

# Exploring Paths for Development of Characteristic Majors Based on Teaching Faculty Development at Universities in the Era of Digital Transformation — A Case study of the Major of Environmental Design

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## ABSTRACT

Since China made the “development of double first-class universities” national strategy, teaching staff development has played a crucial role in development of characteristic majors. In the age of digital transformation, this study takes the development of the characteristic major of environmental design as an example to explore the development paths for characteristic majors at universities. Specifically, the user response, the teaching faculty, the training plans, educational resource guarantee at universities are analyzed, and suggestions about training of the teaching faculty in terms of the development orientation, position, subject-major coordinated development, and educational resources to meet the market needs of the digital economy, with a vision to promote development of the characteristic major of environmental design by advancing the improvement of the teaching faculty.

**Keywords:** *the characteristic majors, teaching faculty, the era of digital transformation, the major of environmental design*

## 1. INTRODUCTION

As China starts the initiative to build a digital economy, governmental and private organizations are going digital and move towards Industry 4.0 era. Especially, under the Covid-19 pandemic, China and the Europe are advancing green and digital transformation of industries, and Guangdong province is building the international technology and innovation center of the Greater Bay Area. These initiatives boost the demand for talents, and as China tries to grow into an education-strong country, how should the universities develop characteristic majors to keep up with the times?

The “double first-class university development” initiative is born of China’s ambition to build an education- and talent-strong country, and it is also the orientation of the educational development endeavors in China’s 13th five-year plan. In 2015, China issued 《the Overall Guidelines for Development of World First-

class Universities and Disciplines》, in which the first article was to “develop first-class teachers”. The teaching team are teachers, which involves factors including the teacher’s structure, the educational background, the occupational title and age, etc..

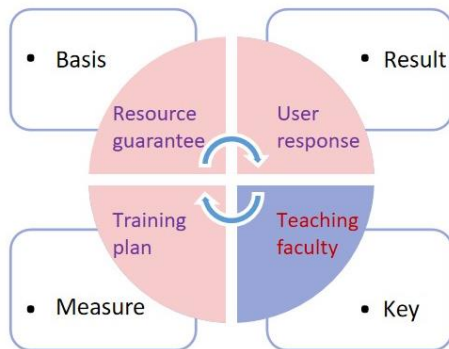
The characteristic major is the predecessor of the first-class disciplines. Developing the teaching faculty is the key to development of characteristic majors at universities [1]. In the era of digital transformation, how to develop characteristic majors at universities by developing the teaching faculty?

Since the major of environmental design was offered in Chinese universities in 1957, there are currently more than 452 institutions of university setting up environmental design majors in China. As this discipline has a short history, the corresponding teaching system and teaching resources show drawbacks despite advancement development in relevant subject and theories. Guangdong University of Finance & Economics is a practice-oriented

university in Guangdong that aims to cultivate practical talents that serve local industries. The School of Art and Design derived from the Space design research institute which established in 2008. In 2012, the department of environmental design was founded, and in 2017, it was certified to grant bachelor's and master's degrees. The teaching faculty of the department has extended from two members to 11, and the enrolled students have grown from 30 in 2008 to 115 in 2020. As universities are increasing the admissions, to develop the characteristic major of environmental design becomes the only way out for the disciplined development.

**2. RELATIONSHIP BETWEEN TEACHING FACULTY DEVELOPMENT AND THE DEVELOPMENT OF CHARACTERISTIC MAJORS**

A characteristic major involves four aspects, i.e., user response, teaching faculty, training plans and resource guarantee. Developing a characteristic major does not only advances a discipline to maturity, but also supplies more brain power and talents to the workplace. Therefore, it is necessary to coordinate the relationship between the development of characteristic majors and the development of disciplines and the job market.



