INVESTIGATING UNIVERSITY STUDENTS' NETWORK SELF-LEARNING ABILITY IN CHINA: A CASE STUDY OF HUNAN INTERNATIONAL ECONOMICS UNIVERSITY

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Abstract: This study aimed to investigate the current status of students' network self-learning ability at Hunan International Economics University, which mainly included four dimensions: online learning environment, learning motivation, learning strategy, and learner autonomy. This study also examined the differences in network self-learning ability among students with different demographic backgrounds, including gender, grade, place of origin, major, and major selection method. This study took Hunan International Economics University in Changsha City, Hunan Province, as the research area, with a total of 27,233 university students on campus. Convenient sampling was conducted according to the Morgan Table, and 378 valid samples were finally used as the basis for the research. SPSS 26.0 statistical software was used for data processing, and descriptive statistics, independent samples t-test, and One-way ANOVA analysis were used for differential statistics. The results indicated that there were significant differences in students' network self-learning ability at Hunan International Economics University of different genders, grades, places of origin, majors, and major selection methods. Finally, based on the research results, it was proposed to construct a diversified learning support ecosystem to meet the needs of individual differences; Implement a full-stage learning guidance program to facilitate students' growth and transition; Suggestions for optimizing the balanced allocation of learning resources, promoting educational equity development, and facilitating cross-disciplinary learning exchanges and integration to cultivate well-rounded talents.

Keywords: Network Self-Learning Ability, Online Learning Environment, Learning Motivation, Learning Strategy, Learner Autonomy

Introduction

The development of 5G networks has had a significant impact on various industries and fields worldwide, and future forms of education will inevitably follow this trend of change and continue to promote reform and innovation. Cai (2023) pointed out that under the influence of online education on

the Internet, traditional education has become difficult to meet the new requirements of The Times. Traditional education should break through its limitations and integrate deeply with the booming online education to explore a more forward-looking development path that is "steady and progressive". In recent years, with the rapid advancement of technology and the full advent of the digital age, the online education industry has maintained a sustained and rapid development trend. Online education has become an important component that cannot be ignored in the field of education. The interactive environment and classroom atmosphere created by online education can enable students to truly feel the experience of being in the classroom, which helps instructors grasp students' learning thinking patterns and makes students more focused and engaged.

Wu & Yang (2022) proposed that Chinese universities, as the core force in building a pattern of co-construction and sharing of high-quality educational resources, should keep up with The Times, innovate educational concepts, empower education with digital technology, and better serve the work of nurturing people. College students in the new era are at the forefront of the digital education wave. Only by grasping the key essence of self-learning in the digital education wave can they possess an important skill of their own. College students have relatively free time and space for study. Besides regular course learning, tasks such as scientific research and writing graduation theses need to be completed independently under the guidance of instructors. Therefore, they need to have stronger self-learning abilities. However, Hu's (2021) research indicated that many university students had a relatively weak awareness of self-learning, lacked initiative and self-management ability, and tended to rely more on the guidance and supervision of instructors. This leads to relatively low self-learning efficiency among university students, affecting their learning outcomes and development potential. It is thus evident that enhancing the self-learning ability of university students in the online learning environment has become an inevitable trend. To achieve this goal, it is first necessary to explore the factors that affect university students' self-learning ability to find effective measures to promote self-learning.

Based on the above background and current situation, this study aimed to investigate the current status of university students' network self-learning ability at Hunan International Economics University, to gain an in-depth understanding of the influencing factors of university students' network self-learning ability, and to propose countermeasures to improve the university students' network self-learning ability at Hunan International Economics University, and to stimulate the enthusiasm of university students for self-learning in online learning.

Research Objectives

(1) To explore the current status of students' network self-learning ability at Hunan International Economics University.

(2) To analyze the differences in the university students' network self-learning ability at Hunan International Economics University under different demographic backgrounds (gender, grade, places of origin, major, and major selection method.

Literature Review

Research on the Connotation of Network Self-Learning Ability

The study of the connotation of self-learning has gradually become one of the most notable hot topics in the field of education. The research by Niemiec & Ryan (2021) provided a solid theoretical foundation for self-learning, emphasizing the crucial importance of autonomy in the learning process. Reeve (2018) elaborates on teaching support strategies for self-learning and delves deeply into how to create a teaching environment that strongly supports students' self-learning. Meanwhile, Van Dinther et al. (2017) dissected the essence of self-learning from the perspectives of learning environment and learning motivation, and found a close and inseparable connection between learning environment and learning motivation. The meta-analysis study by Teo (2019) focused on the impact of self-learning on online learning environments and revealed that self-learning had a positive promoting effect on students' academic performance. Furthermore, Clark & Barbour (2019), through a systematic review of online and blended learning research, presented thoughts and suggestions for further development in this field.

