

# **Students' Self-efficacy under the Blended Teaching Model: A Case Study of Huaihua University, China**

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*Blended teaching is a teaching mode that combines traditional face-to-face teaching and online learning. In recent years, blended teaching has been regarded as an innovative teaching method in China's higher education, attracting extensive attention from teachers and students. In this paper, based on the characteristics of blended teaching, the self-efficacy of students from Huaihua University in economics and management is investigated under the blended teaching model. A self-efficacy scale is developed from four dimensions, and its reliability and validity are verified. The results show that students are seldom confident in learning economics, and students' self-efficacy level is low in the blended teaching model. The average level of ability-related factors is the lowest, and most students find economics courses abstract and challenging to understand. After the individual characteristics of the respondents are differentiated, their self-efficacy has significant differences in several dimensions. Specific recommendations are made to improve the quality of teaching and learning by differentiating the needs of different students.*

*Keywords: self-efficacy, blended teaching, economics course*

## **INTRODUCTION**

From the characteristics of blended teaching, this paper develops a self-efficacy scale from four dimensions of students in economics and management from Huaihua University. The self-efficacy scale is prepared from different dimensions through the questionnaire survey and analysis. Its reliability and validity are verified. Research has shown that Business School of Huaihua University students have low self-efficacy under the blended teaching model. The one-way analysis of the variance of respondents' characteristics reveals that students' self-efficacy significantly differs in several dimensions. Throughout the current academic fields of higher education in China, scholars' research on self-efficacy is mainly based on the traditional offline teaching mode, and there are only a few studies on the relationship and current status of self-efficacy in the blended teaching model. This paper is an attempt to make up for this deficiency. It proposes that self-efficacy can be more differentiated among individual college students in the blended teaching model. Therefore, teachers can better meet the needs of different students based on individual differentiation and improve the overall quality of teaching. Moreover, specific suggestions are made to clarify students' self-efficacy, guide their learning according to different students' needs, and improve the quality of teaching and learning.

With the rapid development of information technology and the popularization of the Internet, digital transformation and innovation in education have become major trends in today's education reform. The

traditional education model has limitations in meeting students' diverse and individualized needs (Johnson et al., 2014). Blended teaching is a teaching model that integrates online and offline, and it has become an integral part of higher education. It is characterized by flexibility, ease of use and media richness (Lan, Guo and Lv, 2019). Combined with traditional face-to-face learning, blended teaching utilizes online learning platforms, teaching resources, and social learning tools to provide students with more diverse learning styles and experiences (Ates, 2009). At the same time, teachers can also interact and discuss with students beyond time and space, answering questions and offering instructions (Garrison and Vaughan, 2008). By integrating the advantages of e-learning and face-to-face teaching, blended teaching promotes students' independent learning, collaboration and use of information technology.

As an essential component of Bandura's social learning theory, self-efficacy is an individual's accurate judgment of his or her ability to organize and carry out an activity to achieve a desired goal. Efficacy directly affects the quality of thinking and the appropriate use of acquired cognitive skills and indirectly enhances persistence in seeking answers. Thus, efficacy strongly influences student behavior (Garrison and Kanuka, 2004). When it is difficult to achieve success, high performers persist, while low performers give up halfway. In online and offline classes, students may judge their ability to complete academic achievements and utilize effective learning methods to accomplish learning goals and tasks. Such judgments are directly related to the quality of their learning engagement. Students perform better academically when they are more engaged in learning (Zhao et al., 2020).

Huaihua University is located in Hunan Province, China. As of September 2023, Huaihua University has 16 colleges (centers and departments) and 48 undergraduate programs, with 1,277 faculty members and 20,986 full-time students. In 2021, to improve the traditional teaching mode and enhance the quality of classroom teaching, Huaihua University introduced the "Rain Classroom" to establish the university's intelligent teaching system. Huaihua University purchased the Rain Classroom Professional Teaching System in 2021. The system pushes video, voice, and courseware to students' cell phones outside the classroom, allowing real-time communication and feedback between students and teachers in class. It reduces the cost of learning for teachers and students, improves the usability of the software, and allows students to utilize past course materials fully. Currently, Huaihua University has 359 teachers, 100 classes and 4,175 students. They participate in intelligent teaching through Rain Classroom. Huaihua University builds full-coverage non-cognitive authentication of campus wireless network (MAC fast authentication). It is a quick way to complete the authentication of campus wireless network access, featuring one-time authentication, multiple uses, and a good user experience. In order to provide more convenient and fast campus network services, the Center for Network Information and Modern Educational Technology has enabled MAC fast authentication based on Web authentication used in the original wireless networks HHXY-Tch and HHXY-Stu. It does not change the user's original way of accessing the Internet but only simplifies the operating process.