**Figure 1.** Relationship between teaching faculty development and development of characteristic majors

The teachers are the main force which develop the characteristic majors, and also is the main force to cultivate talents for the workplace. The teaching expertise and styles of the teachers are formed in long term, and schools need to adjust the talent training plans according to demands the needs of the market. Thus, the teaching faculty development plays a central role in the development of characteristic majors. The relationship between teaching faculty development and the development of characteristic majors involves the following aspects (Figure 1).

**2.1. The teaching faculty is the designer and implementer of talent training plans**

The development of the characteristic majors has involved in the following which are aspects as the talent training philosophy, the design and optimization of talent training plans, the development and reform of courses, the development and reforms of the experimental education, the reform and innovation of teaching management systems. The teaching faculty design and optimizes the training plans, develops and reforms the curriculum, implements the teaching reforms, and thus is the designer and implementer of talent training plans. Therefore, the teaching faculty plays a key role in development of characteristic majors.

**2.2. The teaching faculty is the receiver and corrector of user feedback**

User' feedback are the market employment rate, which are the problems of matching with employment. The high employment rate shows that the professional construction is highly compatible with the demand of the labour market, and reflects the connection between the training of talents and the labour market. The teacher faculty accepts feedbacks from users and start the adjustments to the talent training plan

**2.3. The teaching faculty is the developer and the user of teaching resources**

The teaching resources, i.e., the economic and educational conditions, refer to the sum of human, material and financial resources that are used in education. The advancement of education is now more and more reliant on the educational resources[2]. The teaching faculty carries out talent training, curriculum development and textbook designs activities with the support of educational resources, and tries to extend these resources by building up labs and practice bases.

**3. PATHS TO DEVELOP CHARACTERISTIC MAJORS AT UNIVERSITIES BY DEVELOPING THE TEACHING FACULTY AGAINST THE BACKDROP OF DIGITAL TRANSFORMATION**

The environmental design major offered by Guangdong University of Finance & Economics is positioned as a major that features "business-art integration, design-driven and industry-oriented development". It follows the guideline of the Ministry of Education to develop new business disciplines and meets the need to develop talents for an era in which new technologies like the Internet, cloud computing, big data and artificial intelligence are introduced to social,

economic and educational development. It is also a necessary part in the initiatives to develop characteristic, high-quality and practice-oriented universities in the age of digital transformation and digital economy.

Since it was established, the environment design department has already grown into a core major in School of Art and Design of Guangdong University of Finance & Economics after 12 years of development. In 2018, it won approval to develop university- and province-level characteristic majors, and was certified to grant first-rate discipline certificates and master’s degrees. The teaching faculty has grown from two to 11 in these years, also has improved in educational background and professional expertise.

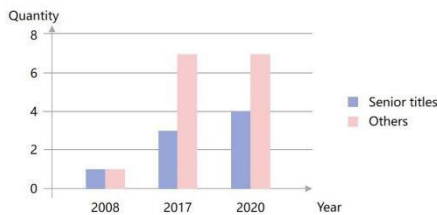


Figure 2 Academic titles of the teaching faculty

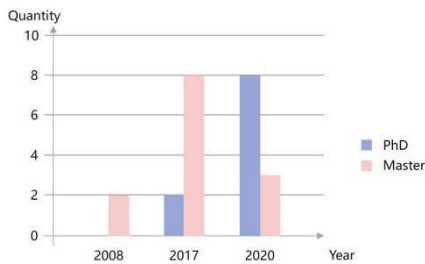


Figure3 Education of background of the teaching faculty

### 3.1. Diversifying the discipline background of teachers

Universities should encourage teachers to hone their professional expertise, keep up with the development of research work, extend their research directions and enhance the academic exploration, also improve the quality of the teaching faculty by way of further study, study tours and training[3].

**3.1.1. Further study:** universities should encourage teachers to pursue higher degrees. In 2017, the environmental design department had 10 teachers, eight of whom have master’s degrees, and two are PhD degree holders (20%). Three teachers have continued to pursue a PhD degree from Tianjin University, South China University of Technology, and Shinawatra University in Thailand. Moreover, the department has enrolled five architecture doctors from South China University of Technology, increasing the proportion of doctorate holders to 72% (Figure 2 , Figure 3).