The numerous studies conducted by Niemiec & Ryan (2021), Reeve (2018), Van Dinther et al. (2017), and Teo (2019) provided us with a comprehensive and in-depth perspective. It enabled us to gain a more thorough understanding of the essence of self-learning and its importance in the field of education. By organically integrating theoretical exploration, practical strategies, and research results, it could grasp the essence of self-learning more precisely and provide more effective and targeted guidance and support for educational practice. Many studies have further highlighted the importance of self-learning in education and provided educators with practical guidance to help promote the improvement of students' self-learning ability and motivation. By creating a teaching environment that supports students' self-learning, educators could effectively stimulate students' interest and enthusiasm in learning and help them acquire knowledge and skills more efficiently. A deeper understanding of the impact of self-directed learning on the online learning environment could help educators better design online courses and teaching activities, thereby maximizing students' learning outcomes and academic achievements.

However, further in-depth research and practical exploration were needed to truly promote the development and application of self-learning. Especially in the digital learning environment, Van Dinther et al. (2017) pointed out that the learning environment had a significant impact on students' learning motivation and academic achievement. If the learning environment didn't support students' self-learning, it would lead to a decrease in students' learning motivation, which in turn would harm

their academic performance. Therefore, it was crucial to design a learning environment that could effectively support students' self-learning. Teo (2019) found that self-directed learning could have a positive impact on students' academic performance in an online learning environment. This fully demonstrates that curriculum design and teaching strategies play a crucial role in promoting students' self-learning. When curriculum design took into full account students' learning differences and provided supportive learning resources and instructional guidance, it helped to reduce the learning gap. How to effectively promote students' self-learning and how to make full use of technological tools and educational resources to support students' self-learning were both issues worthy of in-depth exploration. Many studies have highlighted the importance of the content of self-learning and provided valuable references for educational practice and policy-making. Niemiec & Ryan (2021) delved into the essence of self-learning from the perspective of self-determination theory, emphasizing the importance of autonomy in promoting students' intrinsic motivation and lasting learning outcomes. Reeve's (2018) work provided specific guidance on how instructors could support students' self-learning and offered practical strategies and methods for educators. Van Dinther et al. (2017) delved into the interaction between the learning environment and learning motivation, providing educators with ideas and methods for adjusting and optimizing the learning environment.

Furthermore, a meta-analysis study by Teo (2019) found that self-learning had a positive impact on academic performance in an online learning environment, further emphasizing the importance of self-learning in the digital learning age. Finally, Clark & Barbour (2019) provided a comprehensive review of online and blended learning research, offering clear guidance and suggestions for the development of the current research field and contributing to the continuous optimization and innovation of the online learning environment. Such research not only greatly enriched the understanding of the connotation of self-learning, but also provided important references for educational practice and policy-making. By delving deeper into self-learning, it could better promote students' learning motivation, improve learning outcomes, and make positive contributions to building an educational environment that ADAPTS to the digital age.

As mentioned above, self-learning has always been a subject of great interest to many scholars. Therefore, while actively drawing on the research of predecessors, it also jointly reveals multiple aspects of the connotation of self-learning ability and delves into the mechanism by which self-learning ability affects academic performance and the learning process of students. Through numerous studies, we could gain a more comprehensive understanding of the importance of self-learning ability and provide more effective guidance for educational practice.

Research on Strategies for Enhancing Network Self-Learning Ability

The Manual of Self-regulating Learning and Performance (Zimmerman & Schunk, 2021) was

an important foundational reference in the field of self-learning. It comprehensively and systematically covers all aspects of self-learning, delving deeply into the use and effects of strategies such as self-monitoring, self-evaluation, and goal setting. This manual was like a treasure trove of knowledge, providing researchers and educators with a platform to systematically understand the core concepts and related theories of self-learning ability, and offering them a solid theoretical foundation and practical guidance in the practice of enhancing students' self-learning ability. It had become an important guide for many educators to explore the path of self-learning. Panadero & Jonsson (2020) conducted a meta-analysis study of far-reaching significance, focusing on the relationship between the use of self-learning Strategy and academic performance. Through rigorous data analysis and research, they revealed the intrinsic correlations between various self-learning strategies and academic performance. This research was like a beacon, guiding educators to gain a deeper understanding of the specific impact of different self-learning strategies on students' learning outcomes, and then to design targeted teaching activities and interventions that strongly promote the development of students' self-learning ability and provide strong support for improving the quality of education and teaching.