Teachers in colleges and universities generally recognize and apply the continuity of the blended teaching model in their teaching practice. The combined teaching model has become a familiar learning environment for college students, and it is a commonly used educational technology environment in colleges and universities nowadays. The level of academic self-efficacy will directly affect the quality of education and teaching. Therefore, exploring university students' self-efficacy in the blended teaching model is crucial.

## **LITERATURE REVIEW**

### **Blended Teaching**

Blended teaching is a teaching model that combines traditional face-to-face teaching and online learning. In recent years, blended teaching has attracted extensive attention in education and has been seen as an innovative teaching approach (Means et al., 2009). Blended teaching provides a flexible learning environment that enables students to learn at their own pace and on their initiative. The Sloan Consortium emphasizes the central role of technology in blended teaching. The Sloan Consortium defines blended teaching as the combination of face-to-face and online teaching, integrating the advantages of traditional

and online learning (Bonk et al., 2009). Bliuc et al. (2007) defined the concept of blended teaching from the perspective of technology integration. They emphasized the interaction between teachers and students and between students and resources through offline and online learning. Goodyear and Dudley (2015), based on students' personalized learning experiences, emphasize that the blend is a deep mix of offline and online teaching and learning and, more importantly, a mix of teaching and tutoring styles in a student-centered learning environment. The rise of blended learning, which integrates online teaching with face-to-face classroom instruction, has raised expectations about the effectiveness of online learning (Xiong, 2023).

Numerous studies have shown that blended teaching can improve students' learning outcomes, motivation, and self-directed learning (Bernard et al., 2014). Web-based learning has become a significant trend in K-12 and higher education. Web-based blended learning is consistent with the values of traditional colleges and universities. Also, it can potentially increase the learning experience's effectiveness and efficiency (Garrison and Kanuka, 2004). Means et al. (2013) used a meta-analytic approach to analyze 1,100 empirical samples. They found that blended learning is more effective than online and offline face-to-face learning alone. Gao (2024) explored and practiced blended teaching, covering three teaching sessions: before, during and after class. Practice shows that blended teaching can increase students' opportunities for self-directed learning, activate the classroom atmosphere, and achieve favorable teaching results. Wu (2023) found that the critical factors for the significant effect of blended teaching are the immediate feedback during teaching and more cognitive inputs in the self-directed learning promoted by the combined teaching approach.

Based on the above research results, more attention has been paid to students' personalized learning experiences in assessing the effectiveness of blended teaching. Moreover, it emphasizes changes in internal factors such as motivation, attribution of success and failure, and academic self-efficacy. Blended instruction is increasingly diversified in its modes and forms of implementation. It emphasizes online and offline interactions and the convergence and integration of activities before, during, and after class. It brings together various incentives to enhance the student learning experience and emphasizes the availability of learning resources.

### **Academic Self-Efficacy**

In 1977, Bandura proposed the concept of self-efficacy and elaborated on its definition. Self-efficacy is an individual's perception or belief in his or her ability to effectively control his or her own life, which determines the initiation of his or her behaviors and the maintenance of the processes (Bandura, 1997). Based on this, the concept of academic self-efficacy has been extended. Schunk (1988) suggests that academic self-efficacy is an individual's belief in his or her ability to accomplish learning tasks. Multon, Brown and Lent (1991) explored the relationship between self-efficacy and learning outcomes and provided suggestions for cultivating students' self-efficacy. Morgan and Jinks (1994) demonstrated a high correlation between academic self-efficacy and performance. Cassidy's (2015) research suggests that self-efficacy is particularly important when individuals are in adversity. Learning self-efficacy can influence an individual's academic resilience. Self-efficacy is a significant and reliable predictor of college students' progress and is primarily correlated with their GPAs and motivation to learn (Bartimote-Aufflick et al., 2015). Zhou and Lou (2021) found that college students' self-efficacy was moderate to high in online and deep learning. Their self-efficacy in online learning positively predicted their deep learning level, and the improvement of deep learning also promoted their self-efficacy in online learning.

Research on self-efficacy shows that students' academic performance is closely related to their self-efficacy. Self-efficacy affects people's adherence to activities, attitudes toward difficulties, and emotions toward work. Therefore, an in-depth investigation of students' specific self-efficacy is necessary to enhance their self-efficacy in related disciplines. It also enhances their learning motivation and promotes their core academic literacy formation.

