

Journal of Contemporary Educational Research

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Journal of Contemporary Educational Research

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Table of Contents

1	Reflections on the Construction of “Double-Qualified” Teachers in Higher Vocational Colleges <i>Shang Wang, Fei Peng, Xueyi Zheng</i>
7	Emotional Value Care to Promote Emotional Communication Between Teachers and Students Under the New Era of Education Mode <i>Yongdong Xiao</i>
13	Reshaping the New Paradigm of Classroom Culture Construction in Colleges and Universities <i>Huiping Han, Yuan Qin</i>
27	Strategies for Improving the Effectiveness of Professional Practice for Full-Time Professional Master Degree Postgraduate in Mineral Processing Engineering <i>Jiushuai Deng, Juan Hu, Zhiqiang Xu, Weidong Wang, Zhongyi Bai, Tingting Hu</i>
33	Why Teaching and Research Activities Lack Vitality?: A Probe into the Basic Psychological Needs of Teachers <i>Shenwei Jiang, Lingling Li, Yang Cui</i>
40	Analysis of the Application of Ink Art in Graphic Design Imagery <i>Ye Wang</i>

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Journal of Contemporary Educational Research

Reflections on the Construction of “Double-Qualified” Teachers in Higher Vocational Colleges

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Abstract: Vocational education is an important part of the overall education system. The development of higher vocational education is one of the guiding principles of education in China. The development of teachers is an important support for the development of vocational education. Teachers who can teach theoretically and guide students in practical work are known as “double-qualified” teachers. Building a highly qualified and professional double-qualified teaching team is the fundamental task in modernizing vocational education. Firstly, this paper discusses the importance of “double-qualified” teachers by describing the relevant policies of the Ministry of Education in China. Secondly, it reviews the research works of early scholars. Thirdly, it analyzes the main problems of teacher training in higher education institutions. Fourthly, it proposes five suggestions for the development of a “double-qualified” teaching team in higher education institutions. A high level and professional teaching team is an important support for the high-quality development of vocational institutions. School leaders must attach great importance to the construction of a “double-qualified” teaching team and increase the support in terms of policies, institutional protection, and financial investment.

Keywords: Double-qualified teacher; Higher vocational colleges; Vocational education; Teachers

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1. Introduction

Higher vocational education is an important part of the education system, and it should be vigorously developed ^[1]. Since the reform and opening-up, higher vocational education has exported uncountable numbers of skilled workers to various industries, providing a strong support for the national economy. China’s industrial upgrading continues to accelerate with companies iterating on their processes and technologies. The demand for skilled personnel in various industries is increasing, and vocational education is taking on a more prominent position ^[2].

Teachers are driving force behind vocational education development. Their level of specialization has a direct impact on the quality of talent development. However, with the iteration of production line processes and technologies, the theoretical knowledge and operational skills required by enterprises are also changing. This indicates that the knowledge imparted by teachers must be in line with the actual production of enterprises. In this context, the concept of “double-qualified” teachers has been introduced. A teacher who has both theoretical knowledge and the know-how of the production line and who can guide students in hands-on work is known as a “double-qualified” teacher. An important characteristic of a “double-qualified” teacher is that he or she has knowledge of the latest technologies in the industrial field and is able to introduce these technologies into the classroom ^[3].

In order to meet the needs of enterprises for manpower, higher vocational institutions are vigorously promoting the construction of “double-qualified” teaching teams. In 2018, there were 498,000 full-time teachers in higher vocational institutions in China, of which 191,400 were “double-qualified” teachers, accounting for 39.70% of the total. In 2019, the number of “double-qualified” teachers in higher vocational institutions reached 191,400, accounting for 39.70% of full-time teachers. In 2021, the proportion of double-qualified teachers in higher vocational colleges was 59% [4,5].

In 2019, the Ministry of Education released the Implementation Plan for Deepening the Reform of the Construction of the Double-qualified Education Team of Vocational Education in the New Era. According to the document, higher vocational colleges should strengthen the construction of “double-qualified” teachers in vocational institutions, proposing 12 solutions in terms of training development, evaluation, and treatment guarantee. In 2021, the Ministry of Education released the Plan for Improving the Quality of Vocational College Teachers (2021–2025), which states that vocational education should attach importance to school-enterprise cooperation and highlight the individual growth of “double-qualified” teaching teams; moreover, higher vocational institutions should strive to create a high-quality team, integrating full-time and part-time education, and promote the high-quality development of vocational education. In 2022, the Ministry of Education released the Action to Improve the Ability of Vocational Education Teachers. The document proposes the development of a “double-qualified” teachers’ standard for vocational colleges and the acceleration of the standardization of teacher training by higher vocational institutions [6,7].

Although “double-qualified” teachers in higher vocational colleges have made great progress in recent years, a significant gap still exists between the demands for jobs in enterprises, especially the demand for high-level talents. Vocational college teachers still face certain problems such as weak practical ability and low operation level, both of which have become important factors that affect the high-quality development of institutions.

2. Research status

According to Guo [8], young teachers generally lack practical teaching ability. He thus proposed that higher education institutions should create opportunities for young teachers to be involved in after-school training. Cui [9] believes that school-enterprise cooperation is an important way to promote the construction and simulation of a “double-qualified” teaching team. By analyzing the school-enterprise cooperations of Guangzhou Railway Vocational and Technical College, Peng [10] claims that the construction of a “double-qualified” teaching team is the impetus for the development of higher vocational colleges. Zhu [11] has suggested that higher vocational colleges should create a field training mode for professional teacher training and establish the internal and external system of teachers’ professional development. According to Long [12], the premise of cultivating high-quality professionals is the construction of professional teachers. He suggests that vocational schools should encourage teachers to actively participate in various practical activities in enterprises. Wang [13] believes that encouraging students to participate in various skills competitions can promote the construction of the teaching staff in vocational colleges, thus suggesting that teachers should take an active part in competitions and consciously improve their teaching ability.

3. Challenges

Many scholars have discussed the importance of teachers’ practical ability in higher vocational colleges from different dimensions and emphasized the necessity of building a “double-qualified” teaching team. However, the improvement of their ability and the construction of professional teaching teams are still faced with many challenges.

3.1. Teachers' lack of enthusiasm to participate in training

Some teachers in higher vocational colleges lack the enthusiasm to participate in the construction of the teaching staff. There are two main reasons for this. First, some teachers do not have a good understanding of the concept of “double-qualified” teachers. They simply believe that there is no value in becoming a “double-qualified” teacher. They feel that they should reduce the time and energy input in other aspects so as to ensure that the basic teaching work is unaffected. On the other hand, higher vocational colleges lack an effective incentive mechanism, which also contributes to reducing the enthusiasm of teachers. The majority of teachers often devote their time and energy to papers or patents because these seem more beneficial to them.

3.2. Flawed teacher training mechanism

The flawed training mechanism in the construction of “double-qualified” teachers in higher vocational colleges poses a huge problem. The first problem is the unreasonable design of the training time. There are some trainings that blindly occupy teachers' spare time without any consideration of their time and energy. This will inevitably disrupt the normal working and resting time of teachers and build negative emotions in them. The second problem is the non-targeted training content. Some training contents are out-of-date and far from the latest technologies used in enterprise. Such trainings are often ineffective. The third problem is the training focus. Some trainings tend to pay more attention to the process than the results. Some trainings are purely for the purpose of completing tasks, neglecting the development of teachers. What changes have teachers made after the training? What knowledge and skills have they gained? If these problems are not considered in advance, the training effect will inevitably be poor.

3.3. Demand for more teachers in the production line

Higher vocational colleges are positioned to provide high-quality skilled talents to frontline enterprises. The post demand determines the talent training system in vocational education. In recent decades, new processes and technologies have developed in various industries, which has led to the continuous change in the work content of frontline posts. Taking the automobile industry as an example, new energy vehicles have occupied a considerable proportion in the market, and there is a strong demand for graduates in the job market. However, there is a shortage of teachers who are competent in teaching new energy technology but a surplus of teachers who can teach fuel vehicle technology. This trend has forced the teaching system and content of relevant higher vocational colleges to change. If vocational college teachers still teach old technologies, the skills that the students master will inevitably fail to meet the demand of certain jobs.

4. Targeted suggestions

Teachers are the most valuable resources of vocational education. For any vocational institution, the construction of “double-qualified” teachers is crucial. How then to build a high-level and professional team of “double-qualified” teachers? We propose several suggestions in this paper.

4.1. Formulate incentive measures and systems

The construction of a “double-qualified” teaching team will not only enhance the comprehensive quality of teachers in higher vocational colleges, but also improve their teaching ability and teaching level. In order to ensure an efficient implementation of work, higher vocational colleges must strengthen the construction of a supportive system. It is necessary to establish an effective incentive mechanism that can enhance teachers' enthusiasm and initiative. This incentive model should be designed based on needs. Before formulating certain mechanism measures, it is necessary to deeply understand the needs of teachers (especially young teachers) by means of investigation. A scientific system guarantee is indispensable to

promoting the construction of “double-qualified” teachers. Only a perfect system can stimulate teachers’ enthusiasm to participate. If there is no such system, teachers will be timid and will not participate, which will eventually lead to a slow construction.

4.2. Enhance practical ability through school-enterprise cooperation

School-enterprise cooperation is an effective way and an important thrust to building a “double-qualified” teaching team. The Ministry of Education has clearly pointed out that vocational institutions should vigorously promote the talent training mode of school-enterprise cooperation. Vocational colleges should become the “masters” of the school-enterprise cooperation. They should take the initiative to contact enterprises and seek various ways of cooperation. Only when the school-enterprise cooperation mechanism is established can teachers have more opportunities to learn new technologies in the production line. In this way, teachers’ practical ability and teaching quality can be improved. Students will be able to learn technology thoroughly and adapt to specific posts with the improvement of teachers’ teaching quality. In addition, higher vocational colleges should also consider hiring enterprise engineers to work as part-time teachers in schools. They can undertake part of the teaching task, especially in tasks related to practical knowledge, and jointly complete the training of students. In short, schools should look from the perspective of enterprises. What kind of talents do enterprises need and what skills have not been mastered by our teachers? Based on that, they should then cultivate talents that meet those needs and actively seek help from enterprises.

4.3. Use various skills competitions to improve teachers’ ability

Skills competition is an important part of the vocational education system. It plays an important guiding role in the reform of vocational education. Skills competition is not only an arena for students in higher vocational colleges, but also a stage for teachers to exercise and improve their abilities. Higher vocational college teachers can attempt to integrate the contents of competitions into classroom teaching. This teaching mode can stimulate students’ interest for learning and improve teachers’ teaching ability. Teachers can also put together the application form for entries, winning images, and videos. These materials can then be consulted by students after class. These materials would help stimulate students’ interest in learning and cultivate their creative thinking ability. They also provide a resource reserve for future contestants. The contestants require not only solid theoretical skills and skilled operational skills, but also a certain degree of creativity for skills competitions. When preparing for these competitions, teachers would eventually learn the competition rules and conduct in-depth research on relevant professional knowledge. This process would naturally enhance their abilities.

4.4. Actively attract enterprise engineers

Enterprises are important beneficiaries of vocational education; thus, they should also be participants. However, there is a dearth in the participation of enterprises in higher vocational college talent training at present. Taking the opportunity of building “double-qualified” teachers, higher vocational colleges should actively promote the construction of teaching team that integrates both full-time and part-time teaching. Schools should consider setting up a “mobile staffing” system consisting of part-time teachers and a part-time teacher resource pool. Schools should also continue to invest funds, explore relevant systems, and vigorously promote the construction of “double-qualified” teachers. On the one hand, technicians from enterprises should “come in.” The training classes in enterprises should be advanced to higher vocational colleges, and enterprise managers or technicians should serve as part-time teachers. On the other hand, school teachers should “go out.” Schools should encourage teachers to practice in enterprises and learn new technologies.

4.5. Strengthen further education and training

The Ministry of Education has pointed out that efforts should be made to improve young teachers' technical application ability and practical ability. Young teachers should not only have solid basic theoretical knowledge and higher teaching level, but also strong professional practical ability and rich practical work experience. Since higher vocational colleges are positioned in such a way that their responsibility embodies training technology applied talents for enterprises, they pay special attention to the cultivation of students' innovation ability and practical ability. The improvement of students' innovation ability and practical ability cannot be separated from a high-level and professional team of teachers. In order to create such a team of teachers, schools should strengthen their training efforts. The training content should be targeted in order to ensure a good training effect. On the one hand, the organizer should find out what kind of training is needed for teachers through questionnaires and other forms. On the other hand, the organizer should communicate with enterprises and focus on their latest technologies. In addition to training, schools can also consider organizing various forms of teaching and research activities. School leaders should encourage teachers (especially young teachers) to boldly carry out curriculum reform and innovate teaching models.

5. Conclusions

Vocational education and general education are two different types of education with equal importance. Teachers' professionalization directly affects the quality of talent training in vocational education. Creating a high-level and professional faculty is an inevitable requirement for the high-quality development of vocational institutions. In higher vocational colleges, teachers' practical ability is in fact a shortcoming, which affects the quality of talent training and students' employment rate. School leaders should pay close attention to promoting the construction of "double-qualified" teachers as it is the key to improving the quality of talent training in vocational education.

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Disclosure statement

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Author contributions

S.W. and F.P. conceived the idea of the study and wrote the first draft of the paper. X.Z. revised the format of the article.

