.1%
	Second Year	76	20.4%
	Third Year	76	20.4 %
Total		372	100

4.1.2 Descriptive Analysis

This study used a 5-point Likert scale to measure the latent variables of Cognitive Engagement: CE1, CE2, CE3, CE4, AE1, AE2, AE3, AE4; Behavioral Engagement: BE1, BE2, BE3, and BE4; and Affective Engagement: AE1, AE2, AE3, and AE4.

The results of the descriptive analysis showed the mean and standard deviation of each observed variable. The most effective way to calculate the mean of a given data set is to use the mean, which is the sum of the ratings divided by the total number of measurements. The standard deviation determines the degree to which each result in the data set deviates from its mean. Evaluating the mean and standard deviation of each construct is a basic data procedure for research

The mean values of all observed variables ranged from 3.387 to 3.879, and the standard deviations range from 0.696 to 0.906. The means and standard deviations are shown in Table 4.3.

Table 4.3 Descriptive Analysis

(n=372)

Variable	N	Min	Max	$\bar{x}$	SD
Gender	372	1.000	2.000	1.954	0.209
Age Period	372	1.000	4.000	1.376	0.683
Grade	372	1.000	3.000	1.613	0.805
CE1	372	1.000	5.000	3.745	0.713
CE2	372	2.000	5.000	3.715	0.696
CE3	372	2.000	5.000	3.718	0.718
CE4	372	2.000	5.000	3.677	0.691
AE1	372	1.000	5.000	3.586	0.781
AE2	372	1.000	5.000	3.387	0.906
AE3	372	1.000	5.000	3.591	0.831
AE4	372	1.000	5.000	3.599	0.826
BE1	372	1.000	5.000	3.774	0.796
BE2	372	1.000	5.000	3.879	0.817
BE3	372	1.000	5.000	3.831	0.791
BE4	372	1.000	5.000	3.739	0.755

4.2 Multicollinearity

In this study, the correlation matrix helped determine the multicollinearity. That Shrestha (2020) postulated that if the threshold for Pearson Correlation Coefficient is approximating to 0.800, collinearity probably exists. Correlation coefficient values ranged from 0.475 to .847. There was no violation of multicollinearity, as shown by the multicollinearity results for each pair of the latent variables being less than 0.800.

Table 4.4 Correlation Coefficient Matrix (Cont.)

(n=372)

		CE1	CE2	CE3	CE4	AE1	AE2	AE3	AE4	BE1	BE2	BE3	BE4
BE4	Corr	.521	.540	.545	.530	.630	.562	.590	.527	.700	.652	.733	1
	p	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
	n	372	372	372	372	372	372	372	372	372	372	372	372

Based on the statistical findings presented in Table 4.4, it was revealed that the Cronbach's alpha coefficients for various variables were calculated as follows: 0.93 for CE, 94 for AE, and 0.93 for BE. The obtained results demonstrated strong internal consistency reliability for all the variables of interest, as shown by Cronbach's alpha scores above the threshold of 0.8. This discovery indicated that the variables in this study exhibited a strong degree of internal consistency dependability, confirming that both our models and data are appropriate for further rigorous statistical analysis and validation.

Table 4.5 Consistency Reliability

Variable	Scale Mean after item removal	Scale variance after item removal	Corrected item-to- total correlation	Cronbach's Alpha after item removal
CE1	40.50	46.261	0.734	0.939
CE2	40.53	46.261	0.755	0.938
CE3	40.52	46.045	0.752	0.938
CE4	40.56	46.446	0.740	0.939
AE1	40.66	44.992	0.791	0.937
AE2	40.85	44.647	0.696	0.941
AE3	40.65	44.778	0.758	0.938
AE4	40.64	45.406	0.701	0.940
BE1	40.47	45.123	0.761	0.938
BE2	40.36	45.348	0.716	0.939
BE3	40.41	45.294	0.748	0.938
BE4	40.50	45.615	0.755	0.938

4.3 Confirmatory Factor Analysis

Confirmatory factor analysis was used to verify the relationship between variables in the measurement model. Confirmatory factor analysis helps researchers test the validity of learning engagement theory by evaluating the fit of the model. This study aims to test whether the items of the learning engagement questionnaire can effectively reflect the potential constructs being measured through confirmatory factor analysis. Data analysis was performed using SPSS AMOS 25 software. In this study, we mainly focus on three factors: cognitive engagement (CE), behavioral engagement (BE), and emotional engagement (AE). The following is the specific confirmatory factor analysis process and results.

4.3.1 Model Fit Test

A total of 372 students (N=372) participated in this study, and confirmatory factor analysis (CFA) was conducted to explore the fit of the model with 12 variables in three factors.

The double-head arrows are the covariances that connected to each of the 12 latent variables, which were also referred to as factor correlations while the one-way connection between the latent variables and observed variables was illustrated by a single directed arrow with the factors and their items which are also named the CFA factor loading

Residual correlations may be preferable to standardize residual covariance (SRC). Both have used to assess the source of misfit if the model is poorly fitted (Maydeu-Olivares, 2017). Also, if the model is fit, standardized residual covariances (SRC) have used to measure the standard normal distribution.

In Figure 4.1 the standardized regression weights were the representative of latent variables that signifies the indicator variables. Also, a two-way correlation between variables is the representatives of correlation indices. Modification Indices

used in model modification in the situation of a poorly fitting model (Bagozzi, 2010; Tiffany, 2012). When added to the model, it reduces the value of Chi-square and improves the model fit.

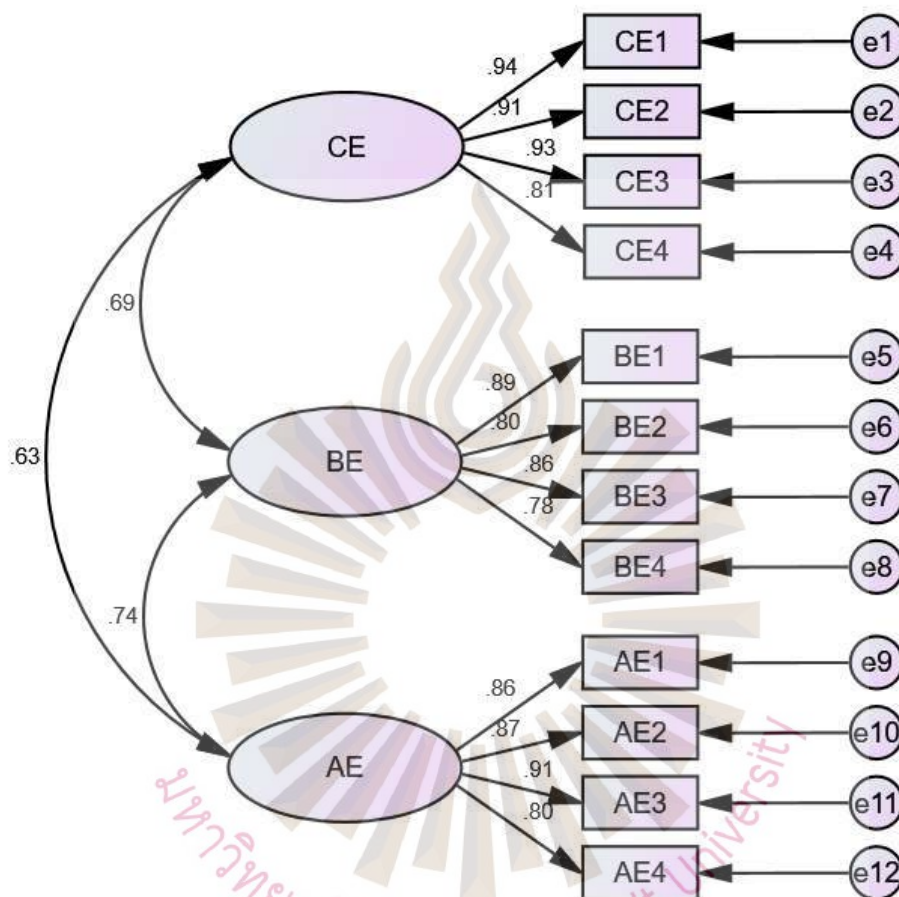


Figure 4.1 Measurement Model: Confirmatory Factor Analysis of Learning Engagement

In term so Goodness of fit, the present study used CFA to evaluate the overall constructs collectively. Following the initial stage of CFA, the evaluation of goodness of fit for the CFA matrix was conducted, and adjustments were made based on modification indices to refine the model. It has been recommended that in the context of synthetic quantitative research, at least one fitness index should be employed to assess the congruence between the matrix and the model fit criteria (Kline (2015). Two categories of indices were utilized: absolute fit and incremental fit. The detailed criteria are demonstrated in table 4.6.

Table 4.6 Model results showed that the chi-square value (CMIN/DF) was 3.274, which was less than 5 (the ideal range is 2-5, which is acceptable), proving that the hypothesized model was suitable. The approximate fit index value was higher than 0.9, proving that the model was adequately fitted (Steiger, 2007; Piaw, 2009; Kilne, 2010, Hair et al., 2017). The approximate fit index values of CFA analysis were: goodness of fit index value (GFI = 0.928), comparative fit index value (CFI = 0.971), standard fit index value (NFI = 0.959), relative fit index value (RFI = 0.947), incremental fit index value (IFI = 0.971) and Tucker-Lewis fit index value (TLI = 0.963), which were higher than 0.9, proving that the model was fit. The root mean square error of approximation (RMSEA = 0.078) was less than 0.08, meeting the cutoff criteria, indicating a high model fit (Bagozzi and Yi, 1991). The root mean square residual (RMR = 0.025) was less than 0.05, which was considered a good fit (Stevens, 2009; Piaw, 2009; Steiger, 2007; Hooper, 2008). The adjusted goodness of fit index value (AGFI = 0.890), PNFI = 0.741 (Parsimony Normed Fit Index), AGFI greater than 0.9 was excellent, and above 0.8 was also acceptable. There was no strict standard for PNFI, and generally greater than 0.5 is considered acceptable.

Table 4.6 Goodness-of-Fit (GFI) Statistics of Student Engagement by CFA

Fit Indices	Results of Analysis	Acceptable Levels
Chi-square (χ^2)	Chi-square (χ^2/df) = 3.274	$P > 0.05$; for a good model, Chi-square (χ^2) test should be nonsignificant (Hu & Bentler, 1998, 1999)
Absolute Fit measures	GFI = 0.928 (Goodness-of-Fit) RMSEA = 0.078 (Root mean square error of approximation) RMR = 0.025 (Root mean square residual)	GFI value > 0.90 RMSEA values < 0.08 (Bagozzi & Yi, 1991) Small SMR is preferable for good models (Widaman, 1984)
Incremental Fit indices	NFI = 0.959 (Normed fit index) CFI = 0.971 (Comparative fit index) RFI = 0.947 (Relative fit index)	NFI value > 0.90 CFI value > 0.90 RFI value > 0.90

Table 4.6 Goodness-of-Fit (GFI) Statistics of Student Engagement by CFA (Cont.)