### **Academic Self-Efficacy in Blended Teaching**

Most studies concluded that blended teaching positively affects students' self-efficacy and academic performance. Kizilcec et al. (2013) found that learners' active participation and academic performance

correlate with their self-efficacy. Furthermore, blended learning can improve learners' engagement and academic performance. Owston (2017) affirmed the effectiveness of the implementation of blended teaching. Blended teaching has increased students' academic self-efficacy compared to face-to-face and fully online instruction. Students in blended teaching tend to perform better than their peers in fully online or face-to-face teaching. Cash et al. (2020) found that blended learning significantly improves students' self-efficacy in mathematics learning compared to traditional face-to-face teaching, especially in solving complex problems and applying mathematical knowledge. Nouri and Eskrootchi (2022), through a case study of a language course, showed that blended learning helps to enhance students' self-efficacy, especially by encouraging their active participation and self-directed learning. Aydin and Yılmaz (2021) found that blended learning improves students' self-efficacy in language education, especially in academic performance and motivation.

Economics courses are the core courses of economic management majors in Chinese colleges and universities. They mainly study the operation mechanism of the market economy and the economic interventions of the government (Wang, 2017). The economics course is characterized by being highly theoretical and abstract. Chinese students have never been exposed to the basics of economics in secondary school, and they have no idea of the terms and terminology used in economics. So, it is not easy for Chinese students to learn economics well. The blended teaching model enhances students' engagement, individualized learning and autonomy. It provides rich learning resources, hands-on opportunities and interactive feedback to help students better understand and apply economic theories. Blended teaching creates diverse learning opportunities and learning environments that stimulate students' motivation to learn independently and participate actively in their learning. As a result, it boosts students' assessment of their confidence in their ability to learn. Many studies have confirmed the benefits of blended teaching. However, it is still necessary to explore its effectiveness further in different disciplines and levels of education and improve the teaching method in educational practice.

The Business School of Huaihua University ("The Business School") offers five programs: Tourism Management, International Economics and Trade, Logistics Management, Financial Management, and Cross-Border E-Commerce. All five programs have economics courses as necessary introductory courses. Huaihua University has an online teaching software system and wired and wireless communication facilities. Most of the faculty members can utilize online resources to assist their teaching. The Business School's economics courses are taught offline and supplemented by online resources to improve teaching quality. This study investigates students' self-efficacy in an economics course under the blended teaching model at Huaihua University in China to enrich the research results in this field. The survey of self-efficacy can help us understand the sources and changes in students' motivation and provide targeted incentives and support to stimulate their interest and motivation in learning. At the same time, it allows us to understand how students cope with these challenges, optimize instructional design and resource allocation, and improve learning outcomes.

## **DEVELOPMENT AND EFFECTIVENESS VERIFICATION OF THE SELF-EFFICACY SCALE**

### **Questionnaire Preparation**

The questionnaire was developed based on Chen's (2023) study of self-efficacy, Chai and Wang's (2021) study of factors influencing e-learning self-efficacy, and combined with the characteristics of teaching economics courses. The questionnaire consists of two parts. The first part is the respondents' characteristics, including gender, the division of arts and science in high school, the place of origin, the program and the grade level. The second part consists of 23 items that examine students' self-efficacy in four dimensions: environment, control, ability, and effort. Detailed information on the 23 items is shown in Table 1. The questionnaire was scored on a 5-point Likert scale. Each question was assigned a value of 1, 2, 3, 4, and 5 ("1" means "strongly disagree," "2" means "disagree," "3" means "uncertain," "4" means "agree," and "5" means "strongly agree"). In this questionnaire, all the questions were set as positive questions. That is, the higher the score, the higher the efficacy.

**TABLE 1**  
**SELF-EFFICACY QUESTIONNAIRE IN THE BLENDED TEACHING MODEL**

No.	Description	
Q1	I believe I can quickly adapt to the online independent learning environment and approach.	
Q2	I am confident that I can solve the difficulties in my Western Economics course.	
Q3	I can view the online economics course at any time, and it helps me better understand what I have learned.	
Q4	Ability	I can easily download all kinds of helpful learning resources online.
Q5		I listen carefully to the lectures, take notes in class, and review independently after class.
Q6		I can quickly fulfill my learning objectives in the Western Economics course.
Q7		When I study Western Economics online, I can grasp the key and challenging points of online learning.
Q8		I participate actively in group discussions and class activities and can think economically.
Q9	Effort	I take the time and effort to complete my Western Economics course's online independent study tasks.
Q10		I can finish the preview of the Western Economics class online before the class.
Q11		I actively participate in online and offline competitions with my classmates, preparing myself carefully to get good grades.
Q12	Environment	I may recommend good economics learning websites or resources to students who need them.
Q13		I often help my classmates solve their problems when studying economics online.
Q14		When having difficulties in online learning, I will consult my teachers and classmates online (including platforms, QQ, and WeChat) to solve the problems.
Q15		I will consult my peers when I struggle with group activities in offline classes.
Q16		I can concentrate on and participate in offline classroom discussions and try to answer questions from my classmates and teacher.
Q17		I know the functions of the e-learning platform and how to utilize it.
Q18		In offline group activities, I often answer questions and solve problems for my peers.
Q19		The combination of online independent learning and classroom learning makes me more confident and effective in learning.
Q20	Control	I can complete the tasks assigned by the teacher in the economics course, both online and offline, on time and with good quality.
Q21		I can complete my study tasks without interruptions in the online course.
Q22		I can organize my time for independent study in Western Economics online.
Q23		I can manage the content and progress of my online course.