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Emotional Value Care to Promote Emotional Communication Between Teachers and Students Under the New Era of Education Mode

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Abstract: With the development of the times and the progress of the society, the ancient education mode can no longer meet the requirements of the times. The concept of educating people must keep pace with the times. The way teachers and students get along is no longer like in ancient times, where teachers teach students to listen. In the new era, it is necessary to build a new model of interaction between teachers and students. If educators pay attention and come to understand students' psychology, listen to students' aspirations, tend to students' emotions, grow in love for education, and treat students from their hearts, they would be able to win the favor of students. Paying attention to students' emotional value can promote emotional communication between teachers and students. It is possible to adapt to the requirements of the new era for the construction of morality and ethics among teachers by caring for students' emotional value.

Keywords: Teacher's morality; Teacher's style; Emotional value; Emotional communication

Online publication: January 3, 2023

1. Introduction

In recent years, strengthening the construction of morality and ethics among teachers has become the top priority of schoolwork. The new era puts forward new requirements for teachers in the process of teaching and educating people. Teachers should be student-oriented, pay attention to and care for students in this process, protect students from physical and mental harm, as well as nurture a harmonious teacher-student relationship. In the process of education and teaching, it is necessary to provide appropriate emotional value care to students ^[1].

2. Connotation of emotional value

Emotional value is a term that is often mentioned in recent years. The term "sentimental value" originates from the fields of economics and marketing. Emotional value is a rare ability. It includes positive emotional value and negative emotional value. It is the ability to arouse positive emotions and bring good feelings to people. What we usually refer to is positive emotional value. Emotional value includes two aspects: one is the ability to empathize with other people's emotions, and the other is to convey one's own emotions (positive or negative) to the other party. Emotional value is the ability to positively or negatively influence others through the expression of emotions. When we get along with someone, it feels like a "spring breeze" from that individual and we feel comfortable. This individual can thus be said to have provided us with high emotional value; in other words, this individual has high emotional value. On the other hand, if we see

a person and feel uncomfortable, this person might have given us a negative emotional impact; thus, it can be said that this person has low emotional value. Everyone wants to get along with individuals whose emotional value is at the peak, and they would not have the intention to get along with individuals whose emotional value is at its lowest ^[2-4].

3. Factors affecting students' emotional value in the process of education and teaching

In the process of education and teaching, there are only three factors that affect students' emotional value: teachers, students, and the knowledge imparted by teachers to students.

3.1. Teachers

3.1.1. External factor

A teacher's dressing, expression, speech, and behavior will all affect the emotional value of students. Therefore, teachers should pay more attention to their dressing and dress appropriately, strive to use artistry in speech and speak appropriately, as well as avoid using "yin and yang" to communicate with their students. In addition, teachers should use proper language and create a relaxed and comfortable environment when communicating with students, so as to ensure a cordial feeling among students.

3.1.2. Personality factor

A teacher's personality, character, and image in students' minds will all affect the emotional value of students. It is important for teachers to consciously maintain their image and pay close attention to their reputation from the perspective of students. There are times when their image carries a butterfly effect, as it may affect a large number of students.

3.1.3. Attitude and emotion factor

A teacher's attitude and emotion have a significant influence on the teaching effect. Having a "sunny" and positive attitude is infectious as it influences students' emotions and the effect of education and teaching. Therefore, it is necessary for teachers to display emotions that can be freely retracted and maintain emotional stability. No matter what happens to the teacher himself or herself, he or she must be calm and composed from the moment he or she enters the classroom. Having a stable mood influences the shaping of students' mood stability. When the teacher's mood is stable, even if the students' mood is fluctuating at that time, they can be calmed down under the comfort of the teacher's mood.

3.1.4. Teaching style factor

By adopting different teaching styles, teachers can effectively mobilize the learning enthusiasm of the whole class. Therefore, teachers should expose themselves to different teacher strategies and apply them in the classroom. Various teaching methods, including the lecture method, discussion method, visual demonstration method, practice method, reading guidance method, task-driven method, visiting teaching method, on-site teaching method, independent learning method, *etc.*, are used interleaved or combined. Teachers should form a variety of teaching styles instead of sticking to a single style of teaching. For example, if a teacher is able to handle students with different learning abilities when asking questions, the students would think that this is a teacher who is capable of taking care of everyone, rather than an "eccentric teacher" who only focuses on their academic performance ^[5-7].

3.2. Knowledge imparted by teachers

In the process of teaching, the lessons taught by teachers must be able to mobilize the enthusiasm of students. This requires the selection of teaching contents that can arouse students' positive emotional value when

preparing for lessons, in addition to handling the content of teaching materials in a reasonable manner, so as to stimulate students' internal motivation for learning. Preparation before class is extremely important. However, it is not easy to prepare a lesson. Lesson preparation involves looking for appropriate teaching materials and considering the specific situation of students in different classes. It is important for teachers to have a good understanding of students' style of learning, whether it is visual, tactile, or auditory. Once they have a thorough understanding of students' learning situation, they can then prepare the teaching courseware according to the students' learning characteristics. In the teaching process, different interactive methods should be adopted based on the students' grades.

3.3. Student

Since students are the main body of learning, teachers, at the best of their ability, often attempt to mobilize students' positive emotions and be more attentive to students' emotions in the classroom. However, this kind of mobilization is an external factor. In the teaching process, the quality of teachers' teaching effect depends on the absorption of students. This situation is highly dependent on students' emotional state. Hence, students should actively cooperate with their teachers to adjust their emotional states, and teachers, on the other hand, should also focus on guiding students in regulating their emotional states ^[8-10].

In short, in the education process, by intentionally caring about students' emotional value, teachers would be able to promote emotional communication with the students, increase the probability of teacher-student interaction, and effectively improve the efficiency of listening among students, thereby improving the effectiveness of classroom education and teaching.

4. Caring for students' emotional value in the process of education and teaching promotes emotional communication between teachers and students

4.1. The emotional values of teachers and students are mutually influential

The emotional value of teachers influences that of students, and vice versa. As adults, teachers have richer life experience than students. Teachers generally can control their emotions better and maintain a stable mood.

For example, in a situation where a conflict occurs between a boy and his dormmate, the boy would be too emotional to see the situation clearly. Hence, the counselor should first stabilize the boy's emotions; then, the counselor should attempt to make conversations from the boy's perspective, convey positive emotional value to the boy, guide him graciously and explain the ins and outs of the matter clearly, as well as pay attention to his emotional value. Once the boy feels that the counselor is capable of understanding him, and his mood changes, only then can effective emotional communication take place. This changes the originally tense atmosphere into one where good conversation can take place. In that way, the boy would be more willing to cooperate with his teacher to solve the conflict with his dormmate. There is nothing wrong with solving the problem harmoniously. It can be seen that emotional value is contagious between teachers and students. Positive emotional value makes people feel comfortable, whereas negative emotional value makes people feel uncomfortable. Therefore, in the process of educating people, positive emotional value should be conveyed ^[11].

4.2. Teachers convey positive emotional value in the process of education and teaching to enhance emotional communication with students

In the process of education and teaching, when teachers convey positive emotional value to students, students will definitely feel the care provided. There is no doubt that people prefer interacting with individuals who have positive energy as it is more comfortable to get along with individuals whose emotional value is positive.

For example, moral education lessons are often held in one class, with more than one hundred students attending the class, and the seats are usually fixed to facilitate management. In one scenario, while a teacher was speaking enthusiastically on the podium, a boy who was sitting in the last row had a sudden outburst of emotion directed at the teacher on the podium. The teacher was not feeling well at the time, but as an adult, the teacher controlled his own emotions. This incident occurred as a result of a seat-change situation, in which the boy who was initially seated in the second row from the front in the last semester was forced to change his seat to the last row. When the boy requested to change his seat, the teacher did not consider his emotional value, which caused the boy to be upset, and thus the sudden outburst of emotion. The teacher dealt with the situation immediately by asking one of the boy's classmates to talk to the boy after class and changing his seat once again. Once the issue was resolved, the incident did not further affect the student's process of getting along with the teacher and other students. On the contrary, the mutual understanding and respect enhanced the relationship between the teacher and the students.

As teachers, we ourselves sometimes have emotions and negative emotional value, but even so, we are adults after all, and we are capable of controlling our emotions in a timely manner. For students, such sudden outbursts of negative emotions are unavoidable; the key is that we should pay attention to them and guide them properly. This would not only help students release positive emotions and reflect on how to get along with others, but also promote emotional exchanges between teachers and students as well as enhance the relationship between them.

4.3. Teachers' concern for students' emotional value in the process of education and teaching can regulate students' emotions

Considering that emotions have such a strong appeal, teachers themselves must be in a good emotional state. In the process of education and teaching, teachers should be in a good state of mind, maintain a positive and optimistic attitude, and provide students with positive emotional value. In that way, students would be more willing to accept them, get close to them, and open up to them, especially when they have concerns. Sincerely praising and encouraging students in the classroom as well as equally treating each student will be of great help to mobilize students' enthusiasm for learning.

In the process of education and teaching, how does a teacher's concern for students' emotional value affect their emotions? First of all, the tone, volume, and gentleness of a teacher's voice will affect the emotional value of students differently. For instance, a Chinese teacher who had always impressed the students with his gentle and delicate voice suddenly spoke loudly in class. The reason was that he wanted to attract the attention of a number of students who were about to fall asleep in class. When his emotional value changed, the students immediately felt the emotional change, and thus make adjustments and sat up straight. Secondly, a teacher's emotional value can be used as a substitution in the process of education and teaching, bringing students into a comfortable space. For instance, in another scenario, two students who were sitting in the front row began quarreling during class. This affected the class discipline, so the teacher immediately used teaching strategies to mobilize the emotional value of the students. The teacher said, "I think these two students are very enthusiastic, and they must have something to tell the teacher in the office after class." The teacher instantly minimized the conflict between the students and turned the conflict into an after-class processing matter, bringing the students' thoughts back to the lesson without affecting the normal teaching progress. The other students who were observing could indeed appreciate the teacher's humor and flexible way of doing things. Thirdly, a teacher's emotional value is alike a "spring breeze" and a shower of rain that can nourish the hearts of students. For example, there was a student who had always scored excellent grades. However, in one of the exams, he failed the paper, and during class, the teacher noticed the student drooping his head, feeling depressed. It happened that it was a history lesson, so the teacher recounted a historical event to imbue the student with positive emotional value. The student who

failed the exam gradually eased up after listening to the story as if a “spring breeze” nourishing his heart [12].

4.4. Teachers provide positive emotional value in the process of education and teaching to promote emotional communication with students

Negative emotional language can hurt students’ emotions. Hence, teachers ought to be concerned about providing positive emotional value by advocating the use of positive language when communicating with students.

There was an incident where a student who was about 1.9 meters tall told his teacher that he had lost his textbook. Since the teacher had been in charge of this particular class for a long time, the teacher and his students were familiar with each other, and thus their interactions were often in the form of jokes. Almost casually, the teacher replied, “You are so big, but you could not even protect this book well; how then can you protect anything else?”. As soon as the words carrying negative emotional value were uttered, there was an immediate change in the boy’s expression. All the other students looked at him, and the teacher immediately realized that even a casual joke could hurt the student. The teacher immediately took remedial measures by saying, “It was only an accident that the book went missing, and it does not affect the way you protect other things.” Regardless of whether this sentence had any effect or how much effect it could have on the student, it was necessary for the teacher to take remedial measures immediately. In the course of the class in the future, the teacher should consider asking the student more questions so that the student would see the attentiveness and feel the sincere care from the teacher.

In the process of teaching and educating people, teachers should pay attention to the language used because the most hurtful words are not foul or cruel words, but rather delicate and casual words. Teachers must subconsciously pay attention to their everyday language when communicating with students. They should not only make effort to observe their words and expressions, but also pay attention to students’ emotions at all times when speaking. The words used by teachers should reflect their psychological care for students and allow students to feel that their teachers do care for their feelings and emotions. In this way, students would be more willing to open up to their teachers and communicate with them, thus promoting emotional communication between teachers and students [13].

5. Conclusion

The era where teachers were superior, and students were either scolded or beaten as punishment has long passed. As teachers in the new era, we cannot continue to be old-fashioned teachers; instead, we must keep pace with the times, learn more about psychology and how to use it properly, pay attention to students’ dynamics in a timely manner, as well as care about students’ emotions. As new age teachers of value, we must constantly cultivate our own virtues while educating people, be role models and teachers of virtue, use appropriate words and carry out the right deeds, wield the power of examples to guide the “flowers” of our motherland in the 21st century to move in a positive direction, possess the correct “three views,” ingrain students with positive emotional values, and be a positive guide for students as they grow.

Disclosure statement

The author declares no conflict of interest.

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Reshaping the New Paradigm of Classroom Culture Construction in Colleges and Universities

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Abstract: The classroom is an important place for “three guarantees” education. Classroom culture refers to a group culture with both teachers and students as the main body, the classroom space as the carrier, and spiritual connotation as the core. The creation of classroom culture with school characteristics, characteristics of the times, and Chinese characteristics can reflect the aesthetic perspective and value orientation of the school, which has far-reaching significance for the growth of students and their future development. This paper takes the construction of classroom culture in colleges and universities as the research subject, obtains real data, and conducts variable analysis through questionnaire survey and structured interview, with the aim of enriching the educational function of the classroom. It involves how the classroom culture pays attention to the current life, needs, and desires of college and university students, along with the problems and functions that should be improved in the traditional construction. This paper also discusses and reshapes the new paradigm of classroom culture construction in colleges and universities based on the combination of student growth, subject areas, school culture, and advanced technology.

