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Practical teaching of textile color science with integrating art

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Abstract: The art integration of the Textile Colour Science curriculum means that the practical teaching of the course cannot be limited to scientific and technical experiments, but should be integrated with artistic colour matching and colour expression. The aim of the course should both include strengthen the students' understanding and consolidation of the basic theoretical knowledge of colour composition and the enhancement of the students' aesthetic awareness and artistic creation ability. Only through properly arrange the practical teaching section and impove the teaching method of the course, can the teaching objective be achieved.

Keywords: Practical teaching; Textile color science; Art integration.

1. Introduction

In textile products including apparel, colour plays an important role through which for designers and consumers to achieve aesthetic expression, conceptual recognition and emotional communion [1]. The rational use of colour and the precise expression of colour can significantly increase in the added value of textiles. Beijing Institute of Fashion Technology (BIFT) is a special clothing college with a close integration of art, engineering and business disciplines. It specialized in theoretical research and practical application in clothing and costume culture, heritage and innovative design of clothes, functional clothing materials and high-performance clothes. Interdisciplinary education supplements disciplinary teaching and learning that prepares students to respond to challenges that transcend disciplines, connect theory with practice, and engage in inquiry that defies simplistic explanations of complex issues. Textile Colour Science is a public optional course for postgraduate students across the college. The main objective of the course is to provide students with a basic knowledge of colour science, an in-depth development of textile colour design and expression, textile colouring materials and methods, as well as enable them to measure and evaluate the textile colours using subjective and objective approaches. Therefore, students can realize the scientific expression of textile colour and form an important concept for the integration of textile colour with latest fashionable colours through learning this course.

2. The value of practical teaching in textile color science

Modern society often needs people who are complexed with multidisciplinary knowledge and skills rather than a single one [2]。 Therefore, in the teaching of postgraduate students, it is important to enable them to understand both the art and the science and technology. For example, students in clothing-related disciplines should not only know how to design and colour-coordinate clothing, but should also have knowledge of the textile materials and clothing manufacturing processes. Teaching practically is one of the most effective approaches to teaching. Engaging with students is a useful and practical approach to examining learning skills and experiences for the students. Teachers should understand the student's needs as it is crucial in order to deliver the best knowledge possible. Understanding the student's needs and learning approach helps the teachers in preparing themselves better to teach or choose the right teaching technique. Only through practical teaching and keep a close eye on students can the teachers thoroughly understand what the students want.

The learning process of textile colour science course is both cognitive and practical. In this process, students learn and practice to understand the object and transform the subject. In addition to learning the theoretical knowledge of colour science, they also continuously integrate colour aesthetic education in the study. Whereas, aesthetic education is an education that integrates aesthetic and sensory beauty, through which students can enhance their ability to recognise, understand, appreciate and create beauty. The teaching experiences of textile colour science has proven that it is difficult to realize the value of teaching by boringly instilling theoretical knowledge to the students. It is only through the close coordination of the eye, brain and hand during practical classed that students can feel the joy of working and creating, so that they can improve their perception of colour and develop their ability to use and control colour in reality, thus achieving the ultimate goal of this course. Besides, practical education can increase a student’s self-esteem, knowledge, and skills, and enriches their transition into operating life.

3. Phased implementation of practical teaching of textile color science

3.1. Feeling the color stage

Through sketching or photography, students will be able to focus on colour and actively engage their visual senses in colour observation to enhance their sensitivity to colour. Although engineering students are not professionally trained in colour in their studies, their visual faculties are not different from those of art students, and they also have a strong perception of colour. In teaching practice, it has been found

that a long period of study in engineering subjects has paralysed some students with colour and diminished the sense of beauty that colour evokes. These students need to be awakened to sense of colour in some way, by intensifying their exposure to colour, allowing them to focus on colour and experience colour stimuli, thus restoring and improving their colour sensitivity. For art students, colour can be captured through colour sketching. The aim is not to train sketching techniques, but to allow students to instinctively reflect their own colour perception through their colour experiences, to reacquaint themselves with the colours in nature and to appreciate the colours in their life. This phase will take place alongside the study of theoretical knowledge of colour, with lectures on the physics, physiology and psychology of colour in class, and outside the classroom allowing students to feel and collect colour of lift.

3.2. Colour analysis stage

The presentation of colour is influenced not only by the structural composition of the colour-emitting substance itself, but also by external light, the observer, adjacent colours and other factors. In the practical operation of colour matching, the influence of external factors should be minimised. After the first stage of colour feeling phase, students begin to actively engage with the sensory stimuli of colour. Using the theoretical basics learnt in the first stage, the collected colours should be analysed as influenced by their own and external factors, such as light sources, the three attributes of colour, and the corresponding relations among colors. To enhance understanding, this is complemented by theoretical exercises in colour, including color mixing exercises, colour matching exercises, tonal contrasts, etc. These exercises are useful in guiding students to analyse colour rationally. This stage can be completed either by hand drawing or by computer colouring.