Fit Indices	Results of Analysis	Acceptable Levels
Parsimony Fit Indices	AGFI = 0.890 (Adjusted goodness-of-fit index) PNFI = 0.741 (Parsimony normed fit index)	AGFI value > 0.90 PNFI value > 0.90

Table 4.7 Overall Fitting Coefficient

(n=372)										
χ^2/df	RMSEA	GFI	RMR	NFI	CFI	RFI	IFI	TLI	AGFI	PNFI
3.274	0.078	0.928	0.025	0.959	0.971	0.947	0.971	0.963	0.890	0.741

4.3.2 Factor loading analysis

In Table 4.8, to gain a deeper understanding of the extent to which each item reflected on its factor, it was calculated the Standardized Regression Weights (SRW) and their square values. The paper tested convergent validity and discriminant validity to reflect the theoretical latent-construct. The ideal standardized factor loading range for construct validity should be 0.5 to 0.7 (Wang et al., 2005). The following were the specific results of the three factors: The sum of SRW estimated values of cognitive engagement factor loading = 3.583; SRW square sum = 3.219; Composite Construct Reliability = 0.943; Average Variance Extracted (AVE) = 0.805. These results showed that the items of the cognitive engagement factor had high loadings and the internal consistency of the factor was very good.

Table 4.8 Cognitive Engagement Factor Loading

(n=372)					
Variable	Factors	SRW Estimate	SRW Squared	1-(SRW Squared)	
CE1	CE	0.939	0.881721	0.118279	
CE2	CE	0.905	0.819025	0.180975	
CE3	CE	0.926	0.857476	0.142524	
CE4	CE	0.813	0.660969	0.339031	
	Sum	3.583			

Table 4.8 Cognitive engagement factor loading (Cont.)

(n=372)

Variable	Factors	SRW Estimate	SRW Squared	1-(SRW Squared)
		Sum of SRW Estimates (Squared)		3.219
		Composite Construct Reliability		0.943
		Average Variance Extracted		0.805

*SRW=Standardized Regression Weights

In table 4.9, the sum of SRW estimated values of the behavioral engagement factor loading was 3.337; the sum of SRW squares is 2.791; the composite construct reliability was 0.902; and the average variance extracted (AVE) was 0.698. The results of the behavioral engagement factor also showed that the items have high loadings on this factor and the factor has good internal consistency.

Table 4.9 Behavior Participation Factor Loading

(n=372)

Variable	Factors	SRW Estimate	SRW Squared	1-(SRW Squared)
BE1	BE	0.891	0.793881	0.206119
BE2	BE	0.805	0.648025	0.351975
BE3	BE	0.859	0.737881	0.262119
BE4	BE	0.782	0.611524	0.388476
	Sum	3.337		
	Sum of SRW Estimates (Squared)	2.791		
	Composite Construct Reliability	0.902		
	Average Variance Extracted	0.698		

*SRW=Standardized Regression Weights

In table 4.10, the sum of SRW estimated values of the emotional engagement factor loading is 3.453; the sum of SRW squares is 2.987; the composite construct reliability is 0.922; the average variance extracted (AVE) is 0.747. The results of the emotional engagement factor showed that the items have high loadings on this factor and the internal consistency of the factor is good.

Table 4.10 Emotional Engagement Factor Loading

(n=372)

Variable	Factors	SRW Estimate	SRW Squared	1-(SRW Squared)
AE1	AE	0.865	0.748225	0.251775
AE2	AE	0.871	0.758641	0.241359
AE3	AE	0.913	0.833569	0.166431
AE4	AE	0.804	0.646416	0.353584
	Sum	3.453		
	Sum of SRW Estimates (Squared)	2.987		
	Composite Construct Reliability	0.922		
	Average Variance Extracted	0.747		

*SRW=Standardized Regression Weights

4.3.3 Discriminant Validity

In table 4.11, to assess the discriminant validity among the factors, it was calculated the average variance extracted (AVE) and square root (SQRT) of each factor. Correlations confirmed discriminant Validity among the construct. The value of associations 0.085 or above shows a weak or no discriminant validity. Table 4.11 & 4.12 shows that none of the correlation value is less than 0.085 (Wang et al., 2015). It was indicated that there was no discriminant validity in the construct. Thus, in Table 4.11 described that all Average Variance Extracted (AVE) estimates had their value lower than the inter-construct correlations. The outcome of the analysis showed that there is no discriminant validity in construct.

Table 4.11 Measurement of Discriminant Validity: Average Variance Extracted (AVE)

(n=372)

AVE (Average Variance Extracted)	Factor	CE	BE	AE
0.805	CE	1.000		
0.698	BE	0.313	1.000	
0.747	AE	0.284	0.353	1.000

Table 4.12 confirmed that all Average Variance Extracted (AVE) estimates had their value lower than the inter-construct correlations. The outcome of the analysis showed that there is no discriminant validity in the construct.

Table 4.12 Measurement of Discriminant Validity: Square Root of AVE

(n=372)

SQRT (Square root)	Factor	CE	BE	AE
0.897	CE	0.897		
0.835	BE	0.313	0.835	
0.864	AE	0.284	0.353	0.864

Note Square root (SQRT) of AVE (Diagonal Value) for the Construct

4.4 Qualitative Research

According to the research methodology, the first step involves collecting and analyzing quantitative data, followed by collecting and analyzing qualitative data. In other words, the goal is to provide qualitative interpretations that enhance and validate the results obtained in the quantitative part of the study (Busetto et al., 2020; Creswell & Hirose, 2019). This study included Semi-structured interviews, which were then analyzed using thematic analysis.

This study applied focus group interviews to the qualitative research stage to investigate how participants viewed the factors affecting the learning engagement of students at Chengdu Vocational College of Beauty. The number of focus groups should be large enough to produce consistent themes. One study found that approximately 80% to 90% of the themes will be identified in one to three focus groups (Fugard & Potts, 2015; Galvin, 2015; Guest, Namey, & McKenna, 2017). Focus groups using semi-structured interviews were used to confirm the factors affecting the learning engagement of Chengdu Vocational College of Beauty. The qualitative stage of this study aims to answer the following research questions through focus group interviews: What are the views and attitudes of students at the Vocational College of Beauty on this, in order to confirm the model of factors affecting the learning engagement of students at the Vocational College of Beauty.

Qualitative research followed the principle of saturation, where additional data does not yield new insights into the subject (Creswell & Hirose, 2019). Saturation

determines an adequate sample size because it marks a threshold beyond which no significant new information emerges that would indicate appropriate conclusions from the data collection. With regard to focus groups, the optimal size ranges from 4 to 10 participants (Moser & Korstjens, 2018). Smaller groups can facilitate deeper discussions and more participant interaction. Larger groups, on the other hand, may dilute the conversation and become difficult to manage. In this study, semi-structured interviews involved nine school administrators from three universities. This number proved to be effective in reaching saturation, ensuring that a wide variety of insights were captured without overwhelming the data collection process.

This study mainly used focus group interviews to collect data. Therefore, qualitative research usually uses non-random sampling methods. In this study, the researcher uses a purposeful sampling method to carefully select respondents who have a good understanding of the phenomenon being studied. After the initial list of questions is confirmed, nine school administrators from three universities will be invited to participate in semi-structured interviews. This study encouraged participants to identify the factors that influence the learning engagement of students in beauty vocational colleges. The interviews were conducted in Chinese. The interviews were recorded, transcribed, and translated into English.

Through interview invitations, contact information of a total of nine school administrators, including their email addresses or telephone numbers, was confirmed. These interviewees showed varying degrees of diversity in terms of age, gender, and position.

When determining the number of respondents, the study followed the saturation principle, that is, continuously exploring new respondents until it was determined that "no new surprises or insights would emerge." New respondents were added later in order to select interviewees who would help further refine the research (Saunders et al., 2018), thereby enhancing a deeper understanding of various types of participants.

4.4.1 Interview Participant Information

Table 4.13 Interview Participant Information

Participants	Information
Participant 1	A Hairdressing Teacher at Chengdu Oumandi Technical School
Participant 2	A Head of The Hairdressing Professional Group at Chengdu Oumandi Technical School.
Participant 3	A Teacher in The Admissions and Employment Office of Chengdu Oumandi Technical School, Is Responsible for Market Enrollment Work.
Participant 4	A Beauty Teacher and Class Teacher at Chengdu Oumandi Technical School.
Participant 5	An Associate Professor at Sichuan Film and Television Academy, Mainly Teaches Character Modeling.
Participant 6	A Chengdu Vocational and Technical College, Professional Course Teacher.
Participant 7	A Class Teacher at Chengdu Oumandi Technical School and Is Also in Charge of The Management of The Jinxiu Road Campus.
Participant 8	A Beauty Teacher, Class Teacher and Academic Director at Chengdu Oumandi Technical School.
Participant 9	A Sichuan Tianyi College, Beauty Teacher

As can be seen from the self-introductions above, the interview participants included teachers and managers from Chengdu Oumandi Technical School, Sichuan Film and Television Academy, and Chengdu Vocational and Technical College. They worked in hairdressing, beauty, admissions, and management positions, and have a deep understanding of student learning engagement.

4.4.2 The impact of cognitive engagement on learning engagement

Table 4.14 Cognitive Engagement on Learning Engagement

How do you think students' ability to connect what they learn in class to what they already know, and how does this impact student learning outcomes?	
Participants	Perspective
Participant 1	Through systematic knowledge learning in the classroom, students' cognition will change, and their thinking, practical operation abilities and professional qualities will be improved.
Participant 2	Connecting new knowledge with existing knowledge helps improve learning efficiency, enhance students' observation, creativity, attention and memory, and improve their ability of coherent thinking. It is an effective teaching method.
Participant 3	It is very important for students to establish knowledge connections between different courses, which is affected by multiple factors such as teaching mode, teacher ability, student learning attitude and method, etc. Different students' interests in different courses will also affect their ability to connect knowledge.
Participant 4	Students need to combine classroom knowledge with their existing knowledge and clarify their goals in order to better learn and apply. By combining their own experience with classroom content, students can understand and master knowledge more deeply and improve their learning outcomes.
Participant 5	Through the display of works, whether students can integrate what they have learned into their works can reflect their learning effect. For example, the overall combination of clothing, hair accessories, hairstyles and other elements can show the degree of students' mastery of knowledge.
Participant 6	Students can better apply professional skills through the combination of theoretical knowledge and practical ability in their studies. Practical ability includes the improvement of communication, exchange and aesthetics, which have a positive impact on students' learning outcomes.
Participant 7	Students should have a certain amount of knowledge reserves and, through transfer ability, connect existing knowledge with new knowledge, so that they can master new knowledge faster and improve learning outcomes.
Participant 8	Students with strong existing knowledge are more receptive to learning new knowledge, while students with weak knowledge base are a little slower in accepting new knowledge.