Keywords: Universities; Questionnaire; Interview; Educating function; Classroom culture construction; Discussion; Remolding; New mode

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1. Research significance

The author found that the classroom culture proposed in western literature is a reflection of a specific phenomenon or a specific targeted object, which grows in a specific “soil.” However, China has a large population base but limited classroom space. The western experience of classroom culture construction in Chinese universities lacks material foundation. Domestic literature pay more attention to school culture and class culture without much attention to classroom culture in colleges and universities. The traditional Chinese classroom culture is restricted to physical space comprising platforms, tables and chairs, blackboards, slogans, *etc.* Under the general trend of “striving for a new journey and making contributions to a new era,” the connotation of classroom culture construction needs to be repositioned according to the development needs of college and university students as well as that of colleges and universities.

Classroom culture has certain functions, including guidance and radiation, education optimization, molding, cohesion and encouragement, restraint and regulation, as well as debugging and consolation, expressing the characteristics of being contagious, integrated, and penetrating. A good classroom culture can be an important medium for both students and teachers to influence each other. However, there are several problems, including rigid tables and chairs, cold clocks and watches, lonely white walls, monotonous slogans, orderly platforms, conservative blackboards, and other teaching aids. The objective existence of these classrooms that display slogans and plaques, possess limitations, and reflect the serious

lack of fun culture, play culture, characteristic culture, and innovation culture, cannot meet the diversified needs of college and university students. If classroom elements can carry the rich connotation of spiritual culture, material culture, behavioral culture, institutional culture, and ecological culture, they will certainly radiate more positive energy and imperceptibly influence the value orientation and spiritual pursuit of both teachers and students. It is of great practical significance for the growth of both students and teachers, the construction of a green campus, and that of a beautiful China.

2. Problems in classroom culture construction

In the first ten days of September 2022, an online questionnaire survey and structured interview were conducted among undergraduates, postgraduates, and doctoral students. Among the students who participated in the questionnaire, 1,528 were college graduates, 286 were master's degree candidates, and 72 were doctoral students; 1,886 questionnaires were recovered, of which 51 were invalid; the effective recovery rate was 97.30%. The content of this questionnaire concerned the structural level of organizational culture (**Figure 1**), with 35 questions set, involving seven parts: students' cultural understanding of the classroom, system construction, material construction, management team, cultural and creative activities, incentive mechanism, and digital platform.

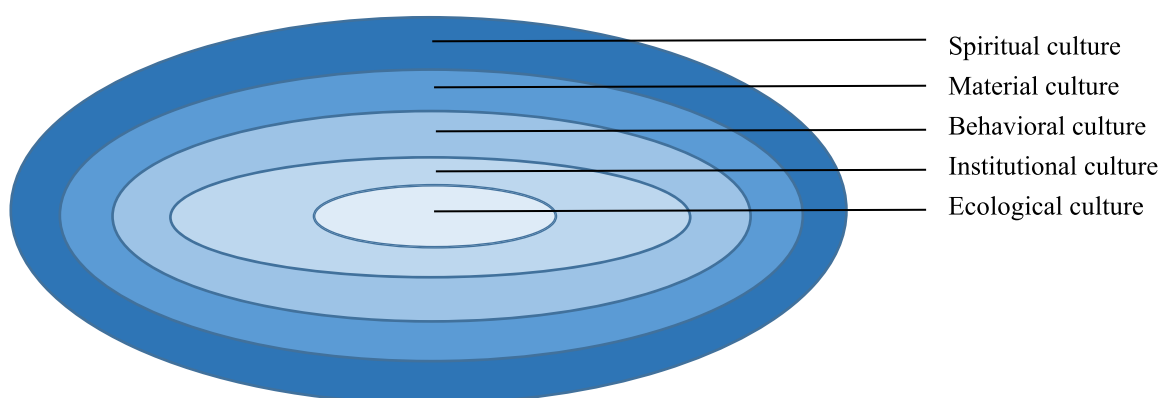


Figure 1. Structural level of organizational culture

In late September 2022, frontline teachers from the School of Earth Science and Resources, the School of Engineering Technology, the School of Geophysics and Information Technology, the School of Water Resources and Environment, the School of Humanities and Economics, the School of Information Engineering, the School of Land Science and Technology, the School of Mathematics and Science, and the School of Marx, as well as 36 teachers from the Discipline Office, the Science and Technology Office, the Academic Affairs Office, the Academic Engineering Office, and the Graduate School were contacted for an online interview to seek their opinions and suggestions on classroom culture construction.

According to the survey data, 96% of the students had never heard of classroom culture construction, while 4% had little knowledge of classroom culture construction. The data derived from the interview showed that 52% of teachers were indifferent to the construction of classroom culture, 21% lacked comprehensive understanding of classroom culture construction, while 27% of teachers made several suggestions and comments. In short, there are several existing problems in the construction of classroom culture in colleges and universities.

2.1. Lack of spiritual culture

Spiritual culture is the core of classroom culture, and it is the values, life pursuit, and learning attitude of college and university students in their classroom life. The data derived from the questionnaire and interview showed that the classroom's spiritual culture needs to be enriched.

Based on the data, 52.5% of students had a common spiritual pursuit in the classroom. Among them, 280 students pursued to learn from each other in the classroom; 1,090 students pursued tolerance and love in the classroom; 1,530 students pursued a bright and clean classroom; 860 students pursued a classroom with geological characteristics; 1,381 students felt that the classroom should have Chinese characteristics; 1,306 students desired a small space in the classroom to talk about everything under the sun; and 899 students valued healthcare and fitness in the classroom (**Figure 2**).

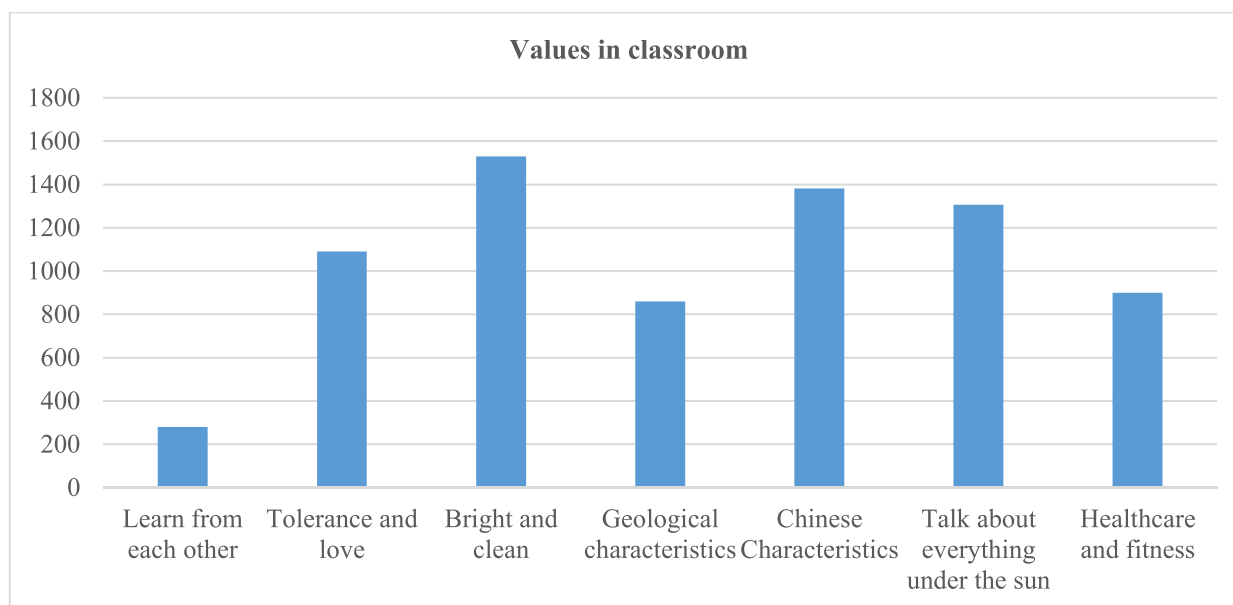


Figure 2. Spiritual pursuit of classroom culture

In the interviews with the students and teachers from various colleges and functional departments, it was found that the convenience brought by the internet has made knowledge acquisition and entertainment more independent, reduced face-to-face communication between teachers and students and among students themselves in the classroom, and even led to poor self-control among students when dealing with entertaining and fragmented information. Students are often in their own realm of “looking at their phones,” leading to the increasingly incidence of depression among students, The spiritual and cultural life of students is deteriorating.

2.2. Single material culture

2.2.1. Insufficient infrastructure

Material culture is the carrier of classroom culture and the material basis of campus culture. With the expansion of college and university enrollment, schools have gradually increased their investments in hardware facilities. As a result, classroom facilities have improved to a certain extent, the green area in campus has increased to a certain extent, and the investment in laboratories has also increased. However, on the whole, the construction speed of hardware facilities and equipment is far from meeting the diversified needs of students.

The data derived from the questionnaire showed that 11.32% of students felt that the classroom infrastructure can meet their needs, 10.91% felt that the classroom infrastructure can basically meet their

needs, 71.26% felt that the classroom infrastructure was not able to meet their needs, and 6.51% were unconcerned about the classroom infrastructure (**Figure 3**). Through comparison, the majority of students who were satisfied and basically satisfied with the classroom infrastructure consisted of graduate students. This finding also reflects that the school prioritizes postgraduates over undergraduates. In addition, more than 70% of students felt that the classroom should be equipped with various functional areas, such as a fitness area, a traditional Chinese culture area, a water dispenser area, and a psychological counseling area, in order to facilitate students' learning, communication, and entertainment. Under this effort, the classroom will not be confined to a single concept of learning.

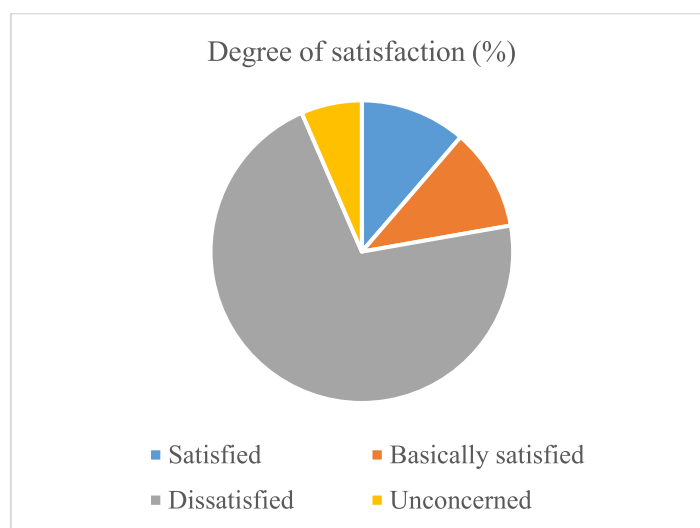


Figure 3. Analysis of classroom infrastructure satisfaction

The data also indicated that the reasons for the poor sense of experience are the narrow classroom space and the old facilities. More than 80% of teachers and students expressed their eagerness to set up a functional area for physical activity in the teaching building. The main reasons include the drop in temperature outdoors during winter, the overcrowded gymnasium, and the absence of a separate fitness area for teachers and students. It is inconvenient and unsightly for teachers and students to take off their tops to exercise together. Therefore, it is necessary to set up more functional areas in the public areas of the classroom or teaching building so as to integrate the spiritual culture and material culture in classroom culture construction, while taking cultural and sports activities, leisure, and entertainment as the carrier.

At the same time, some students reported the lack of maintenance of existing infrastructure. Even after reporting about the damaged tables and chairs, the school did not provide any timely feedback. This problem remained unresolved even after a long time, taking up to about a semester. The low maintenance efficiency and poor maintenance effect are evident problems. In addition, several students also brought up the issues of unreasonable setting of classroom infrastructure and narrow desks in some study rooms, which cannot meet the normal demand for self-learning. The existence of these problems is extremely unfavorable to students' confidence in building classroom culture, and it is also difficult for both teachers and students to develop a sense of belonging and pride in the construction of classroom culture.

2.2.2. Absence of a management platform

Among the students who participated in the questionnaire survey, 75.93% of them claimed that the school did not have a special classroom management platform, and more than 86.25% of them felt that it was necessary to build a classroom management platform to facilitate communication among students, classroom administrators, and counselors, so as to achieve efficient use of classroom resources.

Through the interviews with the students, it was found that building a classroom management platform is an urgent need in the context of the pandemic. The students asserted that since they were not allowed to return to school during the pandemic, establishing a platform to complete online procedures, such as ensuring bookmarks, would indeed be beneficial. There are times when they need help to mail things, but the series of processes as required by the school is a major hindrance. With such a platform, electronic files can be retained, and the relevant platform management personnel or classroom administrators can help the students to mail them directly. In that way, they do not need to be physically present at their college or university to apply for seals, *etc.* The establishment of a management platform will not only promote communication among students, counselors, and classroom administrators, but also minimize the tedious processes, thus improving efficiency. At present, the classroom management platform has yet to be established.

2.2.3. Lack of behavioral culture

Behavioral culture is the means and embodiment of governance in colleges and universities as well as the dynamic embodiment and specific refraction of the spiritual core on those in colleges and universities. Classroom behavioral culture is a specific form of classroom culture construction, which can fully demonstrate the comprehensive quality of students. However, according to the survey, the formalization and simplification of classroom culture construction activities in colleges and universities are still a “norm,” and effective “classroom culture” activities have yet to be designed.

The construction of behavioral culture cannot be separated from specific practice and promotion ^[1]. The dimension of cultural input in cultural identity advocates that individuals should actively participate in cultural activities and absorb relevant cultural information. Behavioral organizational cultural identity also emphasizes the implementation of specific behavior activities ^[2]. However, according to the survey results, 95% of students affirmed that the school had never held any cultural or creative activities in the classroom (**Figure 4**); 74.8% of students claimed that they would actively participate in similar activities held by the school. In the overall evaluation of classroom culture construction, 4.9% of students were satisfied, whereas more than 95% of students were not.

