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Learning style and academic motivation of Chinese visual communication design majors

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Abstract

This study utilized descriptive research to determine the relationship between the learning style and academic motivation of Chinese visual communication design students. A total of 306 visual communication design students in one vocational college in China were involved in the study. Results showed that majority of the respondents were female, sophomore level and from rural areas. The visual communication design students' learning style is more of a reflector. The respondents agreed on all the indicators under academic motivation. According to the grouping of learning styles by characteristics, year level and place of birth have no statistical significance. When grouped according to sex, the learning styles of the respondents differed significantly as to theorists and pragmatist. In terms of academic motivation, sex, year level, and place of birth were not statistically significant. There is a positive correlation between the learning style of Chinese visual communication design students and their extrinsic academic motivation. This implies that the better is the learning style the better is the extrinsic academic motivation. However, no significant relationship exists between learning styles and intrinsic academic motivation. A proposed action plan to enhance the learning styles and academic motivation of Chinese visual design students was proposed. It is suggested that school administrators and university professors, may organize academic lectures, seminars, academic competitions, and other activities, adopt different teaching methods and resources, encourage students to actively participate in classroom discussions and learning activities, and help students to think independently, cultivate critical thinking and innovative abilities.

Keywords: academic motivation, higher education, learning style, visual communication design

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1. Introduction

As society continues to change and develop, education continues to evolve. Especially in a diverse environment where education systems, methods and learning needs are constantly changing, universities have a major responsibility to train future professionals and must constantly adapt to a diverse society.

As an important creative art, visual communication design plays an important role in today's world. In the field of art and design, the use of human sensory systems, especially vision, to interact with information plays an important role (Tong, 2018). Spatially, visual communication design includes two -, three - and four-dimensional dimensions (Yin, 2005). Society has an increasing demand for art and design talents (Sun, 2020). Adjusting the structure and content of the practical course, combining the applied professional ability with the applicability and universality of modern art design, is an important issue facing the teaching of visual communication design. Recently, many universities have begun to use visual communication design to enhance campus culture. In recent years, the imbalance between design supply and demand has created difficulties for design procedures (He, 2023). Students' learning style and motivation are important for their future career growth.

Since 2000, global research on learning styles has increased dramatically. There are over 2,500 publications on experiential learning theory (Kolb,et. al.,2010). Because learning styles vary widely across a wide variety of disciplines, they cover a lot of areas of learning and education. Of course, the study of learning styles is interdisciplinary. The term learning style refers to the methods and strategies that individuals use to learn and acquire knowledge. It reflects an individual's tendencies and preferences in processing information, organizing thoughts, remembering, understanding knowledge, and performing learning tasks. It is an important indicator of personalized learning and plays an important role in the teaching process (Shao,et. al.,2022). Additionally, Grasha (as cited in Diaz, 2010) defines learning styles as personal characteristics that affect access to information, interaction with peers and teachers, and participation in the learning experience. Yan et al. (2022) believe that learning style is mainly reflected in learners' learning strategies and learning methods, with a certain degree of stability and individual differences. A learning style-based approach recognizes that each person is unique and therefore each learning style requires a different approach to learning.

Conversely, academic motivation refers to the internal or external factors that promote academic activities such as learning and research. These factors include the individual's pursuit of knowledge, interest in specific subjects, desire for personal growth and development, desire for reward and recognition, fear of punishment and missed opportunities, etc. Academic motivation is the inner power that directly affects students' learning. It explains why students want to learn, how they work hard, and why they want to learn (Zhang, 1999).

From the perspective of motivation, it is important to distinguish between internal motivation and external motivation. Intrinsic motivation means that a person is motivated or motivated to act by internal factors. This motivation does not come from external rewards and punishments, but from internal desires, interests, values, and personal goals. Examples of intrinsic motivation include enjoyment of work, desire for personal growth, personal values and beliefs, etc. Internal motivation is often associated with an individual's spontaneity and autonomy, and promotes sustained, lasting action. The so-called external motivation means that people are encouraged or motivated to take action by the outside world. This motivation comes from external rewards and punishments such as money, admiration, punishment, and social status. Compared with spontaneity and intrinsic interests, external motivations generally have less impact on an individual's long-term persistence and engagement. Research on learning styles and motivation is the most extensive in the field of education and is mainly focused on higher education. Many higher education experts take learning model as the framework of educational innovation, and study how to realize the matching of teaching method and learning model, and how to realize the matching of

teaching model and learning model. Liu,et. al.,(2014) focus on the relationship between higher education institutions and academic motivation, arguing that school education programs must be continuously improved to increase the importance of social practice.