### Reliability and Validity Test

This survey was conducted in November 2023 on the Business School of Huaihua University students taking the economics course. Questionnaires were distributed to students who were studying economics in November 2023 using the Chinese online survey platform “Wenjuanxing.” A total of 168 copies of questionnaires were received, of which 150 were valid. Cronbach’s  $\alpha$  was used to verify the reliability of the questionnaire. The usual criterion is that  $\alpha \geq 0.7$ , indicating good consistency of the questionnaire. Based on 150 valid questionnaires tested, the  $\alpha$  coefficient of this questionnaire is higher than 0.8, suggesting excellent internal consistency. Factor analysis is the most commonly used method to try the structural validity of questionnaires. In this study, 150 samples of data were tested. The results now show that the result of the KMO test is more significant than 0.9, and the value of Bartlett’s test of sphericity is less than 0.05. Thus, the validity of the questionnaire is acceptable.

### SELF-EFFICACY ANALYSIS IN BLENDED TEACHING MODEL

For further analysis of self-efficacy in the blended teaching mode, the sample data collected are discussed from the overall level of self-efficacy, the attribution analysis of self-efficacy, and the analysis of variance of the effect of individual characteristics on self-efficacy.

#### Overall Level of Self-Efficacy

Each respondent’s scores on the 23 items were summed, and then the total score was divided by 23 to obtain the mean score for each respondent. The mean score ranges from 1 to 5, representing the respondents’ overall self-efficacy evaluation. Higher scores indicate that the respondents are more confident in learning the economics course well in the blended teaching model. A score of 3 suggests a neutral state, meaning that the respondent is neither positive nor negative about the stated issues. A score greater than 3 indicates that the respondent rates self-efficacy as generally positive. A score of less than 3 suggests that the respondent rates self-efficacy as generally negative.

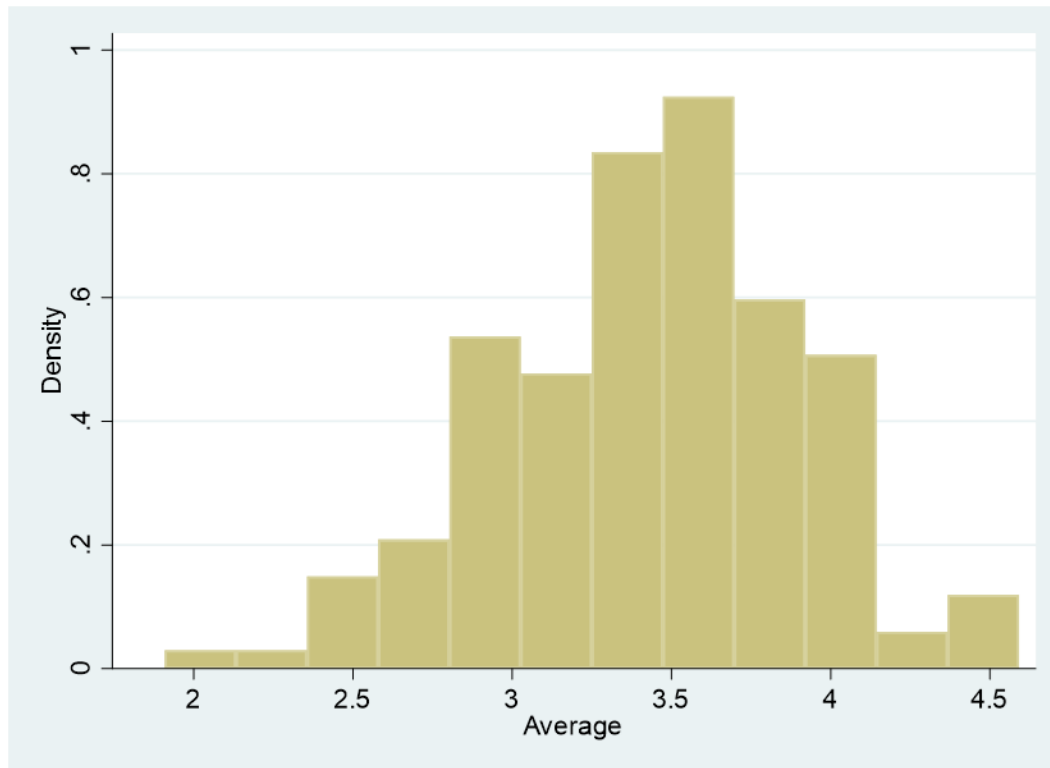
The descriptive statistics of the mean scores of the 150 respondents are given in Table 2. From the results, all the respondents’ mean self-efficacy score was 3.43, ranging from “Unsure” to “Agree.” The respondents generally agreed with the stated issues, indicating low self-efficacy of the Business School students for the economics course in the blended teaching model. The minimum value of the mean score among the respondents was 1.91. Some students have low self-efficacy in blended learning environments and lack confidence in learning economics.