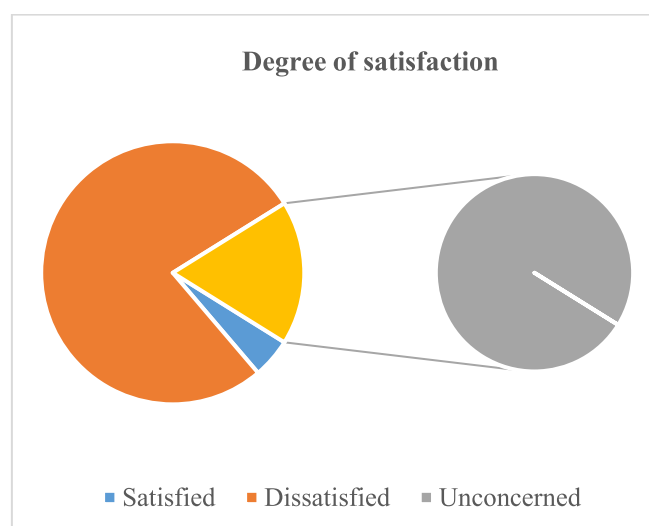


Figure 4. Analysis of activities held in the classroom

Through later interviews, it was found that at present, the school pays more attention to students' achievements, scientific research, employment, and other aspects, while neglecting students' spiritual pursuit in their learning and daily life as well as the comprehensive cultivation of all-staff education and

all-round development. There is also a lack of investment in classroom culture construction and the contradiction with the all-round demand for diversified classroom functions expected by college students. In particular, the teachers put forward the idea that classroom culture is not a matter for one department or a group of staff, but rather a major event involving the whole school and all staff. In reality, the attribution and representation of classroom culture construction have seriously weakened the participation of all staff and the internal vitality of classroom culture.

2.2.4. Old system culture

2.2.4.1. Lacking integration of culture and education

In classroom management, openness and communication should be taken as the basic principles to implement “democratic management” [3], while paying attention to the democratic openness and educational function of management. College students are not only the beneficiaries of the Chinese culture, but also the active participants and promoters of the Chinese culture [4]. However, the data showed that about half of the students felt that their classmates or they themselves have issues complying with the rules and regulations. Among them, 66.3% of students felt that they had poor awareness of complying with the rules and regulations, while 33.5% felt that the rules and regulations were incomplete. In terms of the existing classroom management mode adopted by the school, 82.5% of the students believed that the school is dominated by management and has too many constraints; 16.1% believed that it is the combination of discipline and education, with different proportions; 1.4% believed that the school emphasizes on self-management and guides the cultivation of self-discipline among students (**Figure 5**).

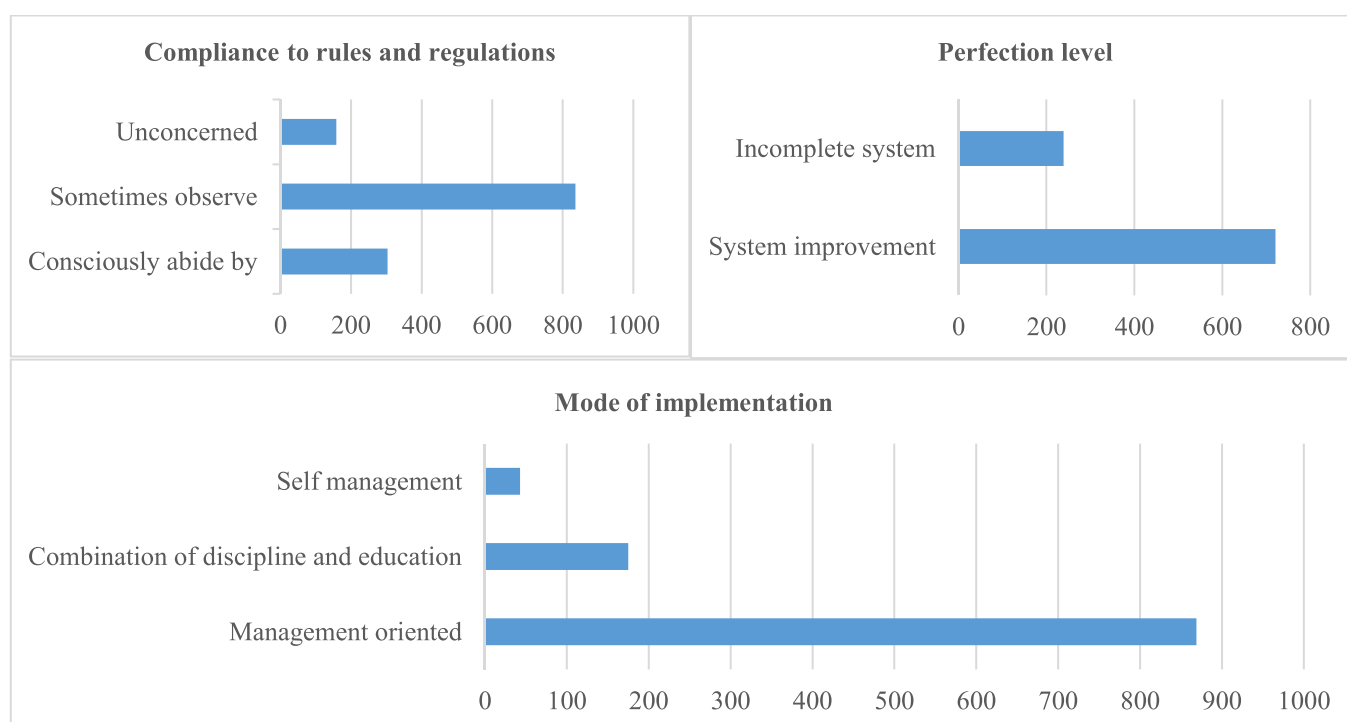


Figure 5. Investigation and analysis of school management attitude

The results from the interview also showed that as far as China University of Geosciences (Beijing) is concerned, the management of student classroom is still dominated by rigid constraints, such as “Article 39: In order to strengthen the construction of spiritual civilization in student classrooms and correct various uncivilized behaviors and bad habits, once violations are found, they will be reported to the Student Work Office and the Security Office at the same time, and the investigation and punishment of students’ violations

will be strengthened.” It can be seen that in classroom management, colleges and universities are used to reporting in accordance with the rules and regulations, dealing with them seriously and enforcing them.

Therefore, there is a certain gap in the construction of classroom culture in colleges and universities. The management mode is mainly management-orientated, neglecting the combination of discipline and education. It does not truly reflect the humanistic education management concept and has not been integrated into the classroom management of college and university students.

2.2.4.2. A need to enrich the construction team

When team members interact, participate in activities, and form common values, the team is said to be building norms ^[5]. Classroom administrators, counselors, and frontline teachers should be leaders and correctors in the process of establishing norms and forming culture. According to the questionnaire data on the role of classroom administrators, 25.6% of students said that they had sought the help of classroom administrators, while 74.4% of students claimed that they had never sought help from classroom administrators. The data on the importance of counselors in classroom functions showed that only 4.3% of students believed that counselors care a lot about the setting of classroom functions, 56.4% believed that counselors have a very general understanding of their classroom conditions, and 39.3% of students believed that counselors do not care about classroom related issues (**Figure 6**). As individuals who are directly related to problems and have relevant ways of understanding, thinking, and feeling, student leaders can inherit and innovate organizational culture through positive attitudes ^[6]. However, according to the survey, in terms of student participation in management, more than 90% of students believed that the school has yet to achieve the role of student backbone assistance and guidance.

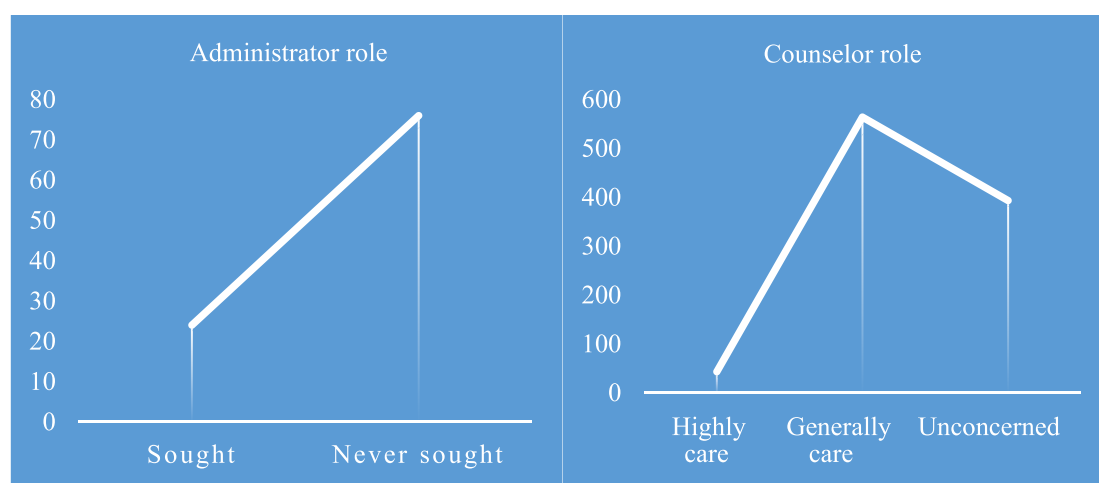


Figure 6. Attention of administrators and counselors to classroom orientation

Through the interview, it was found that although colleges and universities have requested student counselors to participate in the guidance of students’ life, mental health, and other aspects, compared with full-time counselors, their comprehensive qualities in terms of their sense of responsibility, experience, ability level, foresight, and other aspects still require improvement. At the same time, due to the incompatibility between counselors and students, and the complexity of students’ daily management, the investment of counselors in student classroom management is quite limited. In this regard, some interviewees mentioned that it was rare for counselors to come to the classroom to learn about it in person.

2.2.4.3. A need to update the system construction

Classroom management is complex, systematic, and comprehensive. Although many colleges and

universities will set relevant rules and regulations for the construction of classroom culture, including mandatory rules such as laboratory management regulations and moral rules established by convention in the classroom, they often lack publicity for rules and regulations in the construction of classroom culture, thus making it difficult to play the educational and guiding roles of classroom management system culture. In addition, the institutional culture of colleges and universities usually begins from the order of prohibition and explicitly prohibits relevant classroom behaviors, such as forbidding to leave personal belongings in the study room after leaving. Most students are used to keeping books and electronic facilities on their desks in the classroom or study room before meals or when leaving the study room at night, instead of taking them with them. Schools often have disputes with students. For most students, these bottom-line rules cannot be the founders and guides of classroom culture construction. In contrast, it was found through the survey that some students use laptops in the classroom. However, the classroom is not equipped with enough charging sockets, so many students are required to bring their own plugs. However, the behavior of “bringing their own” is not encouraged by the construction of classroom culture.

To sum up, some mandatory provisions do not meet the students’ self-learning and research needs, thus lacking the feasibility and reality of classroom culture construction. It is difficult for teachers and students to reach a point of acceptance in the process of promoting specific rules and regulations.

2.2.4.4. Incentives remain vacant

The incentive mechanism is of great significance to promoting the growth of college and university students [7]. Almost every student had suggested that the school should establish an incentive system for the cultural construction of excellent classrooms. However, the survey results showed that almost all schools did not have an incentive system for classroom cultural construction. More than 85% of students believed that incentive measures could not promote the classroom and individuals. Exploring the reasons, we found that most schools do not recognize the importance of classroom culture construction requiring incentives. Very few schools had too narrow incentives, accounting for 75.9%. The proportion of those who were not well-motivated was 11.2%, while the proportion of those who were uninterested in classroom culture construction was 9.7% (**Figure 7**). In terms of the relationship between the incentives for classroom culture construction and individual awards, more than 95% of students believed that the school offered no incentives for classroom culture construction and individual awards.

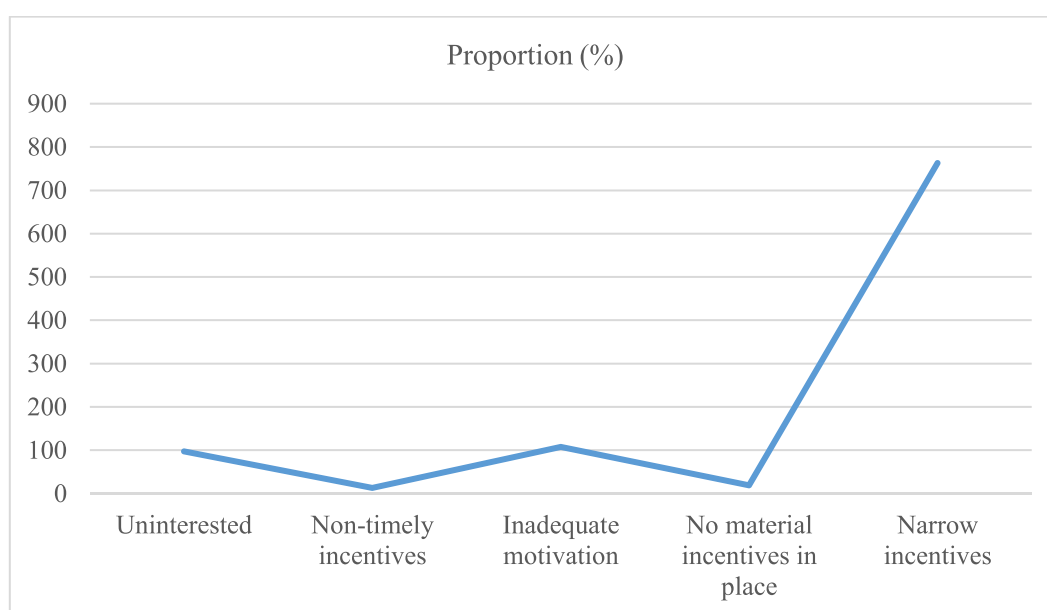


Figure 7. Cause analysis of incentive measures failure

According to the interviews with undergraduate students, the use of illegal electrical appliances in the classroom, for example, would affect the personal research guarantee or the award and evaluation within a year, but the performance of individuals in the classroom would not contribute to their academic achievements. According to some interviewees, “Although some students have good grades, they really need to improve their manners.” It is evident that the school has always failed when evaluating the incentives for the various performances of students in the classroom. This is just the full embodiment of personal ideology and morality, political literacy, and one of the important conditions for measuring personal comprehensive quality.