In the last 10 years, a lot of research has been done on expertise in the field of visual communication design. The rapid socioeconomic progress in China has caused significant changes in aesthetic tastes, imposing new demands on students of visual communication design for innovation and entrepreneurship (Nie, 2023). In an era of multidisciplinary cooperation, designers and educators need to go beyond the traditional framework and expand the scope of design concepts and perspectives (Chen,et. al.,2023). However, there is little research on learning styles and academic motivations in the field of visual communication. At present, Chinese universities lack a consistent teaching plan on visual communication design, professors attach importance to theoretical knowledge, and practice is rarely mentioned in university courses. This means that society is not meeting the demand for the visual communication design profession (Guo,et. al.,2023). Learning styles vary according to the physiological and psychological characteristics of individual learners, so a certain teaching method is not suitable for all learners, only some learners can adapt (Dunn, 1983). This may make some students feel confused or lose interest, thus affecting learning outcomes. Each student has their own learning style and needs, but these differences can sometimes be overlooked or overlooked. Some students and teachers lack the knowledge and understanding of different learning modes and cannot effectively adjust teaching methods and learning strategies to meet the needs of different students. Due to the complexity of learning motivation and the diversity of classification criteria, relevant research has not reached a consensus on the types of learning motivation. In addition, no studies have specifically identified the combination of learning styles, motivation, and expertise. To meet the demands of modern society, students must master new media technologies, enhance experiential awareness, and have strong interactive design skills (Zhu, 2023). On the other hand, academic motivation can help students find internal motivation and goals, thus improving the engagement and efficiency of learning. The study of learning styles and academic motivation is an important area of research in education and is essential to the development and progress of each student and the education system as a whole.

From the context of this study, students of visual communication design may be faced with new learning topics and opportunities. Therefore, this study deeply explores the learning style and academic motivation of Chinese visual communication design students and their relationship, in order to provide more targeted teaching strategies for the cultivation of visual communication design majors in universities. More importantly, an action plan was developed for visual communication students to enhance their learning style and academic motivation. This will provide valuable advice for the university's talent cultivation, formulate more targeted education strategies, and improve students' academic performance and career prospects. Hence, the findings of the study can lay the groundwork for further research on the interaction between learning styles, academic motivation, and specific subject areas like visual communication design. This can lead to a deeper understanding of how to optimize learning experiences for students in the field. Overall, a study on learning style and academic motivation of Chinese visual communication design students can offer valuable insights for educators, program administrators, and researchers in the field. By understanding the specific needs and preferences of this student population, schools and universities may create more effective learning environments and support systems that foster academic success and cultivate the next generation of skilled visual communication design specialists.

Objectives of the Study - This study aims to determine the relationship between learning style and academic motivation of visual communication design students in China. Specifically, it determined the students' intrinsic and extrinsic academic motivations for taking visual communication design course; tested the significant relationship between the two variables; and finally, proposed an action plan based on the results of the study.

2. Methods

Research Design - This study utilized descriptive research to determine the relationship between the learning style and academic motivation of Chinese visual communication design students. According to Adhani et. al.,

(2020) descriptive research is a research method aimed at describing the facts and characteristics of natural phenomena without manipulating variables. This type of research is widely used in various fields. In the context of the smart circular economy paradigm, descriptive research is used to define and conceptualize industrial systems that utilize digital technologies to implement circular strategies (Bressanelli et al., 2022). This suggests that descriptive research shapes and advances knowledge in various fields by providing a general understanding of phenomena and concepts.