Table 4.14 Cognitive Engagement on Learning Engagement (Cont.)

How do you think students' ability to connect what they learn in class to what they already know, and how does this impact student learning outcomes?	
Participants	Perspective
Participant 9	It is very important to connect existing knowledge with new knowledge, which can help students master new knowledge faster, understand it more deeply and learn better. In this way, students can improve their comprehensive abilities more effectively.

The ability of students to connect new knowledge learned in class with existing knowledge is crucial to improving learning outcomes. By connecting new and old knowledge, students were able to master new knowledge faster and enhance their understanding and memory. This ability can also improve students' observation, innovation and attention, making them more coherent and systematic in the learning process, thereby improving learning outcomes. Teachers believed that through reasonable course design and effective teaching methods, they can help students better establish knowledge connections and improve their comprehensive abilities.

4.4.3 The impact of cognitive engagement on learning engagement

Table 4.15 Cognitive Engagement on Learning Engagement

How well do you think students make connections between courses?	
Participants	Perspective
Participant 1	The course design progresses from simple to complex, gradually introducing the industry, teaching how to operate, and finally integrating applications. Each stage complements each other.
Participant 2	The ability of students to establish knowledge connections between different courses varies from person to person, and connections between courses can be achieved through learning and practice. The transformation of teachers' roles and the allocation of emphases to different subjects, as well as the interaction between teachers and students, are all important factors.

Table 4.15 Cognitive Engagement on Learning Engagement (Cont.)

How well do you think students make connections between courses?	
Participants	Perspective
Participant 3	There are individual differences among students in establishing knowledge connections between different courses, which is related to the characteristics of the course itself, the school's teaching quality and the teacher's level.
Participant 4	Students have strong transfer and integration capabilities. The course connectivity is also considered during course development. Through the interactivity and integration of courses, students can establish knowledge connections and improve their professional abilities.
Participant 5	There are differences between students. Some students can integrate the knowledge from different courses very well, while some students are slower and need guidance and instruction to apply the knowledge from other courses to the current course.
Participant 6	At the beginning, students are not very clear about the connections between different courses. They need guidance from teachers and the curriculum construction system, combined with the requirements of the market and enterprises, to help students better establish connections between courses.
Participant 7	Students are optimistic about establishing knowledge connections between different courses and have the ability to transfer and integrate new and old knowledge. The interoperability of courses is taken into consideration when developing courses, and the problem-solving approach is used to cultivate students' comprehensive abilities.
Participant 8	The courses are well connected, and the advanced bridging courses allow students to master knowledge in different courses more effectively.
Participant 9	The courses are well connected and students are able to effectively integrate knowledge from different courses. This integration ability allows students to be more systematic and comprehensive in the learning process, which is conducive to their overall development.

Students were generally good at establishing knowledge connections between different courses. The courses were well connected, and students were able to effectively integrate knowledge when studying different courses. This not only helped them better understand the course content, but also improved their comprehensive

application capabilities. Teachers emphasized that through the interactivity and integration of courses, as well as the guidance of teachers, students were able to establish clear knowledge connections between different courses, thereby improving their professional capabilities.

4.4.4 The impact of cognitive engagement on learning engagement

Table 4.16 Cognitive Engagement on Learning Engagement

In your opinion, how do students integrate and apply what they learn in school?	
Participants	Perspective
Participant 1	Through the on-campus training store, students are exposed to real customers and apply classroom knowledge to actual operations, with remarkable results.
Participant 2	Students should actively collect information, summarize the knowledge they have learned, use mind maps, constantly reflect and adjust, and integrate the knowledge they have learned into industry practice to improve their technical capabilities.
Participant 3	Students can summarize, summarize and innovate in extracurricular time, use Internet resources (such as Douyin, Kuaishou, Xiaohongshu, etc.) and fashion and beauty magazines, and participate in extracurricular practices and loving activities to integrate and apply the knowledge learned in school.
Participant 4	The knowledge provided by the school has a structure and framework, and students need to actually apply this knowledge. Through summary and application, they can better master and progress. If knowledge is not applied, it is like a notebook set aside and useless.
Participant 5	Through practical training, students can apply classroom knowledge to the actual market. Classroom knowledge is out of touch with social reality, and students need to integrate and apply what they have learned through practical training and market practice.
Participant 6	Through basic knowledge learned in school, social practice and understanding of external information, students integrate this knowledge and experience to lay a good foundation for future study and employment and find opportunities for development.

Table 4.16 Cognitive Engagement on Learning Engagement (Cont.)

In your opinion, how do students integrate and apply what they learn in school?	
Participants	Perspective
Participant 7	Students need to integrate scattered theoretical knowledge through practice, like stringing beads, and constantly summarize and improve during the practice and review process to better absorb knowledge.
Participant 8	Through more practice, the knowledge learned needs to be applied and practiced more, and the ability to master it will be better.
Participant 9	More practice and reflection are the key. Students need to transform theoretical knowledge into practical ability through practical operations, so that they can better master and apply what they have learned, and constantly summarize and improve in the process.

Students needed to integrate and applied what they have learned in school through practice and reflection. More practical operations could help students transform theoretical knowledge into practical skills. Teachers suggested that schools should provide more practical opportunities, such as training shops and social practice activities, so that students could apply what they have learned in real environments. At the same time, students should actively collect information, summarize, and constantly reflect and adjust to improve their technical ability and learning effects.

4.4.5 The impact of cognitive engagement on learning engagement

Table 4.17 Cognitive Engagement on Learning Engagement

How do you think expressing ideas in your own words affects students' understanding and retention when they are learning new information?	
Participants	Perspective
Participant 1	Using your own language to express and transfer knowledge can increase the absorption rate to over 70-80%, which helps with understanding and memory.
Participant 2	Using their own words to express ideas deepens understanding, facilitates memory, improves language skills, and increases students' confidence.

Table 4.17 Cognitive Engagement on Learning Engagement (Cont.)

How do you think expressing ideas in your own words affects students' understanding and retention when they are learning new information?	
Participants	Perspective
Participant 3	Using their own language to express ideas can deepen students' understanding and memory, improve their language expression skills, enhance their self-confidence, and greatly enhance their career development, employment direction, and interpersonal communication skills.
Participant 4	Using their own language to express ideas can deepen students' understanding and memory of knowledge points and make knowledge more profound. Students transfer knowledge through their own language, which helps to better communicate and apply it in work.
Participant 5	Using their own language can deepen understanding and memory, allowing students to think and master knowledge. When student express knowledge points in their own language, it shows that they have a thorough understanding and can apply them flexibly.
Participant 6	Using their own words to express new knowledge can help students better understand and remember. Whether it is expressed through language or other means, it can play a positive role.
Participant 7	Students express new knowledge in their own words, deepen their memory and understanding by teaching others, consolidate their knowledge, and make up for their own shortcomings.
Participant 8	Students are relatively weak in language expression, but their language expression ability can be improved through speech activities and courses.
Participant 9	Expressing new knowledge in their own language can deepen their understanding and memory while improving their expression skills. In this way, students can better grasp knowledge and apply it flexibly in practice.

Using your own words to express new knowledge can significantly deepen students' understanding and memory. Through their own language expression, students could better grasp knowledge and improve their expression skills and self-confidence. Teachers believed that encouraging students to convey knowledge in their own language would not only help them understand and remember better in class, but also communicated and applied the knowledge they have learned more effectively at

work. This method was an effective teaching strategy that enhances student learning.

4.4.6 The impact of emotional involvement on learning engagement

Table 4.18 Emotional Engagement on Learning Engagement

How would you rate students' emotions and sense of belonging to the school? How does this emotion and sense of belonging impact their learning experience at school?	
Participants	Perspective
Participant 1	Students have a strong sense of affection and belonging to the school and teachers, and this sense of trust motivates them to overcome difficulties and actively participate in learning.
Participant 2	Students build a sense of belonging by participating in competitions and extracurricular activities, which helps improve the quality of life, promote socialized learning requirements, enhance trust between teachers and students, and promote learning enthusiasm.
Participant 3	Students' strong feelings and sense of belonging to the school help them adapt to campus life, reduce psychological burden, and improve their academic performance and professional ability. Trusting and recognizing the school helps them abide by rules and regulations, and enhances the teacher-student relationship and learning experience.
Participant 4	Students' feelings and sense of belonging to the school are important. Students with a sense of belonging are more willing to abide by school rules and maintain school facilities, which has a positive impact on learning and enhances their learning experience and sense of school responsibility.
Participant 5	Students' emotions and sense of belonging to the school are mainly reflected after graduation. They will share these experiences on social media and express their gratitude to the school and teachers. This emotion and sense of belonging make them cherish their time in school, have a positive impact on their learning experience, and enhance their satisfaction and sense of identity.

Table 4.18 Emotional Engagement on Learning Engagement (Cont.)

How would you rate students' emotions and sense of belonging to the school? How does this emotion and sense of belonging impact their learning experience at school?	
Participants	Perspective
Participant 6	It is difficult for students to express their emotions and sense of belonging during their time at school, but they will become more obvious after graduation. Through the questionnaire, it was found that most students are willing to recommend the school, which shows their recognition and sense of belonging to the school, which has a positive impact on the school's reputation and students' learning experience.
Participant 7	Students' sense of belonging and identity to the school stems from the gains and friendships they make at school, enhancing their sense of happiness and security. A sense of belonging encourages students to abide by rules and regulations, maintain public facilities, promote the school, and enhance their sense of responsibility.
Participant 8	Students' emotions and sense of belonging to school stem from the emotional connection with their class teachers and friends. Good interpersonal relationships and emotional foundation make students feel stronger in school and have a better learning experience.
Participant 9	Students' emotions and sense of belonging to school come from the emotional connection with teachers and classmates. Good interpersonal relationships and emotional foundations can enhance their sense of belonging and improve their learning experience and satisfaction in school.

Students' emotions and sense of belonging to the school had a significant impact on their learning experience. A strong sense of belonging and emotional identification made students more willing to overcome difficulties and actively participate in learning. By participating in competitions, extracurricular activities and building friendships, students could enhance their sense of identity with the school, improve their learning enthusiasm and satisfaction. This sense of belonging not only helped them comply with school rules and regulations, but also promoted trust and good relationships between teachers and students, thereby improving overall learning outcomes.