2.2.4.5. Punishments are difficult to implement

Corresponding to the vacancy of incentive measures is the lack of punishment measures. In the interview, it was found that in addition to normal learning needs, students also showed certain behaviors unrelated to learning in the classroom, such as eating snacks, chatting, playing online games, and listening to music. These behaviors can be divided into “non-harassing” and “harassing.” The former includes behaviors that do not interfere with other people’s normal learning needs, such as surfing the internet, listening to music, and watching videos, whereas the latter includes chatting, eating snacks, and other behaviors that interfere with other people’s normal learning needs to a certain extent. No matter what kind of behavior, since students are vulnerable to the impact of the surrounding environment, students who expend the aforementioned behaviors will often play a “demonstration role,” causing interference to other students to varying degrees. This state is attributed to the lack of supervision and punishment of uncivilized behavior in the classroom. The “strict and loose regulation” in colleges and universities often only takes into account the comprehensiveness of constraints, while neglecting the feasibility of implementation, which directly leads to certain phenomena that undermine the construction of classroom culture from time to time. For example, a place with leftover snacks is unlikely to be a choice for students to study.

2.2.5. Lack of ecological culture

In ecology, the classroom is one of the places where teachers and students are able to experience the vibrancy of life together. The ecological culture of the classroom primarily focuses on the interaction between individuals and the environment. Development is a process in which a person constantly becomes aware of and responds to his or her environment and continues to change. Both the teachers and the students are the subjects of the ecosystem, while the environment is the object. The environment includes both physical and psychological environment. The vigor of the ecosystem comes from the interaction between teachers and students, the subjects and the environment, as well as the functional areas outside of teaching and learning. The classroom ecosystem is an integrated system based on teaching activities, comprising teachers, students, and the classroom environment. Among them, teachers and students play certain roles in restricting, promoting, coordinating, and optimizing the classroom environment. Teachers should pay attention to students’ physiological, psychological, age, behavior, and other characteristics.

Based on the particularity of the classroom ecosystem in colleges and universities, it is necessary to first create a suitable physical environment in the construction of the classroom ecosystem so as to ensure that the classroom space and teaching materials are safe and healthy, highlighting the characteristics of the subjects as well as carrying the connotation of school characteristics and Chinese characteristics. “Safe” means to be free from air pollution, water pollution, bacterial infection, hazards, *etc.* “Health” mainly refers to appropriate temperature, humidity, noise reduction, and natural light. Discipline characteristics mainly refer to different classroom environments in different disciplines, such as music classroom, physics classroom, sports classroom, literature classroom, painting and calligraphy classroom, all of which have distinctive characteristics, with the aim of combining the characteristics of discipline development and the

needs of students' growth. School characteristics mainly refer to the enrichment and inheritance of geosciences. Chinese characteristics mainly refer to the socialist core values as the basis and the leading role of one's core values to display and transmit the essence of Chinese culture to both teachers and students as well as to consolidate the foundation of love and patriotism.

The data derived from the questionnaire showed that almost all students hoped that the school will build the ecological culture of the classroom in a planned way to help them grow and become talents. In the interview, a teacher mentioned that the ecological culture of the classroom is an intangible component and has not received much attention at present. The ecological culture of the classroom should be incorporated into the function of the classroom, beginning from the static culture such as the design and facilities of the classroom, followed by the dynamic culture, which includes the interaction between teachers and students, emotions, and activity rules.

It is believed that the ecological culture of the classroom bears a special mission, and the connotation and pursuit of education should be infiltrated into the ecological culture of the classroom to improve the effect of green campus construction under the guidance of socialist core values.

3. A new exploration of classroom culture construction

In order to integrate classroom management into "campus culture" and innovate classroom culture construction, this paper constructs a classroom culture construction system, as shown in **Figure 8**. Based on the classroom digital platform and focusing on the material construction, system construction, and incentive mechanism of classroom culture, this paper focuses on the development of a series of classroom culture construction activities as well as the allocation of classroom culture construction personnel, so as to boost the construction speed, the development system, and the degree of management practice as well as vigorously promote the construction of classroom culture in colleges and universities.

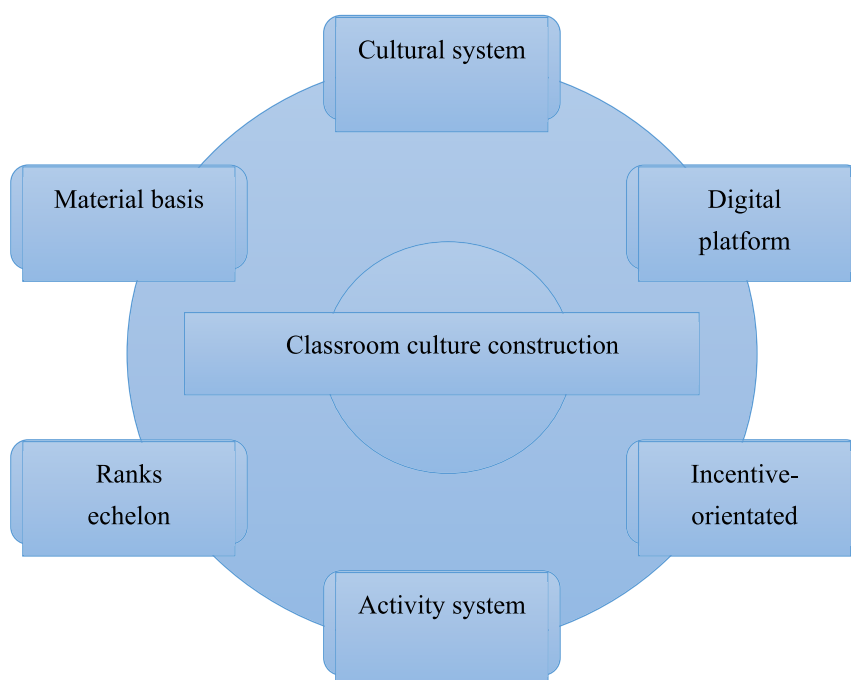


Figure 8. Classroom culture construction system

3.1. Improve the cultural system

Combining the characteristics of the times, school characteristics, and Chinese characteristics, as well as analyzing the survey of more than 1,800 people, schools should attach importance to classroom culture and

give full play to the guiding role of classroom culture. This should be one of the key tasks of schools. At the same time, it is imperative to improve and standardize the initiative of the subjects and pay attention to the mutual promotion and influence among students and between society and schools, counselors and students, as well as teachers and students.

Classrooms should establish a systematic management system and improve the hard and soft systems and standards to make up for and improve the defects of the existing classroom management system. It is necessary for the system construction to keep pace with the times, take students' personal development as the basic starting point and foothold, focus on strengthening the construction of students' classroom culture, integrate classroom culture into the overall planning and construction of college and university culture, as well as fully reflect the diverse needs of students. College and university students are not only the most advanced, thoughtful, and innovative subjects of the times, but also the practitioners, defenders, and promoters of the system. They are highly aware of the gaps and shortcomings of the system. Therefore, they should be encouraged to participate in the system construction, improve the interaction of the system creation, and further combine the "restraint" of heteronomy and the "initiative" of self-discipline [8].

The constructors of classroom culture should make it clear that the construction of the classroom culture system should be a long-term, sustainable development process that combines static and dynamic activities. Cultural institutions generally do not change immediately after being determined and promoted; instead, they adapt, supervise, constrain, and respond to themselves in possible situations in order to have certain institutional stability. However, as the teaching environment, teaching philosophy, and management model continue to change, the effectiveness of the culture system may decline. At this point of time, we should look at the construction of the classroom culture system from the perspective of sustainable development based on the characteristics of the times and teaching characteristics prior to making dynamic adjustments in line with the times.

The management process should be combined with education, not mechanically copying the system and rules, nor blindly punishing, but rather taking the classroom as a special site to carry out ideological and political education, strengthen the code of conduct, and inherit the essence of Chinese culture, thus highlighting the all-round educational value of the system. By implementing the system, students' initiative and enthusiasm can be improved through counseling, psychological guidance, one-on-one conversation, and other relevant measures.

3.2. Improve infrastructure

The construction of classroom culture relies on certain infrastructure. Only classroom hardware facilities that meet the basic learning and living needs of students can support the needs of classroom culture construction. According to the survey, students who were satisfied with the existing facilities were more interested in constructing the classroom environment. This situation also reflects that the construction of classroom culture, as a spiritual construction activity, must rely on certain material basis. Improving the infrastructure of the classroom has become one of the prerequisites for the construction of classroom culture. At this stage, the classroom infrastructure is generally superior to old buildings, and high buildings are superior to low buildings. Based on the consideration of future development, classroom culture depends on the support and capital investment of colleges and universities for the construction of sustainable classroom facilities, which form the bases for the cultivation of classroom culture construction by continuously improving the hardware conditions of classrooms. Colleges and universities must plan the internal space of the classroom in a reasonable manner from the perspective of students and provide a comfortable classroom environment, so that students do not have to waste energy due to issues with the latter. Secondly, it is necessary to improve the public areas of the classroom; build a "cultural and sports corner" according to students' needs; optimize resource allocation; maximize students' initiative; achieve co-governance, co-

management, and sharing; promote communication between students; and broaden the platform for spiritual and cultural activities.

3.3. Optimize the echelon team

The construction of classroom culture in colleges and universities requires the establishment of a high-quality team. The logistics management personnel, counselors, student backbones, and classroom teachers should be taken as the strong support; a good hierarchical echelon should be built; the team construction should be improved; and the overall vitality should be stimulated.

It would also be beneficial to strengthen business training and carry out classroom culture construction, implement the classroom culture management of counselors, cultivate student backbone and mobilize students' initiative, enrich their knowledge and multiply their talents, carry out activities that meet students' interests, and encourage students to play a dynamic role in self-education, self-management, self-service, and self-design, while advancing with the times and innovation in the process of cultural construction ^[9].

3.4. Develop a classroom cultural activity system

It is necessary to realize the value infiltration and practice implementation of classroom culture construction, define the content and purpose of classroom culture activities, vigorously carry out classroom culture construction practice activities, give full play to the role of classroom culture construction, enable students to understand the spiritual connotation contained in it during the process of active participation, as well as improve the harmony and inclusiveness of classroom culture. Through training, it is possible to transform internalized values into behavioral practice, improve the cohesion among members of the classroom, and lay a solid subject foundation for the construction of classroom culture.

Carrying out innovative and interesting activities, such as sports games, would encourage the participation of classroom logistics management personnel, counselors, and teachers; enhance the communication and interaction between students and management personnel, counselors, and school management; reduce estrangement; eliminate strangeness; and cultivate the spirit of mutual help, solidarity, and progress among college students. Carrying out activities such as special classroom fellowship and talking about various issues freely would help improve the understanding of students in and between classrooms as well as promote a healthy relational growth among staff.

Through "classroom culture," the classroom is endowed with the "home concept," and characteristic activities are carried out. It may be beneficial to organize classroom culture design competitions, classroom culture festivals, and other activities; introduce the connotation and characteristics of "Classroom Home" through classroom names, classroom slogans, *etc.*, such as a learning classroom with excellent learning environment, a talented art classroom, *etc.*; and enhance the recognition of classroom values and behavioral norms. Other than that, we can also establish a classroom art party, assume the classroom as a unit and participate in the party in any form, promote the culture of "classroom family," promote mutual understanding and appreciation between teachers and students in the classroom and among students themselves, as well as strengthen the group identity and cohesion of the members in the classroom.

3.5. Give play to the role of external guidance and incentive

The positive external guidance incentive mechanism is a value guidance and a booster of classroom culture construction. It is conducive to the establishment of a virtuous circle as it stimulates students' awareness for active participation, competition, and maintenance as well as promotes the all-round development of college and university students.

At present, many colleges and universities exert formalism in classroom star rating and other activities. This culture evaluates but not awards, without highlighting the importance of excellent classrooms, leading

to the minimal attention paid by college students to excellent classrooms. Several colleges and universities have realized material rewards for excellent classrooms. Although the rewards are high, the number of evaluations and scope of incentive are small and narrow, respectively, thus increasing the difficulty and dampening the enthusiasm of students.

Therefore, we should, first of all, realize the dual incentive of spirit and material to excellent classrooms and promote self-optimization and self-promotion. Secondly, a reasonable grading selection mechanism should be established, and the selection content should be derived from different aspects, such as “beautiful classroom,” “healthy classroom,” *etc.* This would encourage students to tap the characteristics of geosciences and build a characteristic civilized classroom with different styles.