Self-regulation and Learning: A Handbook of Research in Educational Psychology, carefully edited by Cleary & Zimmerman (2019), brings together the latest research findings and theoretical developments in the field of self-learning. The manual systematically and comprehensively summarizes theories, methods, and practices related to self-regulation and learning, providing researchers and educators with an authoritative source for an in-depth understanding of self-learning ability. It was like an encyclopedia of the field of education, helping people stay at the forefront of The Times, grasp the latest developments and trends in the improvement of self-learning ability, and provide rich materials and ideas for further research and practice.

Weinstein et al. (2018) 's research was ingenious and focused on the application of self-learning ability in special education groups. They proposed a series of innovative and targeted self-regulation interventions for difficulties faced by children, such as autism, attention deficit hyperactivity disorder (ADHD), or sensory disorders. These measures were like keys that open the door to improving self-learning ability and learning outcomes for special education groups, enrich the field of research on strategies for enhancing self-learning ability, and embody the concepts of educational equity and humanistic care.

In addition, some studies have focused on strategies for developing self-learning abilities in an online learning environment. These strategies were diverse and may include personalized learning path design, the development and application of self-directed learning tools, as well as the optimization and management of learning resources. Kramarski & Michalsky (2019) focused on strategies for enhancing self-learning ability in the emerging educational context of online collaborative environments. They proposed a range of effective teaching methods and strategies, such as problem-based learning, peer

learning, etc. These strategies act as catalysts to stimulate students' enthusiasm and initiative in learning in an online collaborative environment, promote communication and cooperation among them, and thus strongly promote the development of students' self-learning ability, providing useful references for the development of online education.

In addition to the representative studies mentioned above, there were also important works on strategies for enhancing self-learning in recent years that were worthy of attention. On the one hand, some studies had delved deeply into the crucial role of the instructors in promoting students' self-learning ability. The teaching methods and environment design of instructors in the classroom were like a baton, exerting a significant influence on students' self-learning ability. For instance, instructors could adopt heuristic teaching methods to guide students to think and explore actively. Provide practical opportunities for students to exercise their ability to learn independently in practice; Give timely feedback to help students adjust their Learning Strategy; Support students' self-learning decisions and develop their ability to think independently. Through these methods, instructors could stimulate students' interest in learning and cultivate their self-learning ability (Reeve, 2018). On the other hand, some studies have been dedicated to developing and evaluating interventions for fostering self-learning ability. These interventions come in various forms and may include self-directed learning ability training courses, personalized learning plans, and the use of learning logs etc. Through these interventions, students were like being placed in a self-learning ability training camp, systematically learning and practicing various self-learning strategies and gradually improving their self-learning ability level (García et al., 2021).

In addition, studies had extended their focus to the impact of family and social environments on self-learning ability and how to promote the development of self-learning ability in these environments. Parents and social educational institutions play important roles in children's growth. They could develop children's independent thinking and sense of responsibility by encouraging them to make their own decisions; Provide abundant learning resources and support to create good learning conditions for children; Create a positive learning atmosphere, stimulate children's interest and motivation in learning, etc., to promote the development of children's self-learning ability (Flavell, 2017).

To sum up, in recent years, research on strategies for enhancing network self-learning ability has shown a significant trend of diversity and interdisciplinarity. From the in-depth exploration of the instructors role, the meticulous development of intervention measures to the extensive attention to the family and social environment, it not only enriches the research field of strategies for enhancing network self-learning ability, but also provided a strong basis and direction for the reform and innovation of educational practice, promoting education to continuously develop in a more personalized and efficient direction, and had important theoretical support and practical guidance.

Research Status of Self-Learning Ability in the Online Learning Environment

With the rapid proliferation and vigorous development of online learning, research on self-learning ability in online learning environments has increasingly become a focus in the field of education, attracting the attention of many scholars.

Shroff et al. (2018) focused on students' perception of collaborative learning, social presence, and satisfaction in an online blended learning environment. Through in-depth research, they found that students' perception of collaborative learning and social presence was closely linked to their satisfaction. This finding was like a pebble thrown into a calm lake, creating ripples that show that in an online learning environment, creating a good atmosphere of social interaction and collaboration was of great significance in igniting the flame of students' self-learning ability. Good social interaction and collaboration could make students feel the joy of learning and a sense of belonging, and thus be more actively engaged in learning.