4.4.7 The impact of emotional involvement on learning engagement

Table 4.19 Emotional Engagement on Learning Engagement

How does a student's positive attitude toward school affect their performance in class?	
Participants	Perspective
Participant 1	A positive attitude encourages students to actively answer questions, participate in operations, reflect and innovate, and perform better.
Participant 2	A positive attitude allows students to better engage in learning, actively participate in class, take the initiative to explore, persevere, expand their knowledge, and have a positive impact on classroom performance.
Participant 3	A positive attitude helps students better engage in learning, improve their professional performance and classroom participation, enhance teacher-student interaction and class atmosphere, and stimulate interest in learning and self-confidence.
Participant 4	A positive attitude has a decisive influence on students' learning status and performance. Only with a correct attitude can we better absorb knowledge and improve learning results. If the attitude is not correct, no matter how much you teach, it will be ineffective.
Participant 5	Positive attitude has a great impact on learning performance. Students who actively attend classes and do not arrive late perform better, master the knowledge better, and show recognition of the major and a serious attitude towards learning.
Participant 6	Students' positive attitude directly affects classroom performance. Teachers' teaching attitude, use of modern tools and assessment schemes, and students' participation in class can improve their motivation and ability performance.
Participant 7	A positive attitude makes students think actively, concentrate their attention, absorb knowledge effectively, and have outstanding hands-on skills, forming a virtuous circle that is conducive to learning and improving their abilities.

Table 4.19 Emotional Engagement on Learning Engagement (Cont.)

How does a student's positive attitude toward school affect their performance in class?	
Participants	Perspective
Participant 8	A positive attitude makes students more interactive in class, more motivated to practice, and perform better.
Participant 9	A positive learning attitude can make students more engaged in class, interact more, and achieve better learning results. A positive attitude can also promote the improvement of their hands-on and practical abilities, forming a virtuous cycle.

Students' positive attitudes toward school significantly influenced their performance in the classroom. Positive attitudes made students more engaged in class, interact more, and learned better. A positive learning attitude also promoted the improvement of their hands-on and practical abilities, forming a virtuous cycle. Teachers noted that a positive attitude not only improves students' learning, but also increases their self-confidence and classroom participation.

4.4.8 The Impact of emotional involvement on learning engagement

Table 4.20 Emotional Engagement on Learning Engagement

Do you think students' pride in their school affects their academic performance?	
Participants	Perspective
Participant 1	A sense of pride increases students' motivation to learn and stimulates the desire to learn further by winning a competition or ranking at the top of the class.
Participant 2	Students' pride in the school comes from the school's teaching resources, quality and culture, which enhances their motivation to learn and a sense of belonging, cultivates a sense of responsibility and promotes their personality development.
Participant 3	Students' pride in their school stems from the school's teaching ability, environment, teacher-student relationship, etc., which can improve their enthusiasm and initiative in learning, enhance their sense of belonging and responsibility, and improve the school's reputation and brand influence.

Table 4.20 Emotional Engagement on Learning Engagement (Cont.)

Do you think students' pride in their school affects their academic performance?	
Participants	Perspective
Participant 4	The school motto and cultural identity can mobilize students' learning motivation and interest. The pride in the school can arouse students' interest in learning and enable students to develop better under the influence of the school.
Participant 5	Students' pride in their school affects their learning motivation and professional recognition. If students feel proud of their school, their motivation to learn will be enhanced, and they will be more willing to invest in their studies and achieve good results.
Participant 6	Students' pride in the school comes from the school's progress and achievements, including social practice, competition results and scholarships, which can enhance students' sense of identity with the school and their motivation to learn.
Participant 7	Students' pride in their school stems from their identification with the school culture. This identification stimulates learning motivation, mobilizes thoughts, behaviors and emotions, and improves learning enthusiasm.
Participant 8	Students' pride in their school makes them more proactive in promoting their major and performing better in their studies.
Participant 9	Students' pride in their school can motivate them to learn and make them more proactive in their studies. This sense of pride can also enhance their sense of identity with the school and the major, and improve the overall learning effect.

Students' pride in their school could greatly motivate them to learn. Pride made students more proactive in learning and willing to promote their major and school. Through winning competitions, social practice and the school's progress, students' sense of identity with the school was enhanced and their learning performance was more positive. This sense of pride not only improved their enthusiasm for learning, but also promoted their recognition and sense of responsibility for their major.

4.4.9 The impact of emotional involvement on learning engagement

Table 4.21 Emotional Engagement on Learning Engagement

Do you think schools help students build and maintain friendships? How do these friendships impact students' school life and learning experience?	
Participants	Perspective
Participant 1	The school helps students build friendships, which has a significant impact on school life and learning experience, and friendships can provide a positive learning atmosphere.
Participant 2	Schools can help students establish and maintain friendships, provide opportunities to learn interpersonal and communication skills, and through joint participation in social practice activities, friendships have a positive impact on students' lives and learning experiences.
Participant 3	Schools can help students establish and maintain friendships through activities such as clubs, student unions, welcome parties, and class dinners. Friendship helps students quickly integrate into campus life, develop independent living skills, and improve class cohesion and teamwork skills.
Participant 4	Schools can help students establish and maintain friendships through active guidance, teach students how to make and identify friends, establish correct values, and enable students to learn and grow in friendships. This kind of friendship is a valuable asset.
Participant 5	Counselors and professional teachers should help students build friendships, eliminate negative emotions through extracurricular communication activities and mutual assistance among friends, promote a positive learning atmosphere, and improve learning outcomes.
Participant 6	The school helps students build friendships through welcome parties and other activities. These friendships enhance students' experience in school life and learning and increase their love and sense of belonging to the school.
Participant 7	Schools can actively guide students to make friends, establish correct values and cultivate interpersonal communication skills. Friendship helps students grow together and is a valuable asset in life.

Table 4.21 Emotional Engagement on Learning Engagement (Cont.)

Do you think schools help students build and maintain friendships? How do these friendships impact students' school life and learning experience?	
Participants	Perspective
Participant 8	The school helps students establish correct values, world outlook, values and friendships, and enhances their emotional connections, which contributes to their growth and learning experience.
Participant 9	Schools can help students build and maintain friendships through various activities and guidance. These friendships help students support each other and grow together in school life, enhancing their learning experience and happiness.

Schools could help students build and maintain friendships through various activities and guidance. These friendships helped students support each other in school life, grow together, and enhance their learning experience and sense of happiness. Friendship not only promoted students' social skills, but also enhances their sense of belonging and identity with the school.

Teachers emphasized that schools should actively guide students to make friends, establish correct values, and cultivate good interpersonal relationships and emotional connections.

4.4.10 The impact of behavioral participation on learning engagement

Table 4.22 Behavioral Engagement on Learning Engagement

In your opinion, how well do students generally comply with classroom rules and requirements? How does this compliance affect their performance in class?	
Participants	Perspective
Participant 1	Students are good at complying with classroom rules, especially after clarifying the industry and school rules, their classroom performance and practical operation standards have improved significantly.
Participant 2	Most students abide by classroom rules, and good discipline helps teaching go smoothly, improves classroom efficiency and learning outcomes, and

Table 4.22 Behavioral Engagement on Learning Engagement (Cont.)

In your opinion, how well do students generally comply with classroom rules and requirements? How does this compliance affect their performance in class?	
Participants	Perspective
	reduces disruptions.
Participant 3	Most students abide by the classroom rules, but classroom discipline needs to be improved. Students who abide by classroom discipline are more likely to absorb professional knowledge, have better learning effects and grades, and have frequent interactions between teachers and students, which enhances their interest and motivation in learning.
Participant 4	Most students can abide by classroom rules and school requirements. Complying with rules can maintain classroom order, help teachers teach better, and enable students to grow and progress faster.
Participant 5	Students generally abide by classroom rules and recognize the profession and teachers. Teachers should constantly update their knowledge, communicate more with students, maintain classroom order and a good learning atmosphere, which will help students learn better.
Participant 6	It is difficult for modern students to fully follow traditional classroom rules. Personalized teaching methods such as the use of e-learning tools can improve this situation. Following classroom rules can help improve learning outcomes and grades.
Participant 7	Most students can abide by the classroom rules, especially in practical classes, where they are more interested. Abiding by the rules helps maintain teaching order and enables students to absorb knowledge better.
Participant 8	Most students can abide by classroom rules, but self-discipline requires long-term supervision. A strong awareness of rules has a positive impact on learning.
Participant 9	Most students can abide by the classroom rules, which helps maintain good teaching order and improve learning effects. Students who abide by the rules perform better in class and can absorb knowledge more effectively.

Most students were able to abide by classroom rules, which helped maintain good teaching order and improve learning outcomes. Students who abided by classroom disciplines performed better in class and absorbed knowledge more

effectively. Teachers pointed out that through personalized teaching methods and e-learning tools, students' compliance with classroom rules could be improved and learning outcomes could be further improved.

4.4.11 The impact of behavioral participation on learning engagement

Table 4.23 Behavioral Engagement on Learning Engagement

What is the attendance of students like? How does being on time affect their academic performance?	
Participants	Perspective
Participant 1	The attendance rate is above 95%. Attending classes on time can cultivate a sense of time, avoid falling behind in courses, and promote academic performance.
Participant 2	A high attendance rate indicates that students are interested in the course, which helps to discover students' interests and improve their learning performance. If the attendance rate is low, it may mean that they are not interested in the course, which will affect the teaching effect.
Participant 3	The attendance rate is above 90%. Attending classes on time helps to cultivate students' self-motivation and self-discipline, improve their professional knowledge and skills, and avoid absences that affect learning outcomes and professional grades.
Participant 4	Students have good attendance. Being on time for classes, not being late, not leaving early, and not being absent are basic principles. Being on time for classes shows that students value knowledge, which helps ensure that students learn the content and improve their academic performance.
Participant 5	Students have a high attendance rate and attend classes on time. Students are not late and do not look at their mobile phones, and teachers should also set an example. Being on time for classes helps students value knowledge and ensure learning results.
Participant 6	The school has strict attendance requirements. If you are absent for more than 1/3 of the time, you will fail the course and need to retake it. Regular attendance affects credits and awards, and has an important impact on academic performance.

Table 4.23 Behavioral Engagement on Learning Engagement (Cont.)

What is the attendance of students like? How does being on time affect their academic performance?	
Participants	Perspective
Participant 7	Students have good attendance. Being on time is the basic rule. Only by paying attention to knowledge can we truly acquire knowledge. Being on time helps with course learning and academic performance.
Participant 8	The attendance of new students was skewed, but after one year of attendance, the attendance improved significantly. Being on time for classes has a positive impact on academic performance.
Participant 9	Students usually have good attendance. Being on time helps them better grasp the course content and improve their academic performance. Students with good attendance are usually more regular in their studies and perform better.

Students' attendance was generally good, and being on time helped improve academic performance. A high attendance rate showed that students were interested in the course and helps them better grasp the course content. Being on time could also cultivate students' sense of time and self-discipline, and avoided absenteeism that affected learning effects. Teachers emphasized that being on time was the basis for students to achieve good academic results.