3.6. Establish a classroom digital management platform

Classroom culture construction should be based on the digital platform to achieve timely and effective tripartite communication among administrators, counselors, and students. First of all, classroom administrators would be able to have a better understanding of the classroom information and students’ whereabouts in a timely manner through digital construction; moreover, they would be able to release various information, such as activity information, merit list, *etc.*, in a timely manner through the platform. As a result, this will significantly shorten the time used in communication between students and administrators with regard to classroom management measures, thus achieving benign interaction between administrators and students. Secondly, by paying attention to the interaction and communication of students through the platform, counselors would be able to grasp the psychological state and dynamics of the students, resolve conflicts, and support the value orientation of the classroom. Furthermore, classroom archives can be established in a timely manner through the digital platform. This provides an opportunity to administrators, teachers, and students to view and access students’ classroom archives information easily, thus promoting the construction of classroom archives culture.

4. Conclusion

There are several problems in the construction of classroom culture in colleges and universities in terms of diversified educational functions. However, with the promotion of campus culture and green campus construction, there is a lot of room for improvement and development in classroom culture construction. Hoping that in the diversified development of the times, this research may serve not only to build a three-dimensional educational environment for the growth and personality development of students around the core quality of college and university students in the 21st century as well as the development of colleges and universities, but also to provide scientific guidance and contribute to the construction of innovative campus culture in colleges and universities that are building green campuses.

Disclosure statement

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Strategies for Improving the Effectiveness of Professional Practice for Full-Time Professional Master Degree Postgraduate in Mineral Processing Engineering

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Abstract: In order to gain practical experience and hands-on skills, full-time professional master degree postgraduate in mineral processing engineering should engage in professional practices. Nonetheless, a series of problems, including insufficient time for practice, low management level, inadequate implementation of the double-supervisor system, and poor results of professional practice, has reduced the effectiveness of professional practice. In view of the aforementioned problems and the characteristics of the discipline, this paper proposes several strategies for improving the effectiveness of professional practice for postgraduates in mineral processing engineering.

Keywords: Mineral processing engineering; Full-time; Application-oriented; Master's degree; Professional practice

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1. Introduction

In the context of rapid social and economic development, the demand for talents with strong practical skills has intensified in all professional fields. On March 11, 2009, China's Ministry of Education issued several guidelines for the training of full-time professional master degree postgraduate, providing instructions for the training of these students and specifying that full-time professional master degree postgraduate programs should include at least six months' practical training, which may be implemented through the combination of intensive and distributed practice. By 2025, professional master degree postgraduates are expected to account for two-thirds of all postgraduates enrolled in China. Mineral processing engineering is an applied technical discipline that deals with mineral separation and directed at separating useful minerals from the gangue. The training of professionals in mineral processing engineering plays a crucial role in promoting clean and efficient utilization of mineral resources as well as in facilitating the high-quality development of the mining industry.

Researchers have studied the professional practice of full-time professional master degree postgraduate extensively, analyzed the problems in various aspects, and proposed feasible solutions that include improving the training plan, optimizing the curriculum, upgrading the management system, and constructing bases for professional practice. At present, significant results have been achieved in the

training of full-time professional master degree postgraduate, with a wealth of experience accumulated in professional practice. Nonetheless, professional practice has yet to demonstrate desirable effects. Previous studies have rarely explored pathways for improving the effectiveness of professional practice for full-time professional master degree postgraduate in mineral processing engineering. Therefore, it is a necessity to carry out further research on this field of interest.

2. Importance of professional practice for full-time professional master degree postgraduate

A full-time professional master degree postgraduate program is a type of degree program in China that aims at cultivating high-caliber application-oriented professionals who have a solid understanding of basic theories and a vast amount of professional knowledge in a specific discipline (or occupation) and are capable of solving practical problems and performing technical or management duties. The professional practice module enables full-time professional master degree postgraduate to gain practical experience, amass topics and materials for their dissertations, as well as develop hands-on and innovative skills ^[1-3]. This module connects theory with practice and offers rehearsals for their future career. Therefore, a high-quality and sufficient professional practice plays a significant role in ensuring the quality of application-oriented education.

3. Main forms of professional practice for full-time professional master degree postgraduate in mineral processing engineering and the existing problems affecting the effectiveness of professional practice

3.1. Main forms of professional practice

As a traditional engineering major in the field of mining, mineral processing engineering is an applied technical discipline that has been established in response to the talent demand brought about by the national economic construction. The major has trained a large number of professionals to work in coal, metal, and non-metal mining industries. In the field of mineral processing engineering, the professional practice for full-time professional master degree postgraduate appears in two forms: campus practice and off-campus practice ^[4,5]. With regard to campus practice, universities are often equipped with a beneficiation pilot plant or processing plants with different capacities for postgraduates to participate in professional practice activities according to the training plan. For example, China University of Mining and Technology (Beijing) has a pilot plant for coal beneficiation, while Kunming University of Science and Technology has one for metal beneficiation. Besides these universities, many have their own technological park, with enterprises offering opportunities for practice. This major requires students to be familiar with the properties of minerals, configuration of beneficiation machinery, and the analysis of beneficiation products. Students are also required to be engaged in the debugging and operations of machinery, ensuring expected beneficiation targets are achieved and improving their own hand-on skills and ability to apply classroom knowledge in practice. On the other hand, off-campus practice is held at practice bases that have been established through university-industry cooperation. In general, off-campus practice employs the “double-supervisor system,” with postgraduates’ professional practice guided by an internal supervisor and an external one. Off-campus practice bases provide opportunities for postgraduates to be fully involved in the industrial production of the beneficiation plant and to assist field engineers in solving various problems that arise during production. A period of field practice allows postgraduates to consolidate and expand their knowledge and skills, facilitates the completion of their master’s dissertations and relevant research projects, and helps postgraduates transition into their professional roles smoothly after graduation ^[6].

3.2. Problems affecting the effectiveness of professional practice

- (1) The lack of professional practice bases has narrowed the scope of professional practice. Currently, postgraduates are often placed at a single practice base—for example, an iron mine. In that case, they have no opportunities for exposure to practical activities at coal mines, copper mines, or gold mines. This restricts the scope of their professional practice. This problem may be caused by an insufficient number of practice bases or unreasonably scheduled professional practice.
- (2) There is also a need to strengthen the management of postgraduates' professional practice and increase their professional practice duration. Some postgraduates do not engage in professional practice strictly according to the training plan and detailed training requirements; likewise, some supervisors do not manage professional practice well, thus rendering professional practice ineffective. Meanwhile, increasing the duration of professional practice at engineering sites should be considered based on specific conditions, since certain factors such as COVID-19 have shortened the professional practice of postgraduates at engineering sites ^[7,8].
- (3) The double-supervisor system should play a greater role in promoting the quality of postgraduate training. The functioning of the double-supervisor system largely determines whether the professional practice of full-time professional master degree postgraduate is able to run smoothly and produce practical results. In addition, some of the external supervisors are not academically capable or possess a weak sense of responsibility. Meanwhile, some internal supervisors lack practical experience in engineering ^[9]. Such supervisors pass on rather limited knowledge to their students. Another problem is the lack of interaction between internal supervisors and external supervisors. In particular, the guidance provided by both supervisors often lacks comprehensiveness and consistency.
- (4) The specific content of professional practice needs to be optimized. The professional practice of full-time professional master degree postgraduate aims not only at equipping students with deeper professional knowledge and broadening their horizons, but also at enhancing their ability to solve real-world problems, especially those that arise at engineering sites. Therefore, the content of existing professional practice should be arranged in a more reasonable manner. For example, some postgraduates merely work in laboratories at the beneficiation plant, rather than being personally involved in frontline production, thus rendering them incapable of identifying and solving practical problems, and going against the purpose of professional practice.
- (5) The evaluation and supervision of professional practice should be strengthened. Currently, the credit system, which covers a series of criteria including the practice plan, the professional practice process, case analysis, practice journal, and the final report, is used to evaluate the professional practice of full-time professional master degree postgraduate. However, it can be seen that the supervision of student performance is neglected in the evaluation process. In particular, the absence of evaluation for postgraduates' on-site problem-solving skills tempers the effectiveness of professional practice. Moreover, some postgraduates simply muddle through, which runs counter to the goals of professional practice.

4. Strategies for improving the effectiveness of professional practice for full-time professional master degree postgraduate in mineral processing engineering

4.1. Make appropriate adjustments to existing application-oriented training programs in mineral processing engineering

The professional practice of postgraduates in mineral processing engineering differs from that of other majors in many ways. For example, their practice bases are usually located in remote areas. Moreover, mineral processing engineering activities involve many disciplines, including geology, mining, beneficiation, solid waste disposal and treatment, environmental protection, machinery, *etc.* Therefore, the

training program for these postgraduates should underline prior interdisciplinary knowledge and its field application. Besides, the professional practice module should not only develop postgraduates' understanding of beneficiation techniques in mines, but also guide them to compare the beneficiation levels of similar ores in the industry, be it in China or other countries, implying that they should be familiarized with the cutting-edge techniques in the industry. In addition to the processes, equipment, and reagents of beneficiation, the module should include and strengthen the students' learning of the management system and models of beneficiation plants. Furthermore, it is necessary to emphasize the training of innovative thinking in the process of professional practice and encourage students to spot on-site problems and devise feasible solutions for them. Through the adjustments and improvements of the training program, the professional practice module will be more rational and advanced, thus being more effective in promoting the comprehensive abilities of postgraduates.

4.2. Increase the number of professional practice bases

Universities should seek partnerships with more mining enterprises to build practice bases at mines, covering diverse types of deposits or ores. In addition, the forms of practice should be optimized. For example, each postgraduate should be given opportunities to work at multiple practice bases to gain practical experiences with ferrous metal mines, nonferrous metal mines, coal mines, *etc.*

4.3. Optimize the evaluation criteria and provide incentives

Higher standards should be applied to the double-supervisor system ^[10,11]. Supervisors should be trained before and during professional practice, and both internal supervisors and external supervisors should interact and collaborate at deeper levels. The traditional evaluation only focuses on practice journal and the final report. Therefore, it is necessary to adopt more open-ended and comprehensive criteria. For example, innovative outcomes and successes from solving practical problems should be included in the evaluation. Meanwhile, rewards may be presented to the supervisors and postgraduates who perform remarkably well in their professional practice.

4.4. Combine professional practice with innovation and entrepreneurship education

Innovation education is a type of education that cultivates the consciousness, ability, mindset, and thinking pattern of an individual for innovation, thus training innovative talents accordingly. It aims to prepare students for future industrial and business activities by expanding their skillset and developing their creativity, thus transforming their role from being jobseekers to value creators who hold professional posts ^[12]. Therefore, professional practice should chime with innovation and entrepreneurship education. The double-supervisor system should underscore the training of innovative and entrepreneurial thinking during professional practice and encourage students to take innovative and entrepreneurial actions, which would immensely improve their hands-on skills and comprehensive abilities.

5. Conclusions

Professional practice for full-time professional master degree postgraduate plays a crucial role in training high-caliber application-oriented professionals. From the perspective of mineral processing engineering, this paper describes the main forms of professional practice for application-oriented postgraduate and several problems that affect its effectiveness. In view of these problems and the characteristics of the discipline, several measures are proposed to improve the effectiveness of professional practice for postgraduates in mineral processing engineering, including improving the existing training program, increasing the number of practice bases, optimizing the evaluation criteria, and combining professional practice with innovation and entrepreneurship education. This paper provides a reference for improving the

effectiveness of professional practice for full-time professional master degree postgraduate in mineral processing engineering.

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Author contributions

J.D. and J.H. conceived the idea of the study, P.P. performed the experiments, X.O. analyzed the data and wrote the paper; J.D., J.H., Z.B., and T.H. were involved in the methodology, data curation, writing of the original draft; Z.X. and W.W. supervised the study.

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Why Teaching and Research Activities Lack Vitality?: A Probe into the Basic Psychological Needs of Teachers

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Abstract: Teaching and research activities are of great significance to the professional development of teachers. The basic psychological needs of teachers include autonomy, competence, and attribution. The engagement of teachers in teaching and research activities can be analyzed from these three perspectives. Under the management system of teaching and research, teachers generally lack autonomy in the organization of teaching and research activities; they are also lack scientific research knowledge and ability; in addition, under the influence of harmonious interpersonal relationships and the culture of individualism, there is a dearth in real communication among teachers. In light of this, we propose targeted countermeasures to promote the vitality of teaching and research activities.

Keywords: Teaching and research activities; Vitality; Teachers; Basic psychological needs

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1. Introduction

Ever since the beginning of the new century, we have seen a growing trend of refinement and excellency in the education for teachers. The term “teacher development” has been defined as teachers’ professional and lifelong growth. Moreover, the appeal of “Let Teachers Be Researchers” is now on the rise. As a platform and carrier of cooperation and research for teachers, teaching and research activities play an essential part in teachers’ professional development. Functioning as the subject of teaching and research activities, teachers have a significant influence on the vitality of these activities, such as the affirmation of value, emotional experience, and proactivity of participation. Therefore, it is of great significance to improve the realistic value of teaching and research activities as well as teachers’ professional development, so as to discover the cognitive, emotional, and behavioral problems rested in the process, analyze the attributing factors, and put forward targeted countermeasures.

2. Behaviors attributing to the lack of vitality in teaching and research activities: From the perspective of teachers

The organization of teaching and research activities, embodying cooperative research, aims to reinforce the mutual study among teachers and their teaching quality. However, after several decades of development,

the concept of delicacy management has permeated all aspects of school management, and the function of teaching research for teaching and research groups has declined. The executive function of management bore by teachers is expanding, thus reducing it to a primary level of administrative function in school to some extent. The marginalization is caused by the neglect of communication, research and discussion ^[1], and reflection among teachers, which are the three aspects that can enhance the cooperation among teaching and research groups. As a result, teachers lack the proactivity and initiative to take part in teaching and research activities, leaving the necessary sharing and cooperation among teaching groups in latency.