Participants of the Study - A total of 306 students from 500 registered students majoring in visual communication design at Huaguang Vocational College in Quanzhou, China were involved in this study. This includes 101 first graders, 113 second graders, and 92 third graders. Also, participants were chosen using the random sampling technique to minimize selection bias and ensure that every participant had a fair chance of being included in the sample.

Instrument of the Study - In this study, the "Question Star" application of WeChat platform was used to conduct an electronic questionnaire survey. The questionnaire consists of three parts. The first part is the profile of respondents in terms of sex, year level and place of origin. The second part is about designing students' learning style, which is quoted from Kolb's learning style questionnaire. The third part is a measure of academic motivation cited from George and Mallery's (2003) rule of thumb. They were assessed using the Likert Scale. 1 indicates strong disagreement or lowest, and 4 indicates strong agreement or highest. To determine the learning style of each student, the Kolb Learning Style Questionnaire was employed. The learning style scale for design students was divided into four dimensions: Action, Reflection, Theory, and Practice, with each dimension consisting of 20 questions, totaling 80 questions. The Academic Motivation Scale comprised two dimensions, with each dimension containing 12 questions, totaling 24 questions. Reliability tests were conducted in the form of online and mobile client questionnaires. The reliability of this survey was determined using the internal consistency method of SAS 9.4 statistical software. Cronbach's α coefficient (α=0.70) is considered to be the lowest value of acceptable reliability.

Data Gathering Procedure - To accomplish this research, the following steps were undertaken by the researcher: the pilot test was conducted after the questions were drafted and approved by the test group; it was immediately distributed and 30 samples were collected; it was tested for validity and reliability with the assistance of "Questionnaire Star" on WeChat. The researcher contacted the teaching staff in the surveyed universities offering visual communication design programs via telephone, explained the questionnaire's purpose in detail, and obtained their consent and support. Subsequently, the questionnaire was sent to Visual Communication Design students via WeChat, and the questionnaire was exported using the result export function of "Questionnaire Star".

Data Analysis - In this study, the following statistical tools were used to analyze the data. Weighted averages and rankings were used to assess learning styles and academic motivations. The Likert scale was used to test variables, with 3.50-4.00 indicating Strongly Agree, 2.50-3.49 indicating Agree, 1.50-2.49 indicating Disagree, and 1.00-1.49 indicating Strongly Disagree. The Spearman's rank correlation coefficient was used to test significant relationships between the three variables. Additionally, all data were processed using SPSS statistical software to further interpret the study results at an alpha level of 0.05.

Ethical Consideration - When writing a thesis, ethical issues concerning the relationship between the researcher and the participants are extremely important. The main ethical issues considered in this study are as follows. Firstly, before the research is conducted, it is necessary to ensure that participating students have a full understanding of the purpose, methodology, and potential impact of the research, and confirm their voluntary participation in the study. Measures should be taken to protect the personal information of the participants and ensure that their personal data is not disclosed. Secondly, in order to prevent undue burden on the physical and mental health of the participants, the risks posed by the research should be evaluated and minimized. Additionally, all participants should be treated fairly and impartially, without prejudice based on gender, race, religion, etc. Thirdly, the rights of the participants, including the right to withdraw from the study at any time and the right to

know the results, should be respected. The researchers did not express personal opinions and only provided information and results based on the collected data; the moral permission comes from the research center of LPU (Lyceum of the Philippines University)-Batangas.

3. Result and discussion

Table 1
Summary Table on Learning Styles of the Design Students

Indicators	Weighted Mean	Verbal Interpretation	Rank
Activist	2.71	Agree	4
Reflectors	3.01	Agree	1
Theorists	2.90	Agree	2
Pragmatists	2.85	Agree	3
Composite Mean	2.87	Agree	

Legend: 3.50 – 4.00 = Strongly Agree; 2.50 – 3.49 = Agree; 1.50 – 2.49 = Disagree; 1.00 - 1.49 = Strongly Disagree