**TABLE 2**  
**DESCRIPTIVE STATISTICS OF AVERAGE SCORES OF SELF-EFFICACY**

Variable	Sample size	Mean	Standard deviation	Minimum	Maximum
Average	150	3.43	0.49	1.91	4.59

The frequency histogram of the mean self-efficacy score was plotted to analyze further the distribution of the mean scores of college students’ self-efficacy, as shown in Figure 1. The descriptive statistics of the mean scores of the 150 respondents are presented in Table 2. Respondents’ scores were generally symmetrically distributed, with the symmetry axis falling at 3.43 points. In the frequency histogram, there were slightly more respondents with the highest scores on the right side than those with the lowest on the left. Thirty respondents, 20% of all respondents, scored below 3 points, while the remaining 120 scored above 3 points. 80% of the respondents rated the self-efficacy of the blended teaching model positively. However, 20% of the respondents had low self-efficacy. Nineteen respondents, or 12.67% of the total, scored more than four on average. This group has a high level of self-efficacy.

**FIGURE 1**  
**FREQUENCY HISTOGRAM OF AVERAGE SCORES OF SELF-EFFICACY**



**Attribution Analysis of Self-Efficacy in the Blended Teaching Model**

*Influence of Ability-Related Factors on Self-Efficacy*

The questionnaire has eight items on the efficacy of ability. They mainly examine the information on the sense of talent, confidence in solving problems, expectation of learning outcomes, ability to acquire information, understanding of independent learning, ability to filter information, and sense of goal achievement. As shown in Table 3, the average score of these eight items was 3.22, slightly greater than 3. The respondents' efficacy of ability was not strong. The scores of the two items ("I am confident that I can solve the difficulties in my Western Economics course" and "It is easy for me to fulfill my learning objectives in the Western Economics course") were both below 3 points. Economics has many abstract concepts and complex mathematical models. Understanding and interpreting economic phenomena and theories require specific background knowledge, such as statistics, mathematics, and politics. These are difficult for students new to this course, so they are not confident enough to master it. The average score of respondents was 3.81 for the item "I can view the online economics course at any time, and it helps me to understand what I have learned better." Most respondents recognized the advantage of accessing online courses at any time.

**TABLE 3**  
**MEASUREMENTS OF ABILITY-RELATED FACTORS**

	N	Minimum	Maximum	Mean	Standard deviation
Q1	150	1	5	3.38	.895
Q2	150	1	5	2.89	.840
Q3	150	2	5	3.81	.727
Q4	150	1	5	3.38	.857
Q4	150	1	5	3.09	.754
Q5	150	1	5	3.07	.761
Q6	150	1	5	2.90	.880
Q7	150	1	5	3.21	.745
Valid N (listwise)	150			3.22	

*The Impact of Effort-Related Factors on Self-Efficacy*

The effort-related factors involve four items. They measure the respondents' sense of concentration, the time and energy invested, and the sense of competition with classmates in the economics course. As shown in Table 4, the average score for the four items of effort-related factors was 3.28, slightly higher than that of 3.22 for the ability-related factors. The highest score of 3.56 was given to the item ("I take the time and effort to complete the online independent study tasks in my Western Economics course."). Even though studying economics is challenging, these Chinese students do not give up their efforts. At the same time, they were willing to participate actively in class discussions and answer questions to get good grades. Of the five items of effort-related factors, the lowest score was given to the item ("I can finish the preview of the Western Economics class online before the class."). Students generally gave negative ratings, suggesting that most students did not develop the habit of previewing their lessons.

**TABLE 4**  
**MEASUREMENTS OF EFFORT-RELATED FACTORS**

	N	Minimum	Maximum	Mean	Standard deviation
Q8	150	1	5	3.35	.860
Q9	150	1	5	3.56	.670
Q10	150	1	5	2.93	.783
Q11	150	2	4	3.29	.574
Valid N (listwise)	150			3.28	