Artino & Stephens (2020) pointed out that the success of online learning was closely linked to time management, space management and self-regulation ability. They particularly emphasized the need for students to master a range of self-learning skills in the online learning environment, such as self-monitoring, goal setting, and time management, which were like keys to unlocking successful online learning experiences and could help students better plan their learning, control their learning progress, and achieve efficient learning.

In addition to the representative studies mentioned above, there were also some studies on self-learning in online learning environments in recent years that were worthy of attention. For example, Garrison's (2017) "Online Learning in the 21st Century: A Framework for Research and Practice" was like an encyclopedia of the field of online learning, providing researchers and educators with a comprehensive framework of self-learning ability in the online learning environment. The book systematically and deeply explores the characteristics of online learning, teaching models, and learning strategies, as well as the role and impact of self-learning in it, providing a solid theoretical basis for designing and evaluating strategies for enhancing self-learning ability in an online learning environment.

To sum up, research on self-learning ability in an online learning environment involves multiple aspects, including teaching frameworks, quality assurance mechanisms, and strategies for developing self-learning ability. By delving into these aspects, we could better understand the current status and influencing factors of self-learning ability in the online learning environment, and provide important theoretical support and practical guidance for improving the effectiveness and quality of online learning.

Methodology

The subjects of this study were all current students of Hunan International Economics University.

A student survey was conducted using the convenience sampling method, targeting a total of 27,233 students at Hunan International Economics University. According to the requirements of Krejcie & Morgan's (1970) Morgan table, the sample size for this study was 378. In the form of a questionnaire survey, a link to the questionnaire was pushed through the school group. With the help of the school staff, 380 questionnaires were distributed (to ensure no less than 378 were retrieved), and 378 valid questionnaires were retrieved after screening and sorting, with the effective return rate reaching 99.47%.

The questionnaire used in this study is derived from Cai's (2023) "Research on Self-Learning Ability of College Students in Online Learning Environment", which tests the impact of basic information of university students on autonomous online learning ability. Four factors, including online learning environment, learning motivation, learning strategy, and learner autonomy, were included to analyze the network self-learning ability of university students. The questionnaire consists of 49 questions.

To ensure the applicability of the questionnaire in this study, a reliability test was conducted with 378 samples. Through internal consistency analysis, the Network Self-Learning Ability Scale performed well in terms of reliability, the Cronbach's α of the Network Self-Learning Ability Scale was 0.954, showing high reliability.

The KMO value of the total scale of the network self-learning ability scale was 0.956, reaching the significance level, indicating that there were common factors among the data, and this data applied to this study; And the results of the Bartlett's sphericity test showed $p<.001$, which completely rejected the null hypothesis of the Bartlett sphericity test and met the conditions for factor analysis, An exploratory factor analysis test revealed that by extracting four common factors from the network self-learning ability questionnaire and rotating them using the maximum variance method, the cumulative contribution rate was 68.734%, indicating good structural validity.

Results

Demographic Analysis of Questionnaire Participants

Students from Hunan International Economics University were the subjects of this study, and a total of 378 valid survey samples were collected. The distribution of the surveyed university students in terms of gender, grade, place of origin, major, and major selection method was analyzed. Among the gender variables, 51.9% were male and 48.1% were female, indicating that the gender of the students surveyed was relatively balanced. Among the grade variables, the proportion of freshmen was 23.8%, sophomores was 28.8%, juniors was 27.0%, and seniors was 20.4%. It could be seen that the grades of the students surveyed were relatively balanced. In the place of origin variable, rural students accounted for 28.0%, rural students accounted for 31.0%, and urban students accounted for 41.0%, indicating that there were more students from urban areas among the surveyed students. Among the major variables,

48.1% were Science and Engineering students, 43.1% were Humanities and Social Sciences students, and 8.7% were other majors, indicating that the vast majority of the surveyed students were Science and Engineering and liberal arts and law students. Among the major selection method variables, 49.2% of the students chose their majors independently, 31.2% chose their majors with the help of others, and 19.6% agreed to be adjusted. It could be seen that among the surveyed students, those who chose their majors independently accounted for a relatively large proportion.

Descriptive Statistics on the Levels of University Students' Network Self-Learning Ability in Hunan International Economics University

1) Using SPSS 26.0 software, the current status of university students' network self-learning ability in Hunan International Economics University was analyzed through descriptive statistics. From the descriptive statistics results, it could be known that by observing the mean and standard deviation, from the online learning environment (M=3.80, SD=.50), learning motivation (M=3.96, SD=.58), Learning strategy (M=3.52, SD=.56), learner autonomy (M=3.95, SD=.68), overall network self-learning ability (M=3.81, SD=.46). In general, the university students' network self-learning ability at Hunan International Economics University and its various dimensions were high.

Table 1: Descriptive Statistics of Students' Network Self-Learning Ability

Dimensions	N	M	SD	Interpretation
Online learning environment	378	3.80	0.50	High
Learning motivation	378	3.96	0.58	High
Learning strategy	378	3.52	0.56	High
Learner autonomy	378	3.95	0.68	High
Overall network self-learning ability	378	3.81	0.46	High

Differences in University Students' Network Self-Learning Ability under Different Demographic Backgrounds

To understand the differences in different demographic backgrounds through differential statistical analysis, this study used an independent samples t-test and One-way ANOVA analysis to analyze the network self-learning ability of students at Hunan International Economics University, and to determine the differences by gender, grade, place of origin, major, and major selection method.

(1) Comparison of differences in university students' network self-learning ability of different genders

According to Table 2, the results showed that there was a significant difference in network self-learning ability between male and female university students ($t=2.973$, $p<.01$), and the mean for male students (M=3.88, SD=0.46) was significantly higher than that for female students (M=3.74, SD=0.45).

Table 2: Comparison of Differences in Students' Network Self-Learning Ability of Different Genders

Dimensions/Variables	Group	n	M	SD	t	.Sig
Online learning environment	Male	196	3.81	0.52	.393	.695
	Female	182	3.79	0.47		
Learning motivation	Male	196	4.04	0.58	2.654	.008
	Female	182	3.88	0.57		
Learning strategy	Male	196	3.61	0.58	3.283	.001
	Female	182	3.43	0.52		
Learner autonomy	Male	196	4.05	0.65	2.742	.006
	Female	182	3.85	0.71		
Overall network self-learning ability	Male	196	3.88	0.46	2.973	.003
	Female	182	3.74	0.45		

(2) Comparison of differences in university students' network self-learning ability of different grades

According to Table 3, the results was found that when comparing the overall network self-learning ability of students of different grades (F=12.705, p<.001), each dimension showed online learning environment (F=6.816, p<.001), learning motivation (F=5.120), The four dimensions of learning strategy (F=9.433, p<.001) and learner autonomy (F=10.489, p<.001) indicated significant differences in students' network self-learning ability of different grades in the four dimensions of online learning environment, learning motivation, learning strategy, learner autonomy.

Table 3: Comparison of Differences in Students' Network Self-Learning Ability of Different Grades

Dimensions/Variables	Group	n	M	SD	F	.Sig	LSD
Online learning environment	Freshman ①	90	3.65	0.46	6.816	.000	④>① ④>② ③>①
	Sophomore ②	109	3.75	0.54			
	Junior ③	102	3.86	0.50			
	Senior ④	77	3.97	0.41			
Learning motivation	Freshman ①	90	3.79	0.61	5.120	.002	④>① ④>② ③>① ②>①
	Sophomore ②	109	3.96	0.56			
	Junior ③	102	3.98	0.61			
	Senior ④	77	4.13	0.46			
Learning strategy	Freshman ①	90	3.31	0.51	9.433	.000	④>① ④>② ③>① ③>②
	Sophomore ②	109	3.46	0.57			
	Junior ③	102	3.66	0.58			
	Senior ④	77	3.69	0.47			
Learner autonomy	Freshman ①	90	3.69	0.72	10.489	.000	④>① ④>② ③>① ③>②
	Sophomore ②	109	3.86	0.74			
	Junior ③	102	4.09	0.61			
	Senior ④	77	4.20	0.51			
Overall network self-learning ability	Freshman ①	90	3.61	0.46	12.705	.000	④>① ④>② ③>① ③>② ②>①
	Sophomore ②	109	3.76	0.48			
	Junior ③	102	3.90	0.45			
	Senior ④	77	4.00	0.32			

Discussion

To Discuss the Current Status Level of Students' Network Self-Learning Ability at Hunan International Economics University