2.1. Dutiful educator: Weak research awareness

The world is changing rapidly, and at the same time, there are constant updates to the educational theory with corresponding reforms deepening. The idea of “invigorating education through science and research” has become the main direction of school development. In the complex trend of education, only when teachers are equipped with awareness of science and research can they develop initiative and adapt to the current changes. This demands the construction of teachers’ dual identity, which signifies that teachers are not only individuals who “preach” their thoughts and dispel doubts, but also researchers of educational practice who possess awareness of science and research and can incisively discover the underlying problems in educational practice, and thus adopt scientific methods to study and solve these problems realistically. Without research as a way of support, teaching will remain a mere low-level repetition ^[2]. In actuality, teachers focus solely on their main duties; they lack proactivity and the awareness of science and research. Full of resistance to daily teaching and research activities, they have little consciousness for reflection following any research activity. Therefore, translating the achievements acquired through research activities into their own teaching strengths would be a major challenge for teachers.

2.2. Seemingly harmonious community: Lacking the concept of cooperation and sharing

People, both at home and abroad, in the past and at present, have always placed a high value on the idea of cooperation. For example, the sayings, “The time isn’t as important as the terrain, but the terrain isn’t as important as unity with the people,” from Mencius, a philosopher, politician, and educator during the Warring States period, and “Learning alone without exchanges with others will lead to ignorance,” as recorded in “The Note of Learning,” clearly depict the value of cooperation. However, for a long time, teachers have only been concerned about their own affairs, with little communication or positive attitude for cooperation among them, due to factors such as departmental instruction as well as the exam-oriented and teacher performance evaluation system based on student scores. In teaching and research activities, the spirits of experience exchange and knowledge sharing are needed among teachers. Although there are interactions concerning work arrangements between teachers and leaders of research groups, the lack of emotion and cooperation in studies is apparent.

2.3. Step-by-step learner: Negative attitude toward participating in research activities

School research activities are task-oriented and basically a part of teachers’ own responsibilities. Therefore, much “objective endeavor” exists among them. When observing themselves through “subjective endeavor,” teachers may find many problems. For instance, since they are in a state of “only listening,” they lack proactivity in communication and seldom take part in discussions on issues. Besides, healthy conflicts rarely occur because they are afraid that these conflicts may affect the harmonious relationship among colleges. Since they themselves dislike criticism, they tend to distant themselves from making criticism on others to maintain their working relationships ^[3]. Moreover, many teachers are reluctant to participate in optional research activities.

3. Reasons for the lack of vitality in teaching and research activities: From the perspective of teachers' basic psychological needs

The concept of basic psychological needs originated from the theory of self-determination, a motivation theory that was raised by two American psychologists, Deci and Ryan, in the 1980s. It focuses on the process of self-determination in human behaviors. In the theory of self-determination, basic psychological needs are regarded as key factors for people's healthy development and as triggers of effective behaviors, including autonomy, competence, and attribution ^[4]. Among these, autonomy stresses an individual's willingness and initiative of behaviors; competence highlights an individual's competency to undertake a certain activity; attribution focuses on an individual's sense of community and harmonious relationships with others. When an individual's basic needs are met, the individual's behaviors and self-development will be more effective and healthier. On the other hand, if an individual's basic needs are neglected, the individual will react in a negative way. The reasons for teachers to act negatively in research activities might have gotten a glimpse from the contents of satisfaction with the three basic psychological needs: autonomy, competence, and attribution.

3.1. Autonomy: The teaching and research system takes away the rights of teachers to organize and participate in teaching and research activities

Autonomy focuses on the rights of teachers for self-determination to participate in research activities and self-management with regard to the ways they are conducted. However, the current teaching and researching groups in primary and middle schools have become bottom-management organization in schools with dual functions, researching on teaching and administrative management, while teachers remain at the bottom line under this management system, losing the freedom of joining in research activities and lacking the rights of managing on their own. Taking a teaching and research activity as an example, after the tasks have been delivered by the school administrators, group or grade leaders, as managers possessing "firm rights," would undertake the routine work of theme decision and medium-term inspection. Teachers, though, are the subjects of practice, they are relegated as passive performers of administrative order. The teaching and research groups would then complete the tasks through an inflexible process: school or group leaders deliver research tasks → teachers claim the tasks and complete them respectively → outcomes are put together. In that case, the participation in research is in fact a way of fulfilling tasks passively for teachers, which is opposite to their willingness to participate. The subject of researching is the faculty. It is difficult to meet the requirements of every teacher, and there is a likelihood that some of them do not have the same need. Therefore, adding extra work out of their individual needs would undoubtedly increase their burden, and thus trigger their resistance.

3.2. Competence: Teachers lack the necessary know-how and skills for scientific research

Competence highlights the feeling of competence and the need for self-actualization in teaching and researching for teachers. If teachers are equipped with comprehensive theoretical grounding and practical skills, their motivation to achieve will be ignited, and they will perform better during research activities. Otherwise, a lack of competence causes teachers to carry themselves with timidity and fear. Corwin, an American socialist, has put forward 10 standards for one to be called "proficient." Among the 10 standards, two of them include being equipped with specialized know-hows and skills and being engaged in research and putting theory into practice. The cultivation of educational theory is the basis and prerequisite for teachers to carry out research on teaching, while the ability of researching is the support and guarantee of its success. In reality, however, although frontline teachers are usually very knowledgeable and have the ability and experience of teaching, their educational theories and research capabilities are substandard. Without source and constant updates, teachers would lack the confidence to participate in research activities,

and thus remain dormant due to knowledge and ability deficiencies, even if they had the desire for them. Moreover, they may feel nervous or anxious and may be afraid to express their own ideas. As a result, they may be reluctant to communicate with others.

3.3. Attribution: The harmonious view of interpersonal relationships and insular individualism hinder the communication among teachers

Attribution focuses on sincere interactions among teachers and their sense of community toward the whole faculty. In any research activity, attribution is embodied in the earnest expression of ideas and the sharing of personal teaching experiences by teachers to promote mutual progress for the research community.

For one thing, harmonious interpersonal relationships lead to superficial communications among teachers. The pursuit of harmony highlights the ineradicable value of the Chinese people under the reciprocal effects of a superstructure that is influenced by Confucianism, such as the theory that man is an integral part of nature, etiquette and ethics thoughts, and state ideology, and an understructure that is defined by the agriculture-based mode of production and the society of kinship ^[5]. From the perspective of the Chinese nationality, collectivism is favored over individualism, signifying that people, especially human relationships, are given priority, and tenderness and harmony are advocated so that people may come to avoid conflicts ^[6]. In research activities, teachers are rarely involved in conflicts or opposition as they fear that offensive words may breakdown the harmonious relationships among colleges. Therefore, it is less likely for them to point out the weaknesses of others and express varied ideas. As a result, their communication remains superficial with elements of compliance.

For another thing, the culture of individualism has deepened the existing gap within teachers, causing the alienation of research groups and turning them into a “false community.” The departmental teaching decides on the job specifications for every teacher, who in fact has his or her own teaching style and holds different cognition and understanding toward teaching. As a result, there is no cooperation within the faculty. Under the pressure of enrolment rates and the influence of the performance evaluation system, a competitive awareness has taken precedence among them, thereby making it harder for them to exchange work experience openly and affecting their rational cognition to cooperate.

4. Enhance the vitality of teaching and research activities and promote the professional development of teachers

The aspiration of teaching and research activities is to promote the professional development of teachers themselves. However, teachers are relegated to passive subjects who mindlessly perform given tasks, losing their rights to participate and organize activities as well as the necessary knowledge and ability for conducting scientific research. False communication and the absence of authentic cooperation consequently result in the lack of vitality in research activities. Focusing on the aforementioned problems and reasons, the basic psychological needs of teachers should be met to enhance their initiative to take part in research activities.

4.1. Empowerment: Strengthen teachers’ rights for self-decision and self-management

It is impossible for the operation and organization of school to take effect without the work of school leaders. However, the rights of the leaders are similar to double-edged swords. When their rights are used in ways where people are encouraged to make joint efforts, they play a positive role in leading the faculty. Nonetheless, when their rights are imposed unreasonably and the rights structures are infinitely exaggerated, which may lead to authoritarianism, teachers inevitably become slaves of their rights and subjectivity. Consequently, their autonomy and desire to participate in research activities will decline. For this reason, empowering their rights is of great significance. First of all, the reorientation of the function of research

groups should be done. In fact, research groups are literally the micro professional learning community. The meaning of its existence is “learning” rather than as a management facility. It is advisable to apply the value of the professional learning community to promote the transformation of the function of research groups, emphasizing “proficiency” and “learning.” Second, it is necessary to empower teachers’ rights in research activities. As a matter of fact, it is impossible for teachers to automatically make decisions whether or not to participate within a short time. Moreover, compulsory participation, to some extent, will limit their initiative. As a result, their equity enhancement is seen mainly in decision of research theme and organization of research patterns. Only research based on problems faced by teachers in teaching practice can stimulate their initiative and activity. In that case, the determination of research themes and concrete methods to carry out research activities are not under the leaders’ personal willingness; instead, they should be jointly discussed and determined after taking into consideration of the advice from teachers and complying with their personal willingness and factual needs.

4.2. A research innovation training system: Improve teachers’ research ability

The training of teachers’ research ability should contain elements of systematicity, persistency, and pertinency. Systematicity emphasizes the integrity of learning. For instance, a training that allows teachers to complete a whole set of research projects under the leadership of experts and develop their scientific thinking and research ability in practice would be beneficial. Persistency stresses the coherence and ladder-like developing pattern of teachers’ training in order to solve the problem of acquiring fragmented knowledge. The training should include step-by-step instructions and deepen the teachers’ understanding of teaching. Pertinency focuses on the way of training, in which the traditional way of training should be disposed of; in addition, the practical needs of teachers should be prioritized, and their room for self-decision should be expanded to improve their enthusiasm for involvement and solve the existing problems in teachers’ professional development. As shown in **Table 1**, “Teaching and Research Supermarket,” a training system that has been established by a teaching and research office in a district of Jiangsu Province, is taken as a valuable example.

Table 1. Setting of “Teaching and Research Supermarket” in the district of Jiangsu Province ^[7]

Principle	Utilize differentiated resources to conduct training for teachers.
Subject set	National Laboratory of Specimen Teaching Materials for Various Disciplines, teaching case study room, thesis writing guidance room, class teacher’s studio, <i>etc.</i>
Teacher resources	Full-time and part-time teachers, academic leaders, and backbone teachers.
Principle of activity	Combine scattered and concentrated as well as regular and irregular ways.

In “Teaching and Research Supermarket,” multiple study rooms are apportioned for textbook research and case analysis. Teachers can determine the direction of training in line with their own development and carry out specific studies to meet their own needs. The teachers’ team consists of both full-time and part-time teachers, and even academic leaders. The team not only resolves the problems of understaffed regional instructors and weak training, but also provides practical and professional instructions. The flexible application of combining scattered and concentrated as well as regular and irregular ways offers teachers distributed guidance, adjusts to their teaching schedule, and offers professional learning opportunities to teachers.

4.3. Build a shared vision: Increase teachers’ attribution and cohesion

Vision, which means hope or a blueprint of a goal, is a universal pursuit of value and a practical

development plan. Derived from the theory of community, “shared vision” is a universal desire for a community, a common pursuit of value for all members, and a bond connecting individuals [8]. Shared vision, as the most stimulating factor in organizations or communities, is able to integrate personal vision and connect individuals with different traits. Functioning as an environmental support for all school affairs, shared vision enables teachers to have a common purpose, to carry out efforts in the correct way, and to develop shared views of teaching, students, and curriculum, which are all beneficial to increasing teachers’ attribution and cohesion. As a result, their subsequent joint efforts would benefit the development of the school and leave a subtle influence on the course and effect of all school affairs. It is of great importance for research groups to enhance the attribution of teachers toward themselves so as to establish concrete plans and arrangements according to the shared vision and reach a consensus toward the goal of teachers’ work.

4.4. Create a cultural atmosphere where conflicts and harmony coexist: Promote the sharing of knowledge among teachers

Influenced by the social culture that embodies harmonious interpersonal relationships, teachers seem to have good rapport with each other when they are involved in research activities. However, this picture is, in fact, attributed to the absence of conflicts with others, the failure to express individual perspectives, and a mirroring of other people’s ideas. The development of research activities requires meaningful cooperation from teachers and underlines their real and heartfelt cooperation, rather than a superficial one. In the western world where liberalism prevails, the heterogeneity in individuals is regarded as an indication of one’s personalities. Although conflicts and contradiction between colleges may occur as a result of the event where teachers place strong emphasis on their own expression and come up with risky ideas [9], the prospect that teachers can freely share whatever they have in mind carries a positive connotation. If teachers focus on “reasoning” instead of “relationships,” they would then put forward creative ideas, which have positive effects on the development of the group. On the contrary, teachers in China do enjoy the cooperative platform of teaching and research groups, but they are shy to express themselves due to the fear of conflicts arising [10]. In this context, it is important to learn from the merits of others based on the advantages of the cooperative platform and expand the teachers’ understanding of the term “conflict.” For example, teachers should be encouraged to step out of their comfort zone and build interpersonal relationships, express themselves openly, carry out brainstorming activities actively, and propose creative ideas to put them into practice. “Conflicts” can generate a “catfish effect,” which is conducive to breaking the state of long-lasting harmony, and thus promote the vitality of research activities.

Disclosure statement

The authors declare no conflict of interest.