*The Impact of Environment-Related Factors on Self-Efficacy*

The environment is crucial to self-efficacy, as proposed by Bandura. The environment consists of family, school, and work environments. These environments can affect a person's self-concept and self-evaluation. Self-efficacy will improve if supported and encouraged in a favorable environment. On the other hand, if a person is criticized and denied in a bad environment, their self-efficacy will be negatively affected. The respondents were asked how they felt about the environment, felt needed by others, perceived the need for help from others, and were adapted to the online environment in the blended teaching mode. As shown in Table 5, the average score of the seven items of environment-related factors was 3.31, higher than that of ability- and effort-related factors. Respondents could adapt to a blended learning environment. The highest score for environment-related factors was found in the item ("When having difficulties in online learning, I will consult my teachers and classmates online (including platforms, QQ, and WeChat) to solve the problems."). Respondents would seek external help when having difficulties studying online. They were also willing to share good websites or resources for learning economics with students who needed them. Most respondents gave negative ratings on whether they could help their classmates in online and offline



learning activities, with an average score of less than 3. It is possible that the respondents do not know economics well and do not think they are capable of helping their classmates.

**TABLE 5**  
**MEASUREMENTS OF ENVIRONMENT-RELATED FACTORS**

	N	Minimum	Maximum	Mean	Standard deviation
Q12	150	1	5	3.53	.783
Q13	150	1	5	2.83	.809
Q14	150	1	5	3.73	.793
Q15	150	1	5	3.45	.856
Q16	150	1	5	3.31	.761
Q17	150	1	5	3.40	.794
Q18	150	1	5	2.91	.810
Average	150			3.31	

*The Impact of Control-Related Factors on Self-Efficacy*

In psychology, control refers to an individual’s perception and control of his or her behavior and environment. It is closely related to an individual’s assessment of his or her situation. Individuals with high control are more willing to take on challenges and have more initiative, self-confidence and motivation. On the contrary, individuals with low control tend to fall into negative emotions and cannot respond flexibly to environmental changes (Rasmussen, Scheier and Greenhouse, 2009). Four items were used to evaluate the respondents’ control in the blended learning mode. They cover awareness of scheduling study time, awareness of completing planned tasks, resistance to interference, and awareness of self-management. As shown in Table 6, the mean score of control-related factors was 3.31. It has the highest score among the four categories of factors and is close to the score of environment-related factors. When calculated to the third decimal place, the average score of control-related factors is greater than that of environment-related factors. The highest score was given for the item (“I can complete the tasks assigned by the teacher in the Economics course, both online and offline, on time and in good quality.”). The respondents have good habits in completing their assignments. The lowest score was given to the item (“I can complete my study tasks without interruptions in the online course.”). Compared with offline teaching, online independent learning is more prone to interruptions. In classrooms in Chinese universities, there are strict requirements for students’ behavior. Students are not allowed to talk to each other or to leave their seats. However, students are more likely to be interrupted in online learning venues like dormitories.

**TABLE 6**  
**MEASUREMENTS OF ENVIRONMENT-RELATED FACTORS**

	N	Minimum	Maximum	Mean	Standard deviation
Q19	150	1	5	3.28	.852
Q20	150	1	5	3.69	.734
Q21	150	1	5	3.03	.781
Q22	150	1	5	3.25	.704
Valid N (listwise)	150			3.31	

**One-Way ANOVA**

Individual characteristics of respondents may significantly affect their self-efficacy under the blended learning model. Males showed higher self-efficacy in math, computers, and social sciences than females (Huang, 2013). In the questionnaire, the respondents were asked about their gender, the division of arts and sciences in high school, whether they were from an urban or rural area and their grade level. The effect of

the above characteristics of the respondents on self-efficacy in the blended learning model is discussed below.

*Differences in Self-Efficacy Among Students of Both Sexes*

According to the valid questionnaires collected, 23 respondents were male, and 127 were female. Females accounted for 85% of the total respondents, roughly reflecting the current gender ratio of economics and management students in China. As shown in Table 7, the one-way ANOVA shows that students of different genders differed in their responses to the four questions at the 10% significance level. For the responses to the item (“I take the time and effort to complete the online independent study tasks in my Western Economics course.”), the average score was 3.22 for males and 3.62 for females. Female respondents were more diligent and willing to spend time and effort to complete the online learning tasks than their male counterparts. In response to whether they are eager to help their classmates solve online learning problems, the scores of males and females were 2.65 and 2.96, respectively. Although both male and female respondents answered negatively, female respondents were more active than male respondents. Regarding whether they consulted teachers and classmates to solve their problems, the average scores of females and males were 3.51 and 3.13, respectively. Finally, females were more competitive in their courses and would study harder to get good grades.

