

# *Discussion on the Drawing Review in Architecture Design Curriculum: Taking the Scholars' Residential Design from the Sophomores in Guangzhou City University of Technology as an Example*

Gong Chen<sup>1</sup>, Wang Li<sup>2,\*</sup>

<sup>1</sup>Guangzhou City University of Technology, Xuefu Road, Guangzhou, China

<sup>2</sup>Architectural Design & Research Institute of SCUT Co., Ltd., Guangzhou, China

\*Corresponding author

**Keywords:** Drawing review, Architecture design, Teaching method, Curriculum

**Abstract:** In the teaching process of architecture design, drawing review is a very important teaching method that can not only reflect the current teaching results in time but also the shortcomings in the teaching process. This article firstly uses the case study method, analyzes the process of drawing review of the sophomores majoring in architecture design from the School of Architecture, Guangzhou City University of Technology, and summarizes the current drawing review deficiencies and directions for improvements. Secondly, through field research, this article considers and proposes how to improve students' learning efficiency and drawing ability through a comparative study of the architecture major class of South China University of Technology and the one of Guangzhou City University of Technology. Based on the construction of a distinctive application-oriented core curriculum system, this article aims to improve the quality of core courses in architecture design major and discusses how to establish a fair and impartial drawing review process and mechanism to improve the construction of the curriculum system of architecture design.

## 1. Introduction

At present, the teaching reform is changing rapidly, and the teaching reform of the architecture design major is also being carried out in all aspects, not only teaching concept and teaching method but also teaching system and teaching content are constantly updated and improved [1].

The review of design drawings is a particularly important part in the teaching process of architecture design, the review mechanism affects the fairness of the evaluation, and the contents concerned by the drawing review can be very helpful to deepen the reform of the teaching process.

This article takes the scholar's residential design from the sophomores of the School of Architecture, Guangzhou City University of Technology, as an example to discuss and analyze the importance of drawing review in the teaching process of architecture design. In the drawing view, there were one hundred and forty-seven samples of drawings from the sophomores, and 10% of them would be reviewed as drawings excellent. As a result, fifteen assignments were selected as excellent drawings, and thirteen were selected as featured drawings.

The drawing review process and the drawing review summary will be stated as follows.

## **2. Process of Drawing Screening**

Before the beginning of the process of drawing screening, eleven tutoring groups were formed with thirteen to fourteen sophomores in each group. Based on the principle of fairness, teachers from each group would first select two to three outstanding drawings to participate in the coming rounds of voting to screen the final excellent drawings. There were three rounds in total during the whole process of drawing screening.

During the first round, instructors screened and recommended the outstanding drawings from each group to compete with the ones from other groups. The drawings were posted in different classrooms by the groups, and the teachers of drawing review collectively selected two to three relatively excellent drawings from each group to compete together. There were twenty-two drawings pre-selected in total from all sophomores in the first round.

During the second round, among those that were collectively selected by tutoring teachers during the first round, unqualified drawings were supposed to be eliminated and better executed drawings were supposed to be screened. Teachers had to make the decision to eliminate some drawings through preliminary preview quickly. According to the requested percentage of outstanding drawings, during the second round, six drawings needed to be eliminated in the pre-selection based on eleven teachers' votes. However, the result of the voting turned out that there were four drawings with eight to nine votes while another four drawings with five to six votes. Since the number of votes was close to half, it was difficult to decide. Therefore, the drawings with five to six votes stayed safe and would be eliminated after the third round of detailed drawing review. It is hoped that through the third round of screening, the top fifteen drawings would be selected. Drawings with fewer votes would naturally lose the competition. At the same time, drawings with eight to ten votes could be given ninety-one grades and ninety-two grades.

During the third round, the aim was to choose excellent drawings. After careful inspection, three drawings with only six to seven votes got eliminated, while the remaining fifteen drawings were reviewed as excellent since all of them were functional layouts and didn't violate regulations.