4.4.12 The impact of behavioral participation on learning engagement

Table 4.24 Behavioral Engagement on Learning Engagement

How well do students complete assignments and learning tasks on time? How does meeting deadlines affect their academic outcomes?	
Participants	Perspective
Participant 1	Students complete their homework on time, which helps teachers assess students' progress and adjust their teaching in a timely manner.
Participant 2	Homework is a test after the end of the course. Completing homework on time means that students have absorbed the course content, stimulated their self-thinking ability, and improved their academic outcomes.

Table 4.24 Behavioral Engagement on Learning Engagement (Cont.)

How well do students complete assignments and learning tasks on time? How does meeting deadlines affect their academic outcomes?	
Participants	Perspective
Participant 3	The rate of on-time completion of professional course assignments and learning tasks is high. Completing homework on time helps improve time management ability and self-motivation, enhance independent learning ability and learning efficiency, and helps students discover problems and make progress through homework evaluation.
Participant 4	Most students can complete their homework and tasks on time. Completing tasks on time consolidates what they have learned, reflects whether the teaching method is suitable for students, helps improve learning efficiency and student enthusiasm, and promotes academic achievements.
Participant 5	It is very important to complete the assignments on time. Through the combination of copywriting, renderings and actual works, students can better understand and apply knowledge, improve their practical operation skills and enhance their market competitiveness.
Participant 6	Most students can complete their homework on time, but a small number of students who are not interested in their majors may not complete it on time. Completing homework on time helps to graduate normally and improve academic results.
Participant 7	Most students can complete their homework and tasks on time, which shows their sense of responsibility and self-discipline. Completing homework on time helps consolidate knowledge, improve learning efficiency, and avoid learning aversion and psychological pressure.
Participant 8	It is difficult for students to complete their homework in the early stages of their studies, but as time goes by, the completion of their homework and learning tasks gradually improves, which requires persistence and accumulation.
Participant 9	Most students can complete their homework on time, which helps consolidate what they have learned in class and improves learning efficiency. Completing homework on time can also cultivate students' self-discipline and sense of responsibility and promote academic progress.

Most students could complete their homework and tasks on time, which helped consolidate what they had learned in class and improves learning efficiency. Completing homework on time not only reflected students' sense of responsibility and self-discipline, but also helped them review and understand what they had learned in a timely manner. Teachers believed that completing tasks on time could avoid learning aversion and psychological pressure, and promoted the improvement of academic outcomes.

4.4.13 The impact of behavioral participation on learning engagement

Table 4.25 Behavioral Engagement on Learning Engagement

Where do you think the motivation for students to do well in school comes from?	
Participants	Perspective
Participant 1	A sense of achievement and incentives, such as competitions and awards, help students maintain motivation and a sense of purpose in their studies.
Participant 2	Classwork and periodic examinations, all-round development of morality, intelligence, physical fitness, aesthetics and labor, social activities and the display of self-interests can all enhance students' motivation to learn.
Participant 3	The motivation for students to achieve good results mainly comes from their interest and hobbies in the major, the school's learning atmosphere and teaching level, the teacher's encouragement and the class's learning environment, and participation in practical activities and competitions.
Participant 4	The motivation to achieve good results mainly comes from students' self-discipline, teachers' encouragement and parents' support. Self-discipline is the internal motivation for learning, and teachers' encouragement and parents' support can enhance learning interest and motivation.
Participant 5	The motivation for students to achieve good results mainly comes from the affirmation of teachers, the display of works and social recognition. Teachers should actively promote students' works to enhance students' sense of achievement and learning motivation.
Participant 6	The motivation to achieve good results comes from scholarships, grants, help from teachers, professional understanding, practical gains, etc., which can motivate students to achieve better results.

Table 4.25 Behavioral Engagement on Learning Engagement (Cont.)

Where do you think the motivation for students to do well in school comes from?	
Participants	Perspective
Participant 7	The motivation for good grades comes from three aspects: students' self-motivation (interest in knowledge and skills), teachers' encouragement (external motivation) and parents' support (backing).
Participant 8	The motivation for students to achieve good results comes from the affirmation of teachers and the setting of future goals. Working hard to make a living through technology is an important motivation for them.
Participant 9	The motivation for students to achieve good results mainly comes from the affirmation and encouragement of teachers, as well as the setting and realization of future goals. Parents' support and their own interest in knowledge are also important sources of motivation.

Students' motivation to achieve good results mainly comes from teachers' affirmation, setting future goals, and parents' support. Teachers' encouragement and evaluation of classwork can enhance students' interest in learning and self-confidence. Future career goals and social recognition were also important sources of motivation. Teachers pointed out that incentive mechanisms and practical application opportunities can further stimulate students' learning motivation and helped them achieve excellent results in their studies.

It can be seen from the interviews that students' learning engagement was affected by multiple factors. First, cognitive engagement turned out to be one of the key factors. Through systematic knowledge learning in the classroom, students connected new knowledge with existing knowledge, which significantly improved learning efficiency, observation, innovation and memory, and had an important impact on learning outcomes. In terms of cross-curricular knowledge integration, through reasonable course design, teacher guidance and practical activities, students could effectively integrate knowledge from different courses and improved their comprehensive application abilities, thereby enhancing learning participation.

Secondly, emotional engagement also played an important role. Students had a strong sense of emotion and belonging to the school and teachers, which helped them overcome difficulties and actively participate in learning. Participating in competitions, extracurricular activities and building friendships further enhances their sense of belonging and motivation to learn. A positive attitude had a significant impact on classroom performance, making students more engaged and interactive in class, leading to better learning results, and forming a virtuous cycle. In addition, pride in the school could greatly stimulate students' learning motivation and enthusiasm. Through competition awards, social practice and school progress, students' sense of identity was enhanced and their learning performance became more positive.

Finally, the impact of behavioral participation on learning engagement cannot be ignored. Most students were able to abide by classroom rules, which helped maintain good teaching order and improved learning outcomes. High attendance and punctuality in class cultivated students' sense of time and self-discipline, and avoided absenteeism that affects learning outcomes. Completing homework and learning tasks on time helped consolidate the knowledge learned in class and improved learning efficiency and academic outcomes. In addition, students' motivation to achieve good grades mainly came from teachers' affirmation, setting future goals, and parents' support. These motivating factors could enhance their interest in learning and self-confidence.

CHAPTER 5

SUMMARY AND CONCLUSION

This paper aimed to explore the factors of learning engagement of students in beauty vocational colleges, and on this basis, provided theoretical basis and practical guidance for education administrators and teachers. Through the study of three main dimensions of students' cognition, behavior and emotion, this research revealed how these factors represented learning engagement. The following is a detailed summary of the main findings, theoretical contributions, practical significance, and recommendations of the future research directions.

5.1 Research objectives and main findings

The main objectives of this study were to:

- 1) To explore the internal consistency of learning engagement of the vocational cosmetology students' engagement constructs; and
- 2) To confirm Confirmatory Factor Analysis (CFA) in supporting the three-factors in the model of learning engagement of the students by the administrators, in order to better Cosmetology Education in Chengdu.
- 3) To integrate the qualitative findings with the quantitative results in order to identify key themes and develop practical guidelines that enhance cosmetology vocational education in Chengdu, focusing on improving students' learning engagement.

Quantitative Findings: Objective 1

5.2 Students' Affective Learning Engagement

According to the model of Students' Learning Engagement in Vocational Cosmetology Students' Learning Engagement in this study, it appeared that the Affective turned out to be the most fit, followed by Cognitive and Behavioral Engagements, respectively. Emotional learning engagement has an extremely significant impact on students' learning results and overall development. Studies have found that students' strong emotional belonging to their school and teachers motivates them to participate more actively in learning activities. Students' emotional engagement is enhanced by participating in various competitions, extracurricular activities, and building friendships with classmates, which not only improves their learning motivation but also enhances class engagement. In addition, students' pride in their school is also an important motivating factor, making them more willing to work hard on their academic performance. Positive emotional experiences not only improve learning outcomes, but also promote the all-round development of students.

This can be explained by students' affective or expectations of engagement (Farrell & Brunton, 2020; Khlaif et al., 2021; Muir et al., 2019). It is believed that students with high expectations can motivate themselves to be more active in school both on and off campus (Wood et al., 2020; Triventi et al., 2022; Xie et al., 2022). While affective engagement occurred among the cosmetology students in this study, it can be argued that the higher the degree to which the students actively and effectively participate in their learning (cosmetology) activities (Nanney, 2023), the more positive emotion of engagement and effective academic tasks and social interactions could become (Zhao et al., 2024). Moreover, this sense of belonging, pride, self-interest and opportunity with expectation and supports from others (Fredricks et al., 2004) can help lift up their pride to the level of studying cosmetology for their future career. This, in fact, is consistent with the concept of students' value of interest in which it is related to learning with pride will also help set the learning goals (Miao et al., 2022). The more the students think positive in learning for the future goals, the more motivated to participate in learning with pride (Kallio & Halverson, 2020).

5.3 Students' Cognitive Learning Engagement

At the cognitive level, students significantly improve learning efficiency and learning outcomes by connecting new knowledge with existing knowledge. This study found that students significantly improved their learning efficiency and learning outcomes by connecting new knowledge with existing knowledge in class. Cognitive investment is not only reflected in the understanding and memory of knowledge, but also in students' innovation and problem-solving abilities. Through reasonable course design and teacher guidance, students can more effectively integrate and apply knowledge from different courses, thus improving the depth and breadth of learning. In particular, students who are able to effectively connect knowledge from different subjects show higher learning engagement and better academic performance.

These findings appeared to be consistent with the affective interest involves students' emotional experience of learning content, such as fun and enjoyment (Lan & Hew, 2020); cognitive interest involves students' desire and exploration of knowledge (Dong et al., 2020); value interest involves students' perception of the importance and usefulness of learning content to them (Wang et al., 2022). In order to connect knowledge with practice, several designs of learning engagement could help, especially, cosmetology students through different types of strategies include personalized learning, inquiry learning and project-based learning (Schweder & Raufelder, 2021).

While personalized learning emphasizes designing educational content according to students' interests and needs to stimulate learning motivation and active engagement (Ryan & Deci, 2000), inquiry-based learning and project-based learning encourage students to conduct in-depth research and practice according to their own interests, thereby increasing learning engagement (Hidi & Renninger, 2006). Moreover, the interest-oriented educational method helps emphasize the autonomy of learning (DeMink et al., 2022). Thus, cosmetology students, in particular, are more likely to show active learning engagement when they make autonomous choices of learning content and activities because they feel more in control of the learning

process with aesthetic senses of beauty (Hiver et al., 2021).