**TABLE 7  
ANOVA BY GENDER**

		Sum of squares	df	Mean square	F	Significance
Q9	Inter-group	3.189	1	3.189	7.400	.007
	Intra-group	63.771	148	.431		
	Total	66.960	149			
Q11	Inter-group	1.853	1	1.853	2.856	.093
	Intra-group	96.021	148	.649		
	Total	97.873	149			
Q13	Inter-group	2.832	1	2.832	3.942	.049
	Intra-group	106.341	148	.719		
	Total	109.173	149			
Q14	Inter-group	2.608	1	2.608	3.585	.060
	Intra-group	107.665	148	.727		
	Total	110.273	149			

*The Impact of Division of Arts and Science in High School on Self-Efficacy*

In China, high school students are divided to better match their future college programs. Different groups are taught courses and tested differently on the college entrance exam. The division of high school students and the mix of courses in the various groups has changed in recent decades. Nevertheless, students are generally divided into groups of arts and science. Science subjects stress math, physics, and chemistry, while arts emphasize language, history, and politics. The Business School enrolls students in both arts and

sciences in all of its programs. Among all the respondents, there were 100 students of arts and 50 students of science. As shown in Table 8, an ANOVA was conducted based on the division of arts and science in high school. It was found that there was a significant difference between the respondents' answers to the two items. Science students were more confident in solving the difficulties in studying the economics course than arts students. Science and arts students scored 3.06 and 2.8, respectively. It is generally believed that science students may be more focused on quantitative analysis, data modeling and mathematical derivation. They are more inclined to use mathematical methods to solve economic problems. Therefore, these students are in a better position to solve economic problems. In response to the item ("I listen carefully to the lectures and take notes in class, and review on my own after class"), the scores of arts and science students were 3.04 and 2.72 points. Arts students are more hardworking than science students, although the scores of arts students are very close to a neutral rating.

**TABLE 8**  
**ANOVA BY DIVISION OF ARTS AND SCIENCE IN HIGH SCHOOL**

		Sum of squares	df	Mean square	F	Significance
Q2	Inter-group	2.253	1	2.253	3.243	.074
	Intra-group	102.820	148	.695		
	Total	105.073	149			
Q5	Inter-group	3.413	1	3.413	5.746	.018
	Inter-group	3.413	1	3.413	5.746	.018
	Intra-group	87.920	148	.594		
	Total	91.333	149			

*Differences in Self-Efficacy Between Students From Urban and Rural Areas*

In order to explore the differences in self-efficacy between urban and rural students, the question "Are you from a rural or urban area?" was included in the questionnaire. Of the 150 respondents, 119 were from rural areas, and 31 were from urban areas. The ANOVA of students from rural and urban areas in Table 9 shows significant differences between rural and urban students in two aspects. The scores of 3.75 and 4.06 represent urban and rural students' evaluation of their proficiency in downloading online learning resources. The scores of 3.67 and 3.30 represent urban and rural students' evaluation of whether blended learning is effective. Compared with rural students, urban students are more skillful in downloading helpful learning resources online and more confident in online independent learning and classroom learning. As a result, students in cities learn better. The infrastructure is better in cities, including Internet communication facilities. Students from urban areas have easier access to the Internet before entering university. Furthermore, urban residents are usually better off financially than rural residents. A higher percentage of urban students use online learning devices of higher quality.

**TABLE 9**  
**ANOVA AMONG STUDENTS FROM RURAL AND URBAN AREAS**

		Sum of squares	df	Mean square	F	Significance
Q4	Inter-group	1.873	1	1.873	3.604	.060
	Intra-group	76.901	148	.520		
	Total	78.773	149			
Q19	Inter-group	3.457	1	3.457	4.831	.029
	Intra-group	105.883	148	.715		
	Total	109.340	149			
	Total	86.193	149			

*Influence of Respondents From Different Grades on Self-Efficacy*

The Business School offers Tourism Management, International Economics and Trade, Logistics Management, Financial Management, and Cross-Border E-Commerce programs. Each program has its curriculum. Economics courses for some programs are offered in the first year. The economics courses of other programs are offered in the sophomore year. Among the valid questionnaires received, 61 respondents were first-year students. The other 89 respondents were sophomores. When all the respondents were grouped by grade, their mean self-efficacy scores in the blended teaching model were 3.32 and 3.51, respectively. The self-efficacy of sophomores was significantly higher than that of first-year respondents. As shown in Table 10, the results of the one-way ANOVA demonstrated significant differences in the responses of the respondents from different grades on six items (e.g., “I believe I can quickly adapt to the online independent learning environment and approach,” “I am confident that I can solve the difficulties in my Western Economics course”). The sophomore respondents scored higher than the first-year respondents on all the items. Sophomores have one more year of college experience than first-year students and are better adapted to studying and life in college. The sophomore students have already received introductory courses such as advanced mathematics, laying a foundation for learning economics in their sophomore year. As a result, students who begin economics courses in their sophomore year have higher levels of efficacy than those who take economics in their first year.