Table 1 summarizes the learning patterns of students majoring in visual communication design. The weighted average is 2.87, which indicates the degree of approval of the respondents for the above items. Students majoring in visual communication design are highly creative (Cui,et. al.,2020). Among the four learning modes, reflective students achieved the highest weighted average score, with an average score of 3.01, demonstrating consistency. Reflective students value deep thought and evaluation of learning processes and outcomes. These learners often summarize and generalize what they have learned and make their own notes, mind maps, or review articles. In this way, they can gain a deeper understanding of the knowledge and quickly revise and reexamine it as needed. They are able to recognize their own learning styles, strengths and weaknesses, and to think deeply and evaluate their own learning process. They set clear learning goals, regularly check their progress, and constantly adjust their learning strategies to meet these goals. They have critical thinking skills, are able to conduct in-depth analysis and evaluation of what they have learned, and put forward their own unique opinions and insights. In this way, academic performance and personal growth will be improved. This also reflects that in order to adapt to the talent training needs of the new era, the teaching of visual communication design in universities is constantly reformed and innovated breaking the tradition and diversifying. Ensure talent development (Niu, 2022).

Second place went to theorist, with a weighted average score of 2.90, which was considered consistent. Theorists like to think about the nature of a problem and explore a variety of perspectives and ideas. They are not satisfied with superficial knowledge, but pursue deep understanding. They dig deep into the fundamental concepts of the discipline and explore the principles and logic that underpin these concepts. They are interested in the theoretical framework and concepts of the discipline and enjoy exploring its depth and complexity. They are interested in academic research and exploration, enjoy reading college papers, participating in scientific experiments, and conducting independent research. Compared with practical learners, they may pay more attention to the depth and connotation of the theory, and pay less attention to the practicability and operability of the theory. In the context of information technology, educational informatization has become an inevitable trend in the field of education (Wang, 2022), and theoretical learners can make their contributions.

The third was pragmatists, with a weighted average of 2.85. Pragmatists prefer a direct problem-solving approach, focused on achieving goals and results. In the learning process, they are more inclined to solve practical problems than theoretical discussions. The course of visual communication design is characterized by application and practicality (Wang, 2020). This method of learning prefers to study specific cases and experiences to help understand and apply knowledge. Examples help to quickly translate theoretical knowledge into practical skills. They aim for efficiency and effectiveness, focusing on the smart use of resources and maximizing results. Based on social development, industrial changes and market requirements, the education model combining industry and education is very conducive to improving the applicability and innovation of visual communication design (Cheng, 2022). They are good at solving practical problems, facing challenges, achieving goals, putting theory into practice, and showing flexibility and adaptability in a variety of environments.

Active learners had the lowest weighted average score of 2.71. These learners are interested in new ideas and learning opportunities and are willing to learn new skills and knowledge. They actively participate in learning activities, actively explore learning opportunities, and are willing to participate in class discussions and group projects. Moreover, they are highly self-motivated and able to cheer themselves up in the face of difficulties and challenges. Today, innovation has become a requirement of The Times, and the era of global innovation has arrived (Ying, 2020). They work well with others, play an effective role in a team, and are willing to share their knowledge and experience. In addition, they have the ability to adapt flexibly and adjust their learning and working methods in various situations to cope with changes and topics.

Therefore, it is obvious that different types of learning styles are suitable for different learning topics. Various learning styles provide the most suitable learning activities. Traditional teaching methods do not take into account the different ways learners receive knowledge. One of the most important factors is the learner's learning style. Learning style will affect the quality and efficiency of learning, and determine the learning path and learning strategy suitable for learners. Correct learning strategies can greatly improve learners' learning interest and efficiency. Therefore, implementing customized support methods for individuals with different learning styles is one of the hottest studies in the field of big data education (Zhang, 2020).

Table 2

Summary Table on Academic Motivation

Indicators	Weighted Mean	Verbal Interpretation	Rank
1. Intrinsic motivation	3.13	Agree	1
2. Extrinsic motivation	3.01	Agree	2
Composite Mean	3.07	Agree	

Legend: 3.50 – 4.00 = Strongly Agree; 2.50 – 3.49 = Agree; 1.50 – 2.49 = Disagree; 1.00 - 1.49 = Strongly Disagree

Table 2 shows a composite average of 3.07, indicating that respondents agree with most of the project indicators. The weighted average of intrinsic motivation in the cited items is 3.13, which is evaluated as agreement. Extrinsic motivation came in second, with a mean of 3.01.

The main driver of intrinsic motivation is the individual's interest and joy in the activity itself. Intrinsic motivation plays an important role in all aspects of human behavior and decision-making (Bopp,et. al.,2019). When people feel that activities have intrinsic charm, fun, and meaning, this inner power motivates them. Intrinsically motivated behaviors are usually motivated not only by external rewards and punishments, but also by the individual's internal motivations, and are therefore more durable and stable. Intrinsic motivation is very important for learning, work and personal development. If a person is passionate and motivated about an activity, more time and energy will be invested and the likelihood of success will be higher. In order to promote personal growth and development, educators, leaders, and parents often strive to stimulate and support an individual's intrinsic motivation. Self-determination theory (SDT) provides a framework for understanding intrinsic and extrinsic motivation in educational Settings. Sdt-based research suggests that autonomous forms of intrinsic and extrinsic motivation can predict and reinforce positive outcomes in education by supporting students' basic psychological needs (Ryan,et. al., 2020). The relationship between motivation and academic achievement is complex and multifaceted. The effect of intrinsic motivation on academic performance is generally more positive because it is associated with a sustained interest in learning and self-motivation. However, external motivation can sometimes also serve as motivation and support, and it is important not to rely too heavily on external rewards in order not to undermine a student's intrinsic motivation.

External motivations are often focused primarily on immediate rewards and punishments, and therefore lead to short-term changes and behaviors. Once the external stimulus is gone, the individual's behavior returns to its original state. Since external motivation is primarily based on external rewards and punishments, external motivation tends to make individuals more inclined to complete established tasks and actions, but less inclined to try new approaches and creative solutions. Under the influence of external motivations, individuals tend to focus on external goals rather than their own values and personal growth goals. They may place more importance on

external recognition and reward and less on internal self-actualization and satisfaction. Intrinsic and external motivations influence behavioral sharing on social media, especially in the context of mobile coupons in emerging countries (Sharma et al., 2020). As for medical students, compared with universities that do not focus on knowledge, medical students in knowledge-based universities have higher intrinsic motivation, better academic performance, and lower external motivation (Wu et al., 2020). An effective learning environment should balance the influence of intrinsic and external motivations while promoting students' personal growth and self-motivation.

Table 3

Relationship Between Learning Styles of the Design Students and Academic Motivation

Activist	rho-value	p-value	Interpretation
Intrinsic motivation	-0.031	0.588	Not Significant
Extrinsic motivation	.390**	0.000	Highly Significant
Reflectors			
Intrinsic motivation	-0.055	0.338	Not Significant
Extrinsic motivation	.562**	0.000	Highly Significant
Theorists			
Intrinsic motivation	-0.077	0.178	Not Significant
Extrinsic motivation	.580**	0.000	Highly Significant
Pragmatist			
Intrinsic motivation	-0.061	0.287	Not Significant
Extrinsic motivation	.637**	0.000	Highly Significant

Legend: Significant at p-value < 0.01

The table illustrates the association between learning styles of design students and motivation. The computed r-values indicate a strong direct correlation, and the resulting p-values for learning styles versus extrinsic motivation are all less than the α level, signifying a significant relationship. In other words, the better the learning styles, the stronger the extrinsic motivation.

Students will feel more confident and satisfied when they learn in an environment that suits their learning style. They are more likely to understand and apply knowledge, and this successful experience increases their motivation and self-confidence. In the new liberal arts context, the intersection of visual communication design with humanities and social sciences, natural sciences and other art fields is becoming more and more common. Therefore, it is important for designers to think about how to maintain their true communication identity as they cross multiple fields of humanities, technology, and art (Qi, 2021). Match the learning style with the learning method to ensure that students understand the knowledge rather than simply memorize it. For example, auditory learners listen, understand, and retain information, while motor learners deepen understanding through practical activities.