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Analysis of the Application of Ink Art in Graphic Design Imagery

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Abstract: The graphic design industry has been developing rapidly in recent years. People have begun to focus on steering the development of graphic design in the direction of localization, integrating more traditional Chinese elements, raising the level of acceptance toward graphic design content, and disseminating traditional culture on this basis. Ink art plays an important role in the historical and cultural development process. It uses simple color contrast to construct different situations and possesses unique artistic charm and cultural heritage. Incorporating ink elements into graphic design may enhance the graphic design style and provide inspiration. This article focuses on the reasons, advantages, and strategies of using ink art in graphic design imagery, hoping to provide references for graphic design activities.

Keywords: Ink art; Graphic design; Imagery; Application analysis

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1. Introduction

Graphic design is a form of mass media with flexible characteristics. It combines two elements: pure art and applied design. It has painting and design characteristics at the same time, and it is highly figurative. It distills the design concept into a simple image and conveys certain cultural elements. The continuous growth of people's aesthetic pursuits has led to a diversification of aesthetic activities and an increase in demand for higher quality graphic designs. If the quality of graphic design does not meet people's psychological needs, the communication effect of design works will be affected; thus, the intended design purpose of the design works cannot be achieved. Ink art is an important art form that condenses traditional Chinese culture. It is loved by the masses and has a wide audience in the society and around the world. By applying it to graphic design, it can effectively improve the design quality and preserve cultural heritage. The expression of graphic design imagery should be diversified.

2. Reasons for the application of ink art in graphic design imagery

2.1. Commonality of art

Ink art has always been displayed in the form of painting. In the modern world, ink has begun to become a design symbol and design language. Its features, which include frustrating brushwork and interesting shapes, have created a unique ink context that reflects people's pursuit of beauty ^[1]. Ink art contains philosophical thoughts and traditional aesthetic intentions, showing the artistic characteristics of traditional Chinese culture. Its artistry has brought inspiration and enlightenment to modern designers. In modern-day graphic design, the excessive pursuit of attractive colors and rich content is uncommon; instead, the use of simple shapes prevails so as to create more vivid experiences for people and focus on highlighting the modern

sense of design content. In ink art, the concept of combining white with black and virtual with reality is in line with the pursuit of modern art, which is conducive to the design of excellent graphic works with both local and foreign characteristics ^[2].

2.2. Development trend

Now that the development of social science and technology is accelerating, people can communicate in a more convenient way. The development of social science and technology has expanded the channels for people to obtain information and enabled the dissemination and exchange of culture from various regions on the network platform. This trend has also promoted design to grow in the direction of diversification. At present, graphic design pays more attention to the display of individual characteristics and nationalized elements; it constantly explores ways to express ethnic diversity and applies traditional cultural symbols to design activities visually, so as to improve the concept of product design ^[3]. Different countries display different cultural symbols with their own unique characteristics when carrying out graphic design. For example, the Japanese Ukiyo-e and tea ceremony, as well as the American Uncle Sam all reflect historical and cultural elements. China has also begun to attach importance to the integration of cultural elements in graphic design. Based on local culture, ink art is a classic symbol representing traditional culture. With strong visual expression, it will inevitably become one of the important elements used in graphic design ^[4].

2.3. Audience aesthetics

Audience aesthetics is the main factor affecting graphic design innovation. From the perspective of domestic audiences, they have a high degree of acceptance toward ink art and a certain aesthetic ability; thus, they are able to discover the unique beauty of ink art in time ^[5]. By integrating ink art into graphic design imagery, the expression of the imagery is clearer, and it will be easier for people to grasp the cultural content expressed in the imagery, thereby strengthening the expressive effect of graphic design and arousing the emotional resonance of the audience. From the perspective of foreign audiences, with the gradual improvement of China's cultural strength, people's curiosity about traditional culture is growing, and many foreigners are now beginning to understand traditional culture ^[6]. Moreover, the implicit, introverted, and enigmatic aspects of oriental culture allow it to accept ink art and strengthen the impression of foreign audiences on graphic design ^[7].

3. Advantages of ink art in graphic design imagery

3.1. Concise structural design

Ink art often uses concise brushwork to describe a content. "Jian" does not simply mean "simple." Although the brush and ink are "simple," they have rich meanings. Refined elements are used to express multiple meanings in a simple way, and when expressing the content of the work, they are combined with the appropriate form of expression. The rich connotation and compact visual sense can then be conveyed by ink art symbols after refining ^[8]. In modern graphic design, simplicity is one of the important goals it pursues. Expressing emotions through simple images allows the design content to have a clear layout relationship between the primary and the secondary, highlights the intentional characteristics, and creates unique application advantages. In addition, the different ink colors can bring rich visual experience, thereby playing an outstanding role in displaying graphic design works ^[9].

3.2. Image shaping

In the past, natural environment was often used as the material for most ink landscape paintings and expressed on paper through continuous observation and understanding. In this process, traditional aesthetic

habits and cultural concepts were integrated, which moved the art of painting toward the direction of abstract image expression ^[10]. The image created by this method has both natural and vivid characteristics, and the different shades of ink color can enrich the artistic language embodied in the ink painting. The abstract and random modeling mode as well as the natural freehand brushwork of the ink language bring it in proximity with the graphic design intention, making the image more humane and expressing the unique connotation of the image by using the form to describe the spirit ^[11].

3.3. Ethereal aesthetic conception

Ink art displays the artistic style and emotions of traditional literati, which also enrich the aesthetic meaning of ink language. Even in modern society, the style and techniques of ink art have changed, but the interest in life is still appreciated by the public ^[12]. The focus of graphic design intention is on shaping the situation. The ethereal aesthetic conception of ink art advances the expression of imagery and situation and incorporates the characteristics of traditional Chinese aesthetics, which is conducive to improving the quality of graphic design content ^[13]. The ethereal aesthetic conception of ink art allows people to form a unique aesthetic taste and understand the hidden meaning conveyed by the artistic conception when viewing it.

4. Application strategies of ink art in graphic design imagery

4.1. Highlight the subject image

4.1.1. Concrete expression

Ink art has been continuously optimized and improved in the historical development process. It carries a certain symbolic meaning, which is an important form that embodies the essence of traditional Chinese culture ^[14]. As people pay more attention to traditional Chinese culture, the widespread application of ink art in graphic design has become a new development trend. The use of ink art in graphic design activities allows the display of perceptual and intangible design concepts in a concrete way, highlights the main image of the design content, makes the image expression clearer and more direct, and unfurls the design elements to the audience directly. Ink art is an art form that has been accumulated over a long time. Since it contains many cultural elements, the cultural heritage of graphic design has also become more profound. On this basis, it enriches the visual experience of the audience and makes it easier for the audience to better integrate into the design concept. It arouses the audience's emotional resonance and uses the ink painting image to stimulate the audience's inner thoughts. This design mode allows the audience to experience a range of emotions, fulfil their aesthetic pursuits, and embrace the concept of design with a positive attitude ^[15].

4.1.2. Design form optimization

In ink art, black and white are often used as the main colors; the ink traces tend to be natural, and the form of color is often simple. By adjusting the ink color, the features of the graphic design image can be highlighted, and its natural beauty can be displayed. The expressiveness of imagery is extremely crucial. Black and white are the purest colors in the traditional Chinese belief system. In terms of color habits, an exquisite concept has long existed. It is believed that a purer color expresses more realm, is more symbolic, and has unique philosophical value as well as rich spiritual connotation ^[16]. In the use of ink art, the expression and connotation of the image should be analyzed. Based on this, the black and white layout should be adjusted, and the ink thickness should be reasonably considered, so that the main intention can be highlighted in the graphic design. Both black and white are not in the color system, but in the process of expression, they can be used to display different tones of color. The main influencing factors include pen speed, stroke size, pen length, *etc.* A rich and varied image can be created from graphic design colors with

design optimization from multiple perspectives. In that way, the image description would become more realistic, and the image expression method would be optimized from the perspective of the design form ^[17].

4.1.3. Highlight the connotation of the image

The cultural heritage embodied in imagery is extremely crucial in the process of expression. If there are certain cultural elements within an image, it may arouse people's emotional resonance and become a tool to spread cultural elements. Ink art is a cultural art derived from life, and its art system contains strong traditional Chinese cultural concepts, which is also an important aesthetic tone of ink elements. In graphic design, imagery is the main factor affecting the rendering power of its design concept. Artistic processing of imagery can enrich the design level, expand the depth of design culture, and present a unique new world to the audience ^[18]. When applying ink art, we should extract its charm, use ink art to illustrate the sense of time and space distance in the design content, and reveal the profound meaning and connotation metaphorically, so as to bring the audience a more profound aesthetic experience. Randomness is a characteristic of ink art. By using thick, light, dry, and wet strokes as well as the rhythm of light and dark, an image that is simple and pure, with rich connotations, can be created. This would imbue charm to the image. For example, when designing public service advertisements, the moon can be used as an image, and a full moon can be used to express the expectation of life. When drawing a full moon, ink art can be used to make the image of the moon more prominent. At the same time, drawing a reunion dinner scene below it may also stimulate people's thoughts. An appropriate blank space in the middle would make the connotation of the image more prominent and strengthen people's feelings.

4.2. Strengthen the visual display

Traditional ink art, which includes freehand brushwork and realistic art, has become a unique part of China's art system, expressing ink language with Chinese characteristics and constructing an image embodying internal and external spiritual unity. In order to strengthen the effect of image expression in modern graphic design, it is necessary to analyze the techniques of ink wash, master the characteristics of freehand ink wash and realistic ink wash, and choose appropriate techniques to strengthen the visual display ^[19]. The brush and ink technique is an important skill one must have to outline the shape of an image. When writing, one should integrate one's own emotions into the design of the shape, so that the audience may have different psychological experiences through the changes in brush and ink. Molding line is one of the commonly used techniques. By applying it to graphic design, it highlights the power and overall beauty of the image. In modern design concept, more attention is paid to the design of simple shapes. Ink art can meet the needs of simple shapes and highlight the concept of imagery by simplifying colors and images. The use of dots, lines, and planes as well as black, white, and gray can diversify the expression of images. The sense of design content can be enhanced by using a variety of different ways of dots, lines, and planes. Color is also an important part of ink art, and color can enrich the expressiveness of the impression. When using ink to express images, one can use a brush to outline the image, which creates a sense of ink penetration. This would not only achieve the goal of improving the aesthetics of the design, but also demonstrate the cultural accomplishment of the designer. The combination of virtual and reality is the primary form of expression in ink art. The use of contrast provides the audience with a certain space for imagination, improves the picture coordination, prevents a dull phenomenon, and creates a design form of both virtual and reality ^[20]. Black, white, and gray are the most commonly used colors in ink art. When there is more ink than water, black is highlighted, stabilizing the design content, highlighting the dark emotions represented by visions, and forming a strong aesthetic feeling. When there is more water than ink, the color ranges from light to white, in which the latter is a symbol of purity, with a free and open aesthetic feeling. By comparing it with black, the emotional expression of the image is further highlighted. Blank spaces are important features of ink art.

Using large-scale blank spaces in graphic design can strengthen the characteristics of the image, allowing the audience to imagine and think from the perspective of imagery, forming a strong visual impact, extending the spatiality of the design content, and creating an atmospheric design style.

5. Conclusion

Ink art is based on flexibility and personified shapes, coupled with cadenced brushwork, which fully demonstrates the mood and unique taste of ink wash. The application of ink art in graphic design is a trend of the times. It incorporates traditional Chinese culture into design activities and spreads excellent culture in various graphic designs, enabling ink art to go global and international. In modern graphic design, with the application of ink art, the expression form of images becomes more prominent, and people are able to grasp the connotation of images. While analyzing the characteristics of ink art, designers also need to optimize and adjust the expression form of images according to their own design concepts. The connotation contained in ink art is beyond the times. Whether it is in ancient times or in modern times, there is a certain artistry. Designers must now develop a good cultural background and strengthen the rationale of using ink art.

Disclosure statement

The author declares no conflict of interest.

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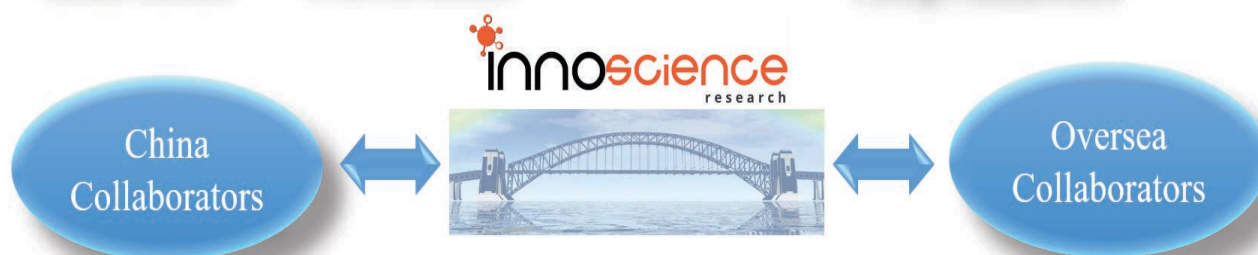
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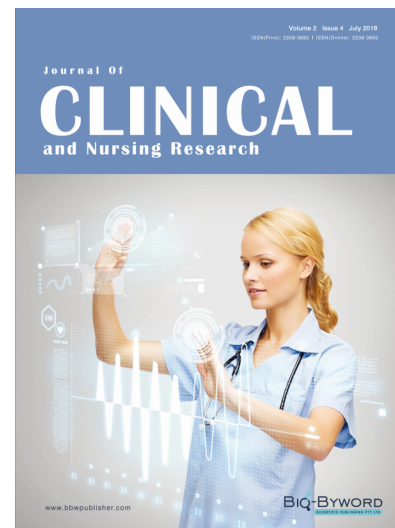
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