**TABLE 10**  
**ANOVA BY GRADE**

		Sum of squares	df	Mean square	F	Significance
Q2	Inter-group	6.562	2	3.281	4.277	.016
	Intra-group	112.778	147	.767		
	Total	119.340	149			
Q3	Inter-group	4.064	2	2.032	2.957	.055
	Intra-group	101.009	147	.687		
	Total	105.073	149			
Q4	Inter-group	6.309	2	3.155	6.270	.002
	Intra-group	73.964	147	.503		
	Total	80.273	149			
Q10	Inter-group	3.491	2	1.746	2.938	.056
	Intra-group	87.342	147	.594		
	Total	90.833	149			
Q11	Inter-group	9.635	2	4.818	6.690	.002
	Intra-group	105.865	147	.720		
	Total	115.500	149			
Q15	Inter-group	3.591	2	1.795	2.919	.057
	Intra-group	90.409	147	.615		
	Total	94.000	149			

## CONCLUSIONS AND RECOMMENDATIONS

In blended learning, students learn part of the courses through online learning platforms. At the same time, they also participate in face-to-face, real-time lessons, group discussions, or hands-on activities. The blended learning model is designed to address the limitations of the traditional teaching model and cater to students' learning needs. Internet communication infrastructures are improving, cell phones and computers are becoming more and more popular, and colleges and universities are spending more money on online learning systems. In this context, blended teaching has been accepted by students. Most students are proficient in using online resources for learning. Almost all of them think blended teaching is more flexible and convenient and can improve their learning experience and effectiveness.

The mean self-efficacy score of the Business School students is 3.43 points. The respondents have low self-efficacy in learning economics courses under the blended teaching model. In this regard, improving self-efficacy should be considered a meaningful way to improve the quality of teaching. The self-efficacy scores of the respondents were typically distributed. 13% of the respondents had an average self-efficacy

score of more than 4, indicating strong self-efficacy. 20% had a self-efficacy score of less than three and lacked a sense of efficacy in the blended teaching of the economics course. Improving the self-efficacy of this group of students is an urgent problem in teaching practice.

Self-efficacy was categorized into four dimensions: ability, effort, environment and control. The mean scores for each dimension ranged from 3 to 4. The ability-related factors had the lowest mean scores among the four dimensions, mainly because most respondents were not confident in solving the difficulties in learning economics and realizing the course's learning objectives. There are many abstract concepts and complex mathematical models in economics. Students often need background knowledge to understand and interpret economic phenomena and theories. Decisions and outcomes in economics are usually influenced by many factors, many of which are uncertain. Due to these characteristics of economics courses, Chinese students who are new to the subject may find it difficult to understand. Other factors contributing to low self-efficacy include failing to preview the course and failing to help classmates in their studies.

A one-way ANOVA revealed that all four individual characteristics significantly influenced a factor of self-efficacy. Female respondents have higher self-efficacy than male respondents, mainly in effort- and control-related factors. Female respondents spend more time and effort on completing online assignments and getting good grades, and they are more willing to help their classmates and ask for help from their classmates and teachers. In comparing students' self-efficacy in arts and sciences, students in sciences were more confident in solving the difficulties in studying Western Economics. The respondents were categorized into rural and urban students. It was found that urban students were more optimistic about their ability to download e-learning resources and better results in blended learning. Finally, when all respondents were grouped by grade, students in higher grades had significantly higher self-efficacy than those in lower grades.

The lowest scores among all the items were in Q2 and Q5, which were 2.89 and 2.90, respectively. Most respondents have no confidence in solving the difficulties in the course and realizing the objectives of the course. It is the main reason for the low self-efficacy. As an application-oriented university, Huaihua University emphasizes using economics cases in its economics courses. In particular, numerous local cases have been introduced over the decades since China's reform and opening up to help students master the theories and their applications. Students are not required to master cumbersome derivations and proofs of economic models. Instead, cases should be introduced in the classroom to help students understand the principles of economics. More online resources should be provided to stimulate students' interest. Second, students need to master specific introductory courses, such as advanced mathematics, for studying economics. Otherwise, they cannot understand the derivations of many economic models. Therefore, economics courses should be offered following introductory courses, such as advanced mathematics, rather than in the first year. Third, from the analysis of respondents with different characteristics, their self-efficacy has some differences. Females work harder than males, and students from urban areas are more confident in using online resources. Based on these differences, teachers should provide targeted instructions, such as a special lecture on utilizing online resources efficiently. In addition, they should urge students to complete their online assignments promptly and interact more with them online.

Regarding the deficiencies of this study, only "Economics," one of the core courses for economics and management majors, was selected, and it could not be transferred to other disciplines or tasks. In addition, given the specialization of the course, there is a small stock of research on its academic self-efficacy. There is, therefore, a slight lack of references, particularly to similar international studies. This paper makes a potential contribution to this field. Finally, Huaihua University has good Internet coverage and speed. Thus, the conclusions and recommendations have some limitations for some universities that still need to improve their digital campus facilities.

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