## **3. Summary of Problems and Solutions in the Process of Drawing Review**

### **3.1. Problems and Solutions of Voting System**

The voting process of drawing review was online by secret ballot. On the one hand, voting online brought convenience to architecture design teaching, on the other hand, we realized that voting online was not perfect and had problems to be solved.

#### **3.1.1. Advantages and Disadvantages of Online Voting**

The efficiency of online voting has been greatly improved compared to the previous voting by raising hands since the system of online voting is completely anonymous and teachers won't be affected by others' opinions and choices. Meanwhile, with the support of advanced technology, it is easier to realize the fairness of voting [2].

However, speaking of online voting, there do have technical limitations. In this case, the number of alternatives in the online voting system was limited to fifteen, which is far less than the number of drawings that participated in the competition. What's worse, if separate all the candidates into two groups and vote online separately, inevitably will lead to a situation that one group has a higher level than the other one, which is not fair for those who got eliminated from the group with a higher level.

This situation occurred in the second round of the drawing review, therefore, the drawings with five to six votes during the second round were not eliminated at that time.

### **3.1.2. Solutions of Online Voting System**

In order to optimize the online voting system, the number of votes for each group can be increased and counted in total. This means, if the teachers need to choose six drawings to be eliminated, each teacher needs to review drawings from two groups and choose six drawings to vote instead of three drawings among the drawings from two groups together.

## **3.2. Problems and Solutions of Drawings**

In the project of the scholar's residential design from the sophomores of the School of Architecture, Guangzhou City University of Technology, half of the residential site is flat while the other half is gently sloped. Most of the drawings submitted by sophomores chose the flat part of the site provided, however, the overall planning structure of the site wasn't clearly designed. It was common to see drawings lacking basic road traffic relationships around the building, what's more, it was hardly to see basic site environment design for the general plan of the residential courtyard.

In order to improve students' ability in site design, excellent examples of site design should be added to the task book and issued together in the future.

## **4. Thoughts on the Depths and Expressions of Drawings**

After carefully comparing both the depth and the expression of the drawings designed by students from South China University of Technology and Guangzhou City University of Technology, it is obvious to observe that those drawings designed by students from Guangzhou City University of Technology have one feature in common, which is they like to put a lot of technical parameters, such as the elevation of the general plan and the axis numbers in their drawings [3].

Based on this phenomenon and the college's teaching goal "architect assistant", it is obvious to see that in order to train students into high level technical talents, the teachers from Guangzhou City University of Technology request students to add necessary technical markings in their assignments, basically reach the depth of planning and construction. And it turns out that it is necessary for teachers to guide students to understand the labeling and know how to label correctly.

Therefore, on the one hand, during the teaching process, it is necessary to use the national cartographic norms and in-depth regulations as the basis of teaching to avoid labeling wrong technical data. At the same time, students should also keep their minds clear during the drawing process, they should be aware that different types of drawings have different depths. Therefore, at Guangzhou City University of Technology, the teaching content of the theoretical course Architecture Drawing includes two parts: Architectural Engineering Overview, and In-Depth Understanding of Drawings, to help students better understand the role of an architect in different project stages from scratch to design, from construction to use, recognize the diversity of architectural drawings and understand the depth requirements of drawings during different stages [4].

On the other hand, the expression skill of drawing is closely integrated with the basic skills of art and is trained in the form of basic assignments in architecture design teaching. Therefore, in the second-year curriculum arrangement in Guangzhou City University of Technology, the graphic expression of drawings and analytical drawing production should be strengthened. By showing the excellent assignments from the South China University of Technology as models to the students from Guangzhou City University of Technology, and increasing professional lectures on hand-drawings skills, the effect of drawings can be improved impressively [5].

Based on the thoughts above, this superimposed method of drawing technical means combining graphic expression skills can ensure a standard and rigorous drawing effect.