Intrinsic motivation refers to the behavior or activity that an individual engages in spontaneously due to internal factors such as interest, curiosity, satisfaction, or personal growth. This motivation comes from within the individual, not from an external reward or punishment. External motivation is when an individual's behavior or activity is influenced by external rewards, punishments, pressures, or expectations. This motivation can drive individuals to act in order to obtain external rewards or to avoid external punishment. Zhang (2021) combines the advantages of traditional teaching methods and online learning in the teaching of visual communication design, promotes students' autonomy, enthusiasm and creativity, improves independent learning ability and learning efficiency, and advocates the expansion of moral education resources in the entire educational process. The scope of political and ideological education should be expanded through the diversified educational models embedded in ethical and civic education.

Learning styles may influence how students respond to external rewards and punishments. Understanding how students learn can help educators design external incentives more effectively. Learning style theory holds that different students have different learning styles, and the selection and implementation of teaching methods suitable for different learning styles can effectively promote their learning (Wang,2020). For example, if a particular student's learning style is visual, then visualizations will be used as rewards and may be more strongly motivated

for them. When external incentives are aligned with students' learning styles, their persistence is higher. During the learning process, students may be inclined to continue learning because they can be paid for something that resonates with their own style. Therefore, in the teaching design, it is necessary to consider the students' learning style and external motivation, so as to stimulate their learning interest and motivation more effectively. This ultimately improves learning outcomes. The purpose of art design education is to cultivate versatile and practical talents who can meet the needs of society (Liu, 2021).

Table 4
Proposed Action Plan to Enhance the Learning Style and Academic Motivation of Chinese Visual Communication Students

Key Result Areas/ Objectives	Strategies	Succes Indicator	Persons Responsible
Learning Styles 1.1 Activist 1.2 Pragmatists Objective: To train it to become a way of thinking and practice innovation ability	Organize creative design seminars and debate competitions. Assist students in practical training design projects and participate in design competitions Encourage classroom discussions, group activities, and other interactive learning activities Encourage students to participate in project-based learning	Improved students' enthusiasm and adventurous spirit by 90% Improved students' practical application and problem-solving ability by 90% Increased interaction and cooperation between students by 90% Improves the student learning experience by 90%	Counseling or Guidance Center/ Instructors/Department Instructors/ Schools Department Peers Enterprise Instructors/ Schools Department Peers Enterprise Instructors/ Schools Department Peers Enterprise
Academic Motivation 2.1 Instrinsic 2.2 Extrinsic Objective: Objective: To enable students to have a stronger academic motivation to promote learning	Lead students to a design exhibition Conduct face-to-face academic exchange activities and salons Use concrete cases and real-life scenarios to explain abstract concepts Provide opportunities for practical learning.	Increased students' interest and curiosity by 90% Improved students' academic motivation and overall ability by 90% Increased student interest and curiosity by 90% Increase students' learning efficiency and motivation by 90%	Schools Department Instructors/ Peers Enterprise Schools Department Schools Department Instructors/ Peers Enterprise Schools Department Instructors/ Peers Enterprise

4. Conclusion and recommendation

The visual communication design students' learning style is more of a reflector. The respondents agreed on all the indicators under academic motivation. There is a positive correlation between the learning style of Chinese visual communication design students and their extrinsic academic motivation. This implies that the better is the learning style the better is the extrinsic academic motivation. However, no significant relationship exists between learning styles and intrinsic academic motivation. A proposed action plan to enhance the learning styles and academic motivation of Chinese visual design students was proposed.

University administrators may organize academic lectures, seminars, academic competitions and other activities to provide a platform for students to display their talents and exchange academic achievements. According to students' learning needs and motivation, we provide more personalized and intimate services. University professors may use different teaching methods and resources and encourage students to actively participate in class discussions and learning activities through lively and interesting textbooks and cases, and help students to think independently, cultivate critical thinking and innovative abilities. The visual communication design students may create study plans, cultivate good study habits and self-management ability, improve learning efficiency, and regularly review their learning motivation and learning goals to make necessary adjustments. Improve design ability through practical experience. The proposed action plan to enhance the learning style and academic motivation of Chinese visual design students may be tabled for discussion, implementation, and further evaluation. Future researchers may analyze how the increasing use of digital tools and software in visual communication design education influences learning styles and academic motivation. They may also explore the effectiveness of various digital learning platforms, the role of visual programming languages, and the impact of

technology on student engagement and self-directed learning.

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