**3.1.2. Study tours:** Five teachers have been organized to study tours abroad. In 2017 and 2018, two teachers had a study tour to South China University of Technology; in 2018, one teacher visited the University of Western Australia, and in 2020, two teachers had a study tour to Pace University in New York, America. These study tours and enhanced the partnership of the university with world-class universities and organizations, and laid a foundation for cooperation in talent training.

**3.1.3. Training:** one teacher has attended the training program “Urban Big Data”, the course “Virtual Reality and Teaching Research”, and provided a pilot class “GIS Big Data Platform and Data Visualization”; one teacher has attended the training program “Parameterized Architecture Design Workshop” and is about to provide a pilot elective “Parameterized Design”.

### 3.2. Creating platforms for development of teaching faculty

#### 3.2.1. Building academic resource platforms for teachers to make the academic achievements more systematic

Development of characteristic majors involves in some aspects, such as the determination of the target of talent training, course development, textbook design, development of labs and practice bases, and the teachers are the implementers. By organizing teachers in discussions, project proposals, textbook compiling activities, universities can increase the bonding of teaching faculty, develop the teaching faculty in a staged manner, and create a platform for sharing teaching resources. For instance, universities can encourage teachers to take part in research seminars about how to connect the required courses and specialty electives, which can engage them in research projects, youth teaching team research project proposals, and design of textbooks with experienced teachers. The teaching faculty of the Department of Environmental Design has taken part in the teaching quality and teaching reform program of Guangdong and the First-class Course Development Program of Guangdong University of Finance and Economics in 2020.

#### 3.2.2. Building a teacher-enterprise collaboration platform to promote supply to the market

The goal of developing characteristic majors is to train talents that meet the needs of the market. In the process of talent training, universities can introduce digital art design contests, digital teaching research programs, and at the end, “virtual space design” practice bases to create a joint training platform of teachers and enterprises, promote conversion of research results to industrial solutions, and gather talents, technologies and assets. For example, the

environmental design sophomores have taken part in the Gadi Cup Interior Decoration Contest, the seniors have taken part in the national Future Exhibition competition and the Asian Human Settlement Design Contest.

### *3.2.3. Creating a platform of lab development and advance the conversion of research results*

Development of labs is extension for educational resources and guarantee of educational activities. The proposal, construction and use of labs need joint efforts of the teaching faculty. Universities should encourage teachers to make the use of new techniques and devices, and formulate sustainable teaching methods.

## **4. PROBLEMS AND SUGGESTIONS**

### **4.1. Problems**

#### *4.1.1. Training of “double-type” teachers should be strengthened*

“Double-type” teachers refer to double-title and double-competence teachers who have other titles aside from titles as professional teachers, and are competent both in teaching of theories and guidance in practice. Against the backdrop of digital transformation, the teaching faculty’s mastery of new technologies has played a key role in the effect of talent training. Among the 11 members in the teaching faculty of Department of Environmental Design, three of them are the “double-type” teachers, which taking up less than 30% of the total teachers. Though some professionals with senior titles have also been engaged in the teaching activities, it is urgent to train “double-type” teachers within the teaching faculty.

#### *4.1.2. Ideological training should be strengthened in the development of the teaching faculty*

Shaping of values, imparting of knowledge, and development of teaching expertise are the three cornerstones in development of the teaching faculty. The teaching faculty is the main force, the course development is the main battlefield, and the classroom teaching is the main channel. In the digital transformation age, teachers should shoulder the responsibility to cultivate talents, introduce ideological and political courses to other courses, combine explicit education with implicit education, generate a synergistic effect, and develop a full-engagement, full-process and all-dimension big-picture vision.

#### *4.1.3. A normal learning and expertise training system is yet to be established*

As digital information technology moves forward and penetrates every aspect of our daily life, the boundaries of physical space is erased by the virtual world. The environmental design major boasts the features of both arts disciplines and engineering disciplines[4], entails both discipline development and professional development work, and has been exploring the kernel, the boundaries and extensions of the discipline as the time proceeds. The training of normal training of theories and practical skills of teachers should be maintained continuously.

### **4.2. Suggestions and solutions**

#### *4.2.1. strengthening practical training of teachers and improving normal training of theories and practical skills among teachers*

In the age of digital transformation, the major of environmental design has been extending its boundaries. It is necessary to improve the training of practical skills and information technology utilization skills of the teaching faculty, encourage the teachers to develop into “double-type” teachers and improve their theoretical and practical expertise.

#### *4.2.2. Strengthening ideological and political education in the development of teaching faculty*

By strengthening ideological and political education during development of the teaching faculty, universities can establish a sharing mechanism of quality resources, build an exchange platform for ideological and political education, organize exchange seminars, teaching observation programs, and teaching training projects of different realms and disciplines, make the fullest of modern information technologies, promote sharing of quality resources between regions and organizations.

#### *4.2.3. Developing a teaching research platform for development the teaching faculty*

Universities can cooperate with governmental departments or enterprises to build industry-university-research institute training bases, encourage long-term collaboration between “double-type” teachers and enterprises, and collaborate with enterprises in practice-oriented projects.

#### *4.2.4. Strengthening development of excellent teachers in the teaching faculty*

Development of the teaching faculty involves development of the teaching team and the major force of teachers. Excellent teachers can ensure sustainable

development of the teaching team. The major force of the teaching team are the “double-type” teachers and also the persons in charge of the teaching team. These teachers have rich academic achievements and keen perception in their field of expertise, can grasp the development direction of the discipline, have rich teaching experience, proficient teaching skills, leadership and coordination capacity. Thus, they can give the role of the major force full play. The leadership responsibilities should be identified, and different resources including manpower, material and financial resources should be introduced to development of disciplines, and the teachers should undertake their due responsibilities to improve the overall level of the development of the teaching faculty.

## 5. CONCLUSIONS

Development of characteristic majors at universities is a long-term endeavor that cannot be fulfilled at a stroke. The major development plans and resource guarantee for this endeavor can be realized in a short term, but development of the teachers’ expertise in this regard takes long. Against the backdrop of digital transformation and amid the development of the characteristic major of environmental design, the university should explore how to develop the major into a “high-quality” and “characteristic” major in line with the national strategy to develop new business disciplines, and developing the teaching faculty remains the key to this initiative [5].

## REFERENCES

- [1] B. H. Wang. Theories and practice of development of characteristic majors at universities , in : Proceedings of Central China Normal University Press, Wuhan, China, 2013, pp.11.
- [2] Qiongliu liu. Application and Exploration of Online Education of Art&Design Subjects , Proceedings of 2020 International Conference on Big Data and Informatization Education Zhangjiajie, China, pp.259-262. DOI:10.1109/ICBDIE50010.2020.00066
- [3] L. Y. Wang, Lv X. H. Optimization and innovation of plant related courses of environmental design majors in arts and design universities. in : Proceedings of Journal of Southwest Normal University (NATURAL SCIENCE EDITION), Xi’An, China, 2018, pp.206-211.
- [4] L. M. Song, “Amphibious” features of environmental design major and discipline development . in : Proceedings of Journal of Design, Beijing, China, 2020:13, pp.93-95.
- [5] Qiongliu Liu. Construction Strategy of Featured Environmental Design Subject Based on Art Design

Disciplinary Background, Proceedings of the 3rd International Conference on Judicial, Administrative and Humanitarian Problems of State Structures and Economic Subjects, Domodedovo RUSSIA, 2018, pp.865-869. DOI: <https://doi.org/10.2991/jahp-18.2>