3.3. Applying color stage

Textile color science is a course integrating art and engineering for undergraduate students. Based on theoretical knowledge of colour science, it focuses on teaching students the emergence of colour on textiles. Students are required to understand the connection between colour and people's psychology and emotions, to master basic colour matching skills, as well as to have textile colouring skills and textile colour analysis ability. After the previous training in colour perception and colour analysis, the students have got a basic knowledge of textile colouring and a certain rational understanding of colour, which, together with their sense of colour, will adds a personal emotional element to the application of colour on textiles. This stage is the most important section of the course practical teaching, which stress on the students' practical application of colour to textiles. Through the collection of materials and information in the previous stages, students are inquired to choose a theme and design their own work accordingly. For example, to design and finish a work which present 'Springtime Vibrancy' on cotton fabric by means of roll dyeing. Fig 1 shows a result of such works.

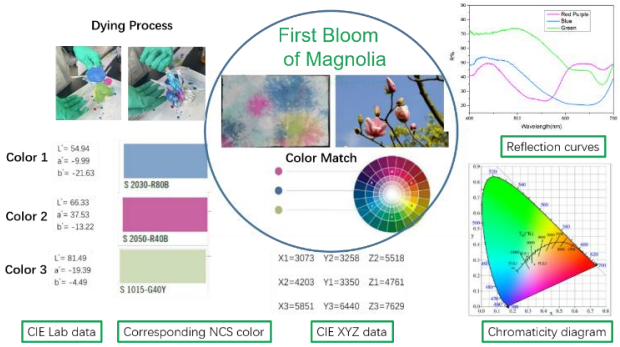


Fig .1 Representative course work

4. Teach assurance resources for practical teaching

4.1. Strengthening colour materials of the colledge library and school library

The college library is a vital collection and diffusion point for knowledge and information, and is charged with the dual task of teaching and research services in universities. It is an important place for students to acquire extra-curricular knowledge, self-improvement and culture exchange [3]. The school resource room is the centre of documentary and information resources for the teaching and research activities of school teachers and students. It carries the historical and cultural heritage accumulated during the development of the school, and its literature resource system is systematic, research-oriented and academic, and has distinctive disciplinary and professional characteristics compared with the college library [4]. Strengthening the construction of the colour library in the secondary school's resource room, realising the development of traditional colour information on the Internet, and capturing fashion colour information more accurately and systematically, which has incomparable advantages for libraries in terms of flexibility, professionalism and relevance in serving the teaching and research of colour science. In addition, the complementary and sound colour information of the secondary school can best meet the multi-angle, multi-layered and personalised service needs of colour students, help them to study and research at a deeper level, and enhance the relevance, effectiveness and cutting-edge development of relevant teaching and research.

4.2. Improve the color teaching aid

Modern teaching technologies and platforms play an important supporting role in colour science practical teaching. They create an interactive environment and make learning a multisensory experience. The Textile Colour Science course straddles the disciplines of both art and technology, and the practical teaching of this subject places a higher aesthetic demand on engineering students, for art students, a higher level of engineering and technical skills. In a short term, without being able to make up for the knowledge and skill deficiencies due to different professional backgrounds, various computer-assisted teaching resources, such as computer drawing and editing software, web-based material library resources and colour conversion open source websites will provide a strong guarantee for students of different disciplines in their learning of colour. And, with the various teaching aid, it also enables the students to explore and better understand the subject and facilitate learning

4.3. Exhibition system of course work

Exhibition is one of the best methods to test the application of whatever has been taught or learned. The students learn to apply the knowledge and information collected through various sources and the teacher has the opportunity to test the students what and how much they have learned. It should be held at the end of the course, which was both to ensure the integrity of the work and to inspire students to apply their enthusiasm for the course to their subsequent studies and postgraduate projects. Through the work exhibition, Students are supposed to achieve a sense of self-identity, build self-confidence in their professional studies and increase their motivation and engagement, which facilitates a virtuous cycle of teaching and learning. In addition to that, the reporting exhibition is a comprehensive practical activity, including a series of planning, organization, collaboration and promotion, which also helps to improve the comprehensive quality of students.

5. Conclusion

Practical teaching is playing a more and more important role in the interdisciplinary courses of arts and engineering integration. Reasonable arrangement of practical teaching contents, implement and evaluate practical teaching effectively would help and enhance the quality of theoretical teaching, enable students to get actual training and deepen interdisciplinary integration.

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