5.4 Students' Behavior Learning Engagement

Although behavioral learning engagement is also an important component of learning engagement, its impact is relatively basic. The results of this study showed that observing classroom disciplines, attending school on time, and completing assignments are important behavioral factors that support student learning outcomes. Most students can abide by classroom rules, which not only helps maintain good teaching order, but also significantly improves learning results. In addition, punctual attendance and high attendance rate cultivate students' time concept and self-discipline, and avoid the decline in learning effect caused by absence. Completing homework and learning tasks on time helps students consolidate what they have learned in class, further improving learning efficiency and academic performance.

This is because behavior engagement is the actual behavior that can be observed by students' exhibition in learning activities, including participation in work collaboratively, thereby developing their collaborative and social skills (Sadeghi, 2019). This study is consistent with the studies on academic motivation of Hidi and Harackiewicz (2000) in that there is a positive interrelationship of students learning engagement and the class attendance with later affect the improvement of academic performance.

Qualitative Findings: Objective 2

5.5 Sources of Motivation for Learning Participation

Through qualitative analysis, this study found that students' motivation for learning participation mainly comes from the following aspects:

First, teachers' affirmation is the core source of students' learning motivation. Teachers' praise in class, positive feedback in homework, and affirmation in

competitions or projects greatly enhance students' self-confidence and interest in learning. Teachers' encouragement can not only enhance students' sense of identity with professional knowledge, but also prompt them to be more actively involved in class and practice, thereby improving learning outcomes.

Second, the setting of future career goals is an important driving force for students to participate in learning. Many students said that their learning motivation comes from their vision of future careers and the desire to achieve self-development. By combining learning with future career development paths, students can see the actual value of learning more clearly, so that they can work harder in their studies.

Third, parents' support and expectations also play a key role in students' learning motivation. Parents' expectations and support provide students with both emotional and material guarantees, helping them to maintain motivation and focus in their studies. Parents' support is not only reflected in their attention to academic studies, but also in their guidance of students' future career development. This support further motivates students to perform well in their studies.

In addition, social recognition and a sense of achievement are also important sources of motivation. Students can gain recognition and affirmation from the outside world by participating in competitions, displaying their works or winning awards. This sense of achievement can inspire students to continue to work hard and pursue higher academic and professional achievements.

Finally, self-discipline and intrinsic interest are also the core driving forces of students' learning motivation. Students who have a strong interest in the beauty industry show higher self-motivation. They are not only active in class, but also take the initiative to learn and practice relevant knowledge outside of class. Such self-disciplined learning encourages students to be more focused and to master what they have learned more effectively.

5.6 The Guidelines to Better Cosmetology Education

Based on the findings of this study, cosmetology vocational colleges should take targeted measures in teaching management and educational practice to improve students' learning engagement and overall education quality. China's cosmetology vocational colleges have unique environments in terms of teaching content, student characteristics, and social needs. Therefore, these particularities need to be considered when formulating improvement plans to ensure the effectiveness and operability of the measures.

First, in terms of curriculum design, beauty vocational schools should focus on the integration and application of knowledge, and help students establish connections between new and old knowledge in the learning process. Specifically, schools can design multidisciplinary cross-curriculum courses, such as combining beauty technology with marketing and management, to help students understand and apply what they have learned from a broader perspective. At the same time, the proportion of practical courses should be increased to enhance students' hands-on ability and practical experience, which can not only improve students' cognitive investment, but also effectively enhance their professional competitiveness.

Secondly, in terms of the management of behavioral engagement, schools should strengthen the supervision and guidance of students' classroom discipline, attendance rate, and homework completion. In order to ensure that students can abide by classroom rules and actively participate in class, schools can introduce a complete attendance and homework management system to monitor students' attendance and learning progress in real time through information technology. At the same time, schools can also set up a reward and punishment mechanism to reward students with outstanding performance and provide reasonable guidance and education for students who violate discipline, so as to cultivate students' self-discipline and sense of responsibility.

In view of students' emotional investment, schools should focus on creating a good campus cultural atmosphere and enhancing students' sense of belonging and pride. Most of the students in China's beauty vocational colleges come from middle-income families, and they often face great employment pressure when choosing vocational education. Therefore, schools should help students establish a positive sense of professional identity through rich extracurricular activities, community organizations and campus cultural construction. For example, schools can regularly hold skill competitions, career salons and alumni sharing sessions related to the beauty industry, so that students can feel the prospects of the industry and the value of the profession during the engagement process, thereby enhancing their learning motivation and sense of identity with the school.

In addition, colleges also focus on the training and improvement of teachers. Teachers play a vital role in improving students' learning engagement, so schools should strengthen professional training for teachers and improve their teaching level and student management ability. Specific measures include: regularly organizing teachers to participate in beauty industry training and academic exchanges at home and abroad, encouraging teachers to participate in teaching research and curriculum development, and establishing a teacher performance evaluation mechanism to link students' learning engagement with teachers' professional development, so as to motivate teachers to devote more to teaching.

Finally, schools should strengthen their ties with the beauty industry, build a school-enterprise cooperation platform, and provide students with more practical opportunities and employment support. In the context of the rapid development of China's beauty industry, schools can cooperate with well-known beauty companies to jointly develop internship programs and employment training courses to help students better adapt to industry needs and improve their employment competitiveness. This kind of school-enterprise cooperation can not only provide students with richer learning resources, but also enhance students' career confidence and future development motivation.

Quantitative Findings: Objective 3

5.7 Integrating Qualitative and Quantitative Analysis

In this study, the understanding of student learning engagement in beauty vocational education was further deepened through the combination of quantitative and qualitative methods. The validity of the three-factor model of student learning engagement (behavioral engagement, emotional engagement, and cognitive engagement) was verified through confirmatory factor analysis (CFA). At the same time, results from the qualitative interviews provided deeper insights, revealing key themes that influence learning engagement. These qualitative themes complemented the quantitative data and helped develop a set of specific educational improvement recommendations to enhance the quality of cosmetology career education.

First, quantitative analysis shows that the three dimensions of behavioral engagement, emotional engagement and cognitive engagement have a significant impact on student learning outcomes. However, the qualitative interviews further revealed students' practical difficulties in engaging in the learning process. For example, many respondents cited a lack of hands-on practice as a major barrier to engagement. While the quantitative data confirmed students' high levels of behavioral engagement, the interview data revealed that students wanted more hands-on opportunities to increase their interest and engagement in class content. Therefore, in response to this finding, it is recommended that beauty vocational education strengthen the proportion of practical courses to ensure that students can better apply theoretical knowledge to practical operations.

Secondly, qualitative research revealed the impact of teaching equipment and environment on learning interest. Although quantitative data indicate a certain positive relationship between teaching facilities and learning engagement, many students in the interviews emphasized that the modernization of equipment and the simulation of actual working environments are crucial to improving their learning motivation and learning effectiveness. Therefore, it is recommended that schools invest in upgrading

teaching equipment and simulate real working environments to increase students' learning interest and enthusiasm.

Third, quantitative data indicate that emotional engagement has a significant impact on student learning outcomes. Qualitative interviews further complemented this, with many students mentioning that teacher-student relationships and interactions with classmates played an important role in their learning experience. Students prefer to learn in a supportive, interactive environment. Therefore, it is recommended that schools not only strengthen teacher-student interaction, but also enhance the emotional bonds between students through group activities or collaborative learning, thereby increasing their emotional engagement.

Based on the above analysis, this study proposes the following specific guidelines for improving beauty vocational education:

- 1) Increase practical courses: ensure that students have more opportunities to apply theory to practice and improve learning engagement.
- 2) Upgrade teaching facilities: simulate a real working environment to enhance students' interest and enthusiasm in learning.
- 3) Strengthen teacher-student interaction and classmate collaboration: Enhance students' emotional engagement by improving emotional support, thereby improving learning outcomes.

By integrating qualitative and quantitative research results, this study provides new ideas and suggestions for improving cosmetology vocational education in Chengdu, which helps to improve students' learning experience and improve teaching effects.

5.8 Recommendations for the Future Research

5.8.1 This study shows that personalized learning, inquiry-based learning, and project-based learning play an important role in improving students' learning engagement. Future research can further explore the specific application effects of these strategies in different beauty courses and evaluate how they affect students' long-

term learning outcomes. For example, future research can use experimental design to explore the role of these learning strategies in improving different professional skills (such as makeup, hair design, etc.) and determine the teaching methods that are most suitable for different student groups;

5.8.2 This study found that emotional learning engagement has the most significant impact on students' learning outcomes. Future research can further explore the impact of students' emotional support, school belonging, etc. on student groups from different backgrounds. Further research can be conducted on how different emotional motivation strategies (such as teacher feedback and peer interaction) can help improve students' learning motivation and classroom performance, especially how to provide personalized support for students with different emotional needs;

5.8.3 This study focused on beauty vocational colleges in Chengdu. Future research can further verify the generalizability of the research results through cross-school and cross-regional comparisons. By expanding the scope of the study, future research can compare the beauty education systems in different regions or countries and analyze the impact of different educational environments and cultural backgrounds on learning engagement. This will help to put forward more generally applicable educational improvement suggestions.



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APPENDICES



APPENDIX A
AN IOC FOR SURVEY RESEARCH

An IOC for A Survey Research

Topic: Factors Influencing Cosmetology Vocational College Students' Learning Engagement

Dear Expert:

This research is to fulfill the dissertation for Doctor of Education Program in Educational Studies, Suryadhep Techers College, Rangsit University. Its topic is Factors Influencing Cosmetology Vocational College Students' Learning Engagement and the objectives of the study are:

1.2.1 To evaluate the construct validity using confirmatory factor analysis (CFA), and internal consistency of learning engagement of the students in cosmetology classes in Chengdu vocational colleges;

1.2.2 To confirm Confirmatory factor analysis (CFA) in supporting the three-factors in the model of learning engagement of the students in cosmetology classes in Chengdu vocational colleges cosmetology administrators, in order to advance the cosmetology vocational education in vocational colleges in Chengdu;

This questionnaire is a part of a quantitative method as to gain the model of learning engagement of the students in cosmetology classes in Chengdu vocational colleges cosmetology administrators, in order to advance the cosmetology vocational education in vocational colleges in Chengdu. After that, the data obtained will be used to write up for the interview questions as to gain insights into the factors of learning engagement of the Cosmetology students in vocational college.

Your answers will be valuable in terms of validating the information containing in this questionnaire which will be beneficial for understanding the overall picture and situations pertaining this topic.

Accordingly, the researcher would like to show great appreciation and gratitude for your valuable time and comments for the validity of this research instrument.

Mrs. Wen Feng

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Instructions:

Please rate each statement by ticking ✓ on the most relevant scale from +1 to -1

Congruent = + 1

Questionable = 0

Incongruent = - 1

This questionnaire contains 2 parts:

Part 1: Respondent's demographic information

Part 2: Items of factors influencing cosmetology vocational college students' learning

Part 1: Demographic Information

ITMES	-1	0	+1	Suggestion
1. Gender: ☐ Male ☐ Female	✓			
2. Age: ☐ 18 to 19 ☐ 20 to 21 ☐ 22 to 23 ☐ 24 to 25	✓			
3. Level of the study: ☐ Freshman ☐ Sophomore ☐ Junior	✓			
Cognitive Engagement	-1	0	+1	Suggestions
1. When learning things for school, I try to see how	✓			

Cognitive Engagement	-1	0	+1	Suggestions
they fit together with other things I already know.				
2. I try to match what I already know with things I am trying to learn for school.	✓			
3. I try to understand how the things I learn in school fit together with each other.	✓			
4. I try to see the similarities and differences between things I am learning for school and things I know already.	✓			
5. When learning things for school, I often try to associate them with what I learnt in other classes about the same or similar things.	✓			
6. I challenge myself to think beyond what is taught in class.	✓			
7. I enjoy exploring new ideas and concepts.	✓			
8. I promote understanding through discussion.	✓			
9. I modeled the characters to understand the concepts.	✓			
10. I compare information to enhance my memory.	✓			
11. When learning new information, I try to put the ideas in my own words	✓			
12. When studying, I try to combine different pieces of information from course material in new ways.	✓			
13. I am very interested in learning.	✓			
14. I think what we are learning in school is interesting.	✓			
15. I enjoy learning new things in class.	✓			
16. I am eager to learn new knowledge.	✓			
17. I often review what I learned in class.	✓			

Cognitive Engagement	-1	0	+1	Suggestions
18. When I have difficulty understanding something, I try different ways to figure it out.	✓			
19. I make sure to understand the material before moving on to the next topic.	✓			
20. I actively seek out additional resources to deepen my understanding of the material.	✓			
21. I test theories through experiments.	✓			
22. When I study, I try to understand the material better by relating it to things I already know.	✓			
23. When I study, I figure out how the information might be useful in the real world.	✓			
24. When I study, I try to connect what I am learning with my own experiences.	✓			
25. I make up my own examples to help me understand the important concepts I learn from school.	✓			
Affective Engagement	-1	0	+1	Suggestions
1. I feel a sense of belonging at this school.	✓			
2. I feel motivated to do well in school.	✓			
3. I feel valued as a member of the school community.	✓			
4. I feel excited about participating in school activities.	✓			
5. I feel positive about my academic achievements.	✓			
6. I feel optimistic about my future prospects.	✓			
7. I complete my assignments on time.	✓			
8. I can reflect my self-worth in school.	✓			
9. I have a deep affection for the school.	✓			
10. I feel supported by my teachers and classmates.	✓			

Affective Engagement	-1	0	+1	Suggestions
11. Most mornings, I look forward to going to school.	✓			
12. The school encouraged me to express my personal thoughts.	✓			
13. The school provides opportunities to develop my interests.	✓			
14. The school supports free learning and exploration.	✓			
15. I like my school.	✓			
16. I am happy to be at this school.	✓			
17. Most mornings, I look forward to going to school.	✓			
18. I am proud to be at this school.	✓			
19. The school is a safe and inclusive place.	✓			
20. I trust and am willing to share my feelings with teachers and classmates.	✓			
21. I have a strong sense of loyalty to my school.	✓			
22. School helps build lasting friendships.	✓			
23. I think learning is boring.	✓			
24. I like what I am learning in school	✓			
25. I think what we are learning in school is interesting	✓			
26. I enjoy learning new things in class.	✓			
Behavioral Engagement	-1	0	+1	Suggestions
1. I collaborate with my peers on group projects.	✓			
2. I actively participate in class discussions and activities.	✓			
3. I take an active role in extra-curricular activities in	✓			

Behavioral Engagement	-1	0	+1	Suggestions
my school.				
4. I volunteer to help with school activities such as sport day and parent day.	✓			
5. I am an active participant of school activities such as sport day and school picnic.	✓			
6. I am involved in extracurricular activities outside of class.	✓			
7. I help my classmates when they need assistance.	✓			
8. I take pride in my schoolwork and accomplishments.	✓			
9. I try to make connections between different topics and subjects.	✓			
10. I reflect on my learning and set goals for improvement.	✓			
11. I ask for help when I need it.	✓			
12. I help set the rules for my class or study group.	✓			
13. I proactively seek opportunities to participate in school decision-making.	✓			
14. I take responsibility for my own learning.	✓			
15. I contribute positively to the school community.	✓			
16. I follow classroom rules and expectations.	✓			
17. I am punctual and attend classes regularly.	✓			
18. I complete my homework and study tasks on time.	✓			
19. I participate in various competitions and activities organized by the school.	✓			
20. I prepare and review for exams together with my classmates.	✓			
21. When I run into a difficult homework problem, I keep working at it until I think I've solved it.	✓			

Behavioral Engagement	-1	0	+1	Suggestions
22. If I have trouble understanding a problem, I go over it again until I understand it.	✓			
23. When I'm in class, I just act like I'm working.	✓			
24. I pay attention in class.	✓			
25. When I'm in class, I participate in class activities.	✓			
26. In class, I work as hard as I can.	✓			
27. I try hard to do well in school.	✓			





APPENDIX B
RESEARCH INSTRUMENTS

Questionnaire

Your answers are valuable in terms of understanding the overall picture and situations pertaining this topic. Accordingly, the researcher would like to show great appreciation and gratitude for your valuable time in answering this questionnaire.

Your gender :

[Single-choice question] *

☐ Male

☐ Female

Your age group :

[Single-choice question] *

☐ Under 18 years
old

☐ 18~19

☐ 20~21

☐ 22~23

☐ 24 or more

Your grade :

[Single-choice question] *

☐ Grade 1

☐ Grade 2

☐ Grade 3

1. When learning school knowledge, I try to see how it integrates with what I already know. [Single Choice] *

☐ Strongly disagree

☐ Disagree

☐ General

☐ Agree

☐ I agree

2. I try to match what I already know with what I want to learn in school. [Single Choice] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree

3. I try to understand how the knowledge learned at school is interconnected. [Single-choice question] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree

4. I try to identify the similarities and differences between what I learn at school and what I already know. [Single Choice] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree

5. When learning school knowledge, I often try to connect it with similar knowledge learned in other classes. [Single-choice question] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree

6. I challenge myself to think beyond what is taught in class. [Single Choice] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree

7. I enjoy exploring new ideas and concepts. [Single-choice question] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree

8. I promote understanding through discussion. [Single Choice] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree

9. I create character images to help understand these concepts. [Single Choice] *

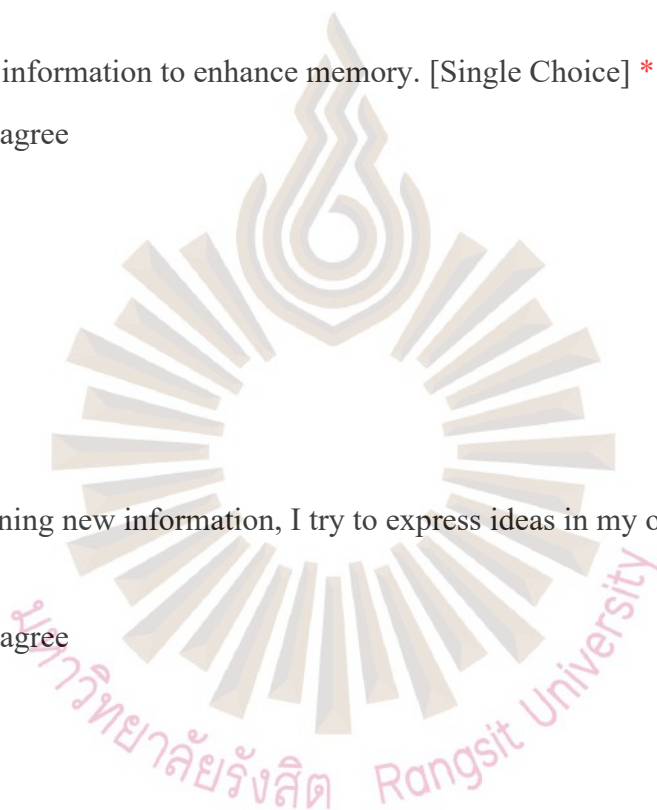
- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree

10. I compare information to enhance memory. [Single Choice] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree

11. When learning new information, I try to express ideas in my own words. [Single Choice] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree



12. When studying, I try to combine different information from the course material in new ways. [Single Choice] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree

13. I am very interested in learning. [Single-choice question] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree

14. I find what we learn at school interesting. [Single Choice] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree

15. I enjoy learning new knowledge in class. [Single Choice] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree

16. I am eager to learn new knowledge. [Single-choice question] *

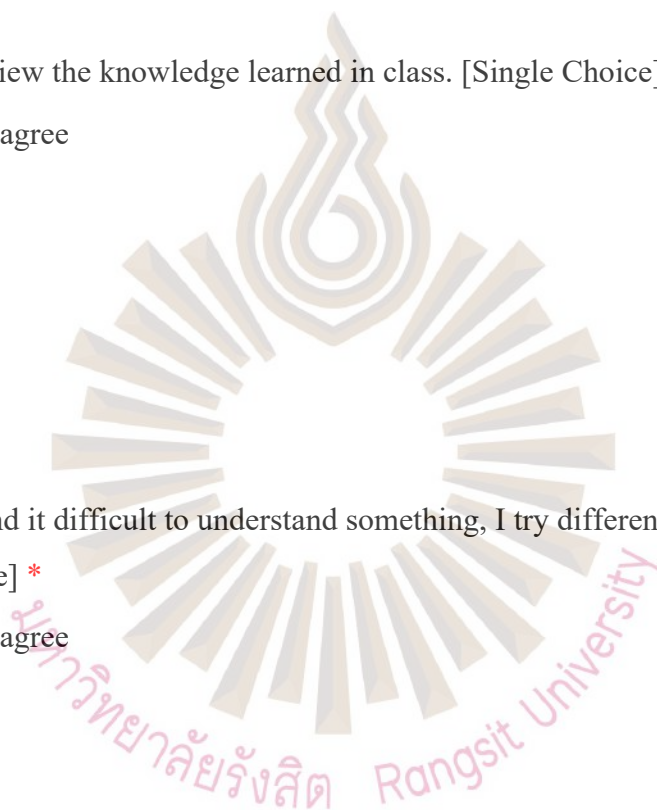
- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree

17. I often review the knowledge learned in class. [Single Choice] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree

18. When I find it difficult to understand something, I try different methods to solve it.
[Single Choice] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree



19. Before moving on to the next topic, I make sure I understand the relevant material.

[Single-choice question] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree

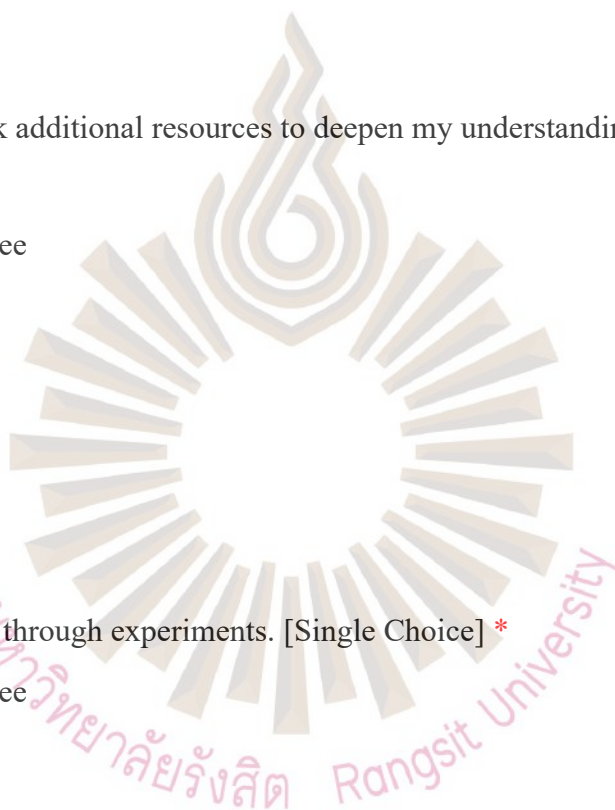
20. I actively seek additional resources to deepen my understanding of the material.

[Single Choice] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree

21. I test theories through experiments. [Single Choice] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree



22. When I study, I try to better understand the material by relating it to what I already know. [单选题] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree

23. When I study, I figure out how this information can be useful in the real world. [Single Choice] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree

24. When I study, I try to relate what I learn to my own experiences. [Single Choice] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree

25. I create my own examples to help me understand important concepts learned at school. [Single Choice] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree

26. I feel a sense of belonging at this school. [Single-choice question] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree

27. I feel motivated to achieve good grades at school. [Single-choice question] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree

28. As a member of the school community, I feel valued. [Single-choice question] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree

29. I am excited about participating in school activities. [Single Choice] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree

30. I am very satisfied with my academic achievements. [Single-choice question] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree

31. I feel optimistic about my future prospects. [Single-choice question] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree

32. I complete my homework on time. [Single-choice question] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree

33. I can show my self-worth at school. [Single-choice question] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree

34. I have deep feelings for my school. [Single Choice] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree

35. I feel supported by my teachers and classmates. [Single Choice] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree

36. Most mornings, I look forward to going to school. [Single Choice] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree



37. The school encourages me to express my personal thoughts. [Single-choice question] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree

38. The school provides opportunities to develop my interests. [Single-choice question] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree

39. The school supports free learning and exploration. [Single-choice question] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree

40. I like my school. [Single-choice question] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree

41. I am happy to attend this school. [Single Choice] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree

42. I feel happy at school. [Single-choice question] *

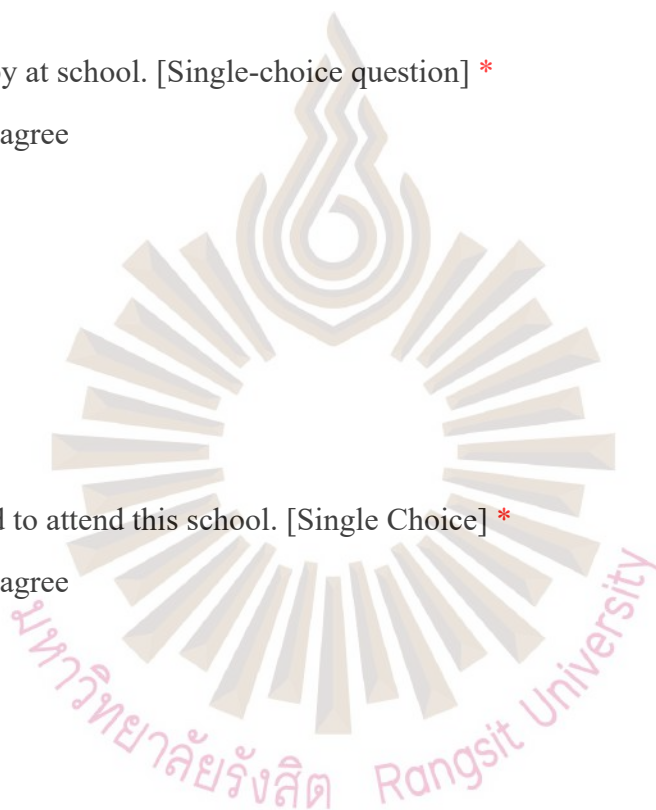
- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree

43. I am proud to attend this school. [Single Choice] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree

44. The school is a safe and inclusive place. [Single-choice question] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree



45. I trust and am willing to share my feelings with teachers and classmates. [Single-choice question] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree

46. I have a strong loyalty to my school. [Single Choice] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree

47. The school helps to establish lasting friendships. [Single-choice question] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree

48. I find learning boring. [Single-choice question] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree

49. I like what I learn at school. [Single Choice] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree

50. I think what we learn at school is interesting. [Single Choice] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree

51. I enjoy learning new knowledge in class. [Single Choice] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree

52. I collaborate with colleagues on group projects. [Single Choice] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree

53. I actively participate in class discussions and activities. [Single-choice question] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree

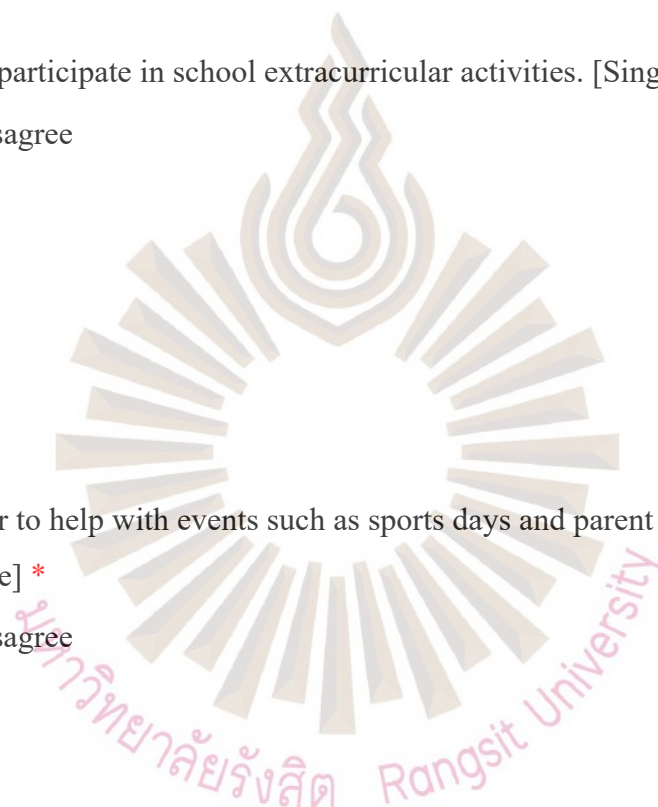
54. I actively participate in school extracurricular activities. [Single Choice] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree

55. I volunteer to help with events such as sports days and parent days at school.

[Single Choice] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree



56. I actively participate in school activities such as sports days and school picnics.

[Single Choice] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree

57. I participate in extracurricular activities outside of class. [Single Choice] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree

58. I help my classmates when they need assistance. [Single Choice] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree

59. I am proud of my academic achievements. [Single-choice question] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree

60. I try to make connections between different topics and subjects. [Single-choice question] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree

61. I reflect on my learning and set goals for improvement. [Single Choice] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree

62. When I need help, I seek assistance. [Single Choice] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree

63. I help to establish rules for the class or study group. [Single-choice question] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree

64. I actively seek opportunities to participate in school decision-making. [Single-choice question] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree

65. I take responsibility for my own learning. [Single-choice question] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree

66. I make positive contributions to the school community. [Single-choice question] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree

67. I follow class rules and requirements. [Single-choice question] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree

68. I am punctual and attend classes on time. [Single Choice] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree

69. I complete homework and study tasks on time. [Single Choice] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree

70. I participate in various competitions and activities organized by the school.
[Single-choice question] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree

71. I prepare and review for exams with my classmates. [Single-choice question] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree

72. When I encounter difficult homework problems, I keep trying until I think I've solved them. [单选题] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree

73. If I have trouble understanding a problem, I repeat it until I understand it. [Single Choice] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree

74. When I 'm in class, I pretend to be studying. [Single-choice question] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree

75. I listen attentively in class. [Single-choice question] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree

76. During class, I participate in class activities. [Single-choice question] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree

77. In class, I try my best to study hard. [Single Choice] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree

78. I strive to achieve good grades at school. [Single Choice] *

- ☐ Strongly disagree
- ☐ Disagree
- ☐ General
- ☐ Agree
- ☐ I agree

Interview

1. Self-introduction: name, school and job position

2. Learning Engagement Interview Questions

How do you think students' ability to connect what they learn in class to what they already know, and how does this impact student learning outcomes?

Participants	Answer

How well do you think students make connections between courses?

Participants	Answer

In your opinion, how do students integrate and apply what they learn in school?

Participants	Answer

How do you think expressing ideas in one's own words affects students' understanding and retention when they are learning new information?

Participants	Answer

How does a student's positive attitude toward school affect their performance in class?

Participants	Answer

do you think students' pride in their school affects their academic performance?

Participants	Answer

Do you think schools help students build and maintain friendships? How do these friendships impact students' school life and learning experience?

Participants	Answer

In your opinion, how well do students generally comply with classroom rules and requirements? How does this compliance affect their performance in class?

Participants	Answer

What is the attendance of students like? How does being on time affect their academic performance?

Participants	Answer

How well do students complete assignments and learning tasks on time? How does meeting deadlines affect their academic outcomes?

Participants	Answer

Where do you think the motivation for students to do well in school comes from?

Participants	Answer

How would you rate students' feelings and sense of belonging to the school? How does this affect their learning experience in school?

Participants	Answer

BIOGRAPHY

Name	Wen Feng
Date of birth	July 1, 1982
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Education background	Sichuan Normal University, China Bachelor of Education, 2005 Sichuan Normal University, China Master of Education, 2011 Rangsit University, Thailand Doctor of Education in Educational Studies, 2024
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