## 5. Thoughts on Effectiveness of Learning

In the school of Architecture, Guangzhou City University of Technology, in order to ensure that students can learn design methods from multiple teachers during the design courses, the teachers will be rotated every time when the design project changes, and every time the tutoring starts, the drawing standards will be emphasized, however, the drawing error rate doesn't reduce as much as expected.

What is the reason for this phenomenon? The preliminary conclusion is that students' mastering of knowledge is at a level of understanding, which will cause a lot of uncertainties when it comes to an actual operation [6]. There is a common problem among the students from Guangzhou City University of Technology, which is they don't study the courseware nor take notes while studying in class. More than ninety percent of the students do not have class notes, for those who have class notes, only take notes on a piece of paper which will not be well organized and got lost easily. During one research of the students from the 2020 class, none of them uses a notebook for taking notes in class, instead, some of them only use drawing paper and lose the paper immediately after class.

The learning habits of students need long-term supervision by teachers to form. Therefore, although in the drawing class teachers repeatedly emphasize that a notebook should be used to record the key points of the class so students can bring the notebook and review it all the time, university classes are not primary school classes after all. The study habits of students have already been formed and it is very difficult to achieve essential changes through constant requirements.

Some students in the class are in a good serious state of studying, however without reviewing and summarizing constantly, they lose the knowledge learned during the class loses very fast. This can explain why there still have incorrect markings in the excellent drawings from hard study students. These students who study hard are surrounded by students who don't study and submit drawings with a lot of marking incorrect, and in this situation, the good students start to doubt themselves and make mistakes in their drawings. This can also explain why these hard-study students get very high evaluations when they enter good companies since they integrate into an environment that matches their habits, and the surroundings are all correct demonstrations.

In order to make comparative research, we went to the teaching building of the School of Architecture, South China University of Technology, and observed the state of the students there. The research turned out to be surprising at first and triggered a lot of thinking.

In the School of Architecture, Guangzhou City University of Technology, all the students in the classroom keep their heads up and stare at the blackboard, which is a very good state of studying and can encourage teachers to devote themselves to the lecture. However, in the School of Architecture, South China University of Technology, nearly half of the students in the classroom either stared at their mobile phones or heads down to read, what's worse, some students even slept in the classroom. This phenomenon is quite surprising at first since the South China University of Technology is one of the top universities in China. After more careful observation, we found out that although the students from South China University of Technology didn't focus on the teacher one hundred percent like these in Guangzhou City University of Technology do, they occasionally look up at the blackboard and stared at the courseware for a little bit, picked up a pen and took some notes on their notebooks, and continued to watch their phone. And almost ninety percent of the students there had an open notebook and a pen on the desk waiting to take notes. Although the studying states of students from the South China University of Technology vary, what is impressive is that the notebooks on the desk.

On the contrary, the students from the School of Architecture, Guangzhou City University of

Technology, usually only put one mobile phone and one unopened book on the top of their desks, occasionally a few of them take some pictures of the courseware with their mobile phones during the class.

This comparative research reflects the differences in the efficiency and behavioral patterns of different students. In conclusion, being able to listen to lectures and record key points to review after class is critical for students majoring in architecture design [7].

## **6. Thoughts on Teaching Methods**

It is difficult for students to change their habits. What needs to be changed is the teaching method. How to improve the quality of teaching results according to different types of students is very important.

One thing I have to mention here is strict education. Strict requirements will bring good results. The strictness in the drawing class should be carried out from the following aspects

### **6.1. Strict Requirements for Drawing Attitude**

Without a strict, cautious, and serious attitude, it is impossible to produce a high-quality drawing. Therefore, when the students first entered the school to study drawing, they have to be strictly stipulated attendance to form a strict attitude towards drawings [8].

### **6.2. Strict Requirements for Assignments**

Ideally speaking, when it comes to unqualified drawings, it is necessary to require students to redo the assignments. However, if the assignment is repeated many times, the workload of the student will increase a lot. Therefore, it is more effective to leave a little bit of time for students to finish the homework in the classroom, let teachers review homework on spot, show excellent assignments to everyone else in the classroom, and correct the homework immediately in the classroom if it doesn't meet the requirements. This method can effectively improve the teaching result, however, this method is quite time-consuming and can not correct all the papers with limited time [9].