The high level of network self-learning ability and its various dimensions among students at Hunan International Economics University may result from multiple factors. The research results of Cai (2023) also reflect the high level of students' self-learning ability. According to her analysis, the reasons could also be understood from multiple aspects, which had a certain reference value for this study. From the perspective of the school, Hunan International Economics University may attach great importance to the cultivation of students' self-learning ability. In terms of curriculum design, it focused on guiding students to conduct autonomous inquiry learning, such as arranging more research-based learning projects and group discussion tasks that students need to complete independently, to encourage students to gradually develop the habit and ability of self-learning. In terms of teaching resources, the school may provide rich and high-quality online learning resources, such as online course platforms, electronic libraries, etc., which provide a solid material foundation for students to develop network self-learning ability and enable students to conveniently access various learning materials, thereby enhancing the effect of self-learning. In addition, the school may have created a good learning atmosphere by holding various academic lectures, learning competitions and other activities to stimulate students' enthusiasm for learning and intrinsic motivation, and encourage students to actively engage in network self-learning ability, thereby enabling students' network self-learning ability and its various dimensions to reach a relatively high level.

To Discuss the Differences in Students' Network Self-Learning Ability at Hunan International Economics University with Different Demographic Backgrounds

There were significant differences in overall network self-learning ability, learning motivation, learning strategy, and learner autonomy among students of different genders. Cai (2023), Hu (2021), and Yuan & Li (2017) also reached largely similar conclusions in their studies.

In terms of personal cognitive style, males may be more inclined to logical and abstract thinking, and be better able to handle complex information and problems and formulate effective learning strategy in online learning; Females may be better at visual thinking and language expression, and may had unique advantages in screening and integrating online learning resources, but may be relatively at a disadvantage when it comes to learning tasks that require a high degree of logical analysis, which leads to differences in learning motivation, learning strategy, and learner autonomy between the two genders.

In terms of overall and various dimensions of students' network self-learning ability of different grades, senior students were significantly better than junior students. Many studies have shown that senior students have a relatively higher ability to learn independently. Hu (2021), Sun & Wang (2021),

Wu & Yang (2022) and so on. The reasons were mostly related to the differences among different grades, which were mainly associated with the learning experiences and cognitive development levels of students at different stages. Freshmen face a transition from high school to university, needing time to adapt, so their online self-learning ability is weak. Sophomores, become familiar with the university and improve this ability. Juniors further enhance it for academic and career development under pressure. Seniors, on the eve of graduation, have more targeted and efficient network self-learning ability.

In terms of the differences in students' network self-learning ability from different places of origin, university students in urban areas were significantly higher than those in rural and township areas. Hu (2021) and Yuan & Li (2017) suggested that this phenomenon may be closely related to factors such as the growth environment, access to educational resources and family economic conditions of students in different regions.

The results of Cai (2023) suggested that the differences in network self-learning ability among different majors may be related to the learning characteristics and requirements of different majors. Natural Science and Engineering programs typically had strong logic and the course content involves a large amount of formula derivation, experimental operation and problem-solving, which requires students to have strong self-learning and independent thinking ability. During the learning process, Science and Engineering students need to actively consult a large number of academic literature and research materials in order to deeply understand professional knowledge and solve complex academic problems.

When comparing the results of students' network self-learning ability with different self-choice intentions, students who chose their majors independently were significantly better than those who chose their majors voluntarily and agreed to be adjusted. Cai (2023) and Wu & Yang (2022) all suggested that students who chose their majors independently performed better in network self-learning ability, which was mainly related to their learning motivation and interest. Students who choose their majors independently tend to have a strong interest in and a strong desire to learn about the major.

Conclusion

Conclusion 1: Students' network self-learning ability at Hunan International Economics University and its dimensions were high.

Conclusion 2: There were significant differences in overall network self-learning ability, learning motivation, learning strategy, and learner autonomy among students of different genders at Hunan International Economics University.

In terms of overall network self-learning ability and dimensions, senior students were significantly higher than freshmen and sophomores, juniors were significantly higher than freshmen and sophomores, and sophomores were significantly higher than freshmen.

In terms of overall network self-learning ability, students from urban areas were significantly better than those from rural and township areas.

In terms of overall network self-learning ability, learning strategy and learner autonomy, students majoring in Science and Engineering were significantly better than those majoring in Humanities and Social Sciences and other majors.

In terms of overall network self-learning ability, students who chose their majors independently were significantly better than those who chose their majors voluntarily and agreed to be reallocated.

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