There are another two methods to improve the effectiveness of studying. The first one is to divide the class into several groups and appoint the students with better drawing skills as group leaders to lead and guide the rest of the group. The second one is teaching on a smaller scale so that the teacher can guide every student to better improve classroom efficiency.

### **6.3. Strict Requirements for Drafting Regulations**

The teaching content should be arranged strictly in accordance with the national drawing standards and the national engineering drawings depth regulations.

### **6.4. Strict Requirements to Broaden the Professional Knowledge**

From the perspective of training a professional assistant designer, it is necessary for students to familiarize themselves with the various stages of a project, know how the corresponding architectural designers cooperate, and what the depth of the drawings should be [10].

### **6.5. Strict Requirements to Deepen the Drawings**

Speaking of drawings of architecture design, generally what affects the teaching results the most is the depth of the drawing. The teaching system in the School of Architecture, Guangzhou City

University of Technology, aims to help students to complete their senior year drawing with depth through three years of training. However, based on the drawings submitted by students, it is obvious that these students didn't master the knowledge.

For example, the design elevation of a single building floor is based on the relative elevation system, which is based on  $\pm 0.000$  digits of the first floor; while the elevation in the general floor plan is based on the absolute elevation system, which is based on the elevation of the Yellow Sea. The difficulty here is that students often treat the general plane as the roof plane, and mark the relative elevation of the roof in the single building design. This is also a common problem that students majoring in architecture design make with an architectural focus.

Therefore, during the teaching process in the future, it is necessary to add more strict requirements for large-scale assignments.

## 7. Conclusions

The drawing review is an important reference for teaching adjustment and reform, and it should be given enough attention and incorporated into the teaching plan. Although the current drawing review is based on the teacher's evaluation of the students' drawings, in the future, students can be considered to be included in the evaluation process, and various forms such as discussion and mutual evaluation can be used to allow students to understand the key points of learning in the process of drawing review.

## References

- [1] Xu Li and Su Liu. (2012) *From Implicit Interpretation to Explicit Expression of the Regional Architecture Culture*. *Huazhong Architecture*, 11, 174-178.
- [2] Ming Xie and Meiliang Zhang. (2021) *Exploration on Diversified Teaching Based on the Integration of Industry and Education: A Case of the Course of Architectural Design*. *Urbanization and Architecture*, 18, 125-127.
- [3] Juan Liu. (2020) *Open teaching based on ability training, taking the second-year architectural design course for architecture majors as an example*. *Journal of Weifang University*, 6, 90-93.
- [4] Haiou Wang and Guofeng Zhang. (2022) *The teaching reform of architecture design based on the concept of OBE*. *Journal of Green Science and Technology*, 24, 234-236.
- [5] Shaochun Li, Yongjuan Geng and Dongshuai Hou. (2020) *Research on the current situation and countermeasures of the integration of production and education in applied undergraduate colleges and universities*. *Higher Education Journal*, 32, 77-80.
- [6] Jianyun Zhang. (2020) *Vocational education industry-education integration park: connotation, power and function*. *China Higher Education Research*, 11, 104-108.
- [7] Yan Li. (2020) *Application research on the informatization teaching methods of architecture major under the background of integration of production and education*. *Science and Technology Economics Guide*, 20, 141-142.
- [8] Chunling Liang, Shengli Gu, Guiling Yang. (2021) *Research on Discipline Integration of Land and Space Planning, Industry, Education Integration and Cooperative Education Model*. *Anhui Architecture*, 28, 116-117.
- [9] Yue Wu and Fan Chen. (2015) *The basic structure of undergraduate design education in the Department of Architecture of Zhejiang University*. *Urban Architecture*, 16, 90-92.
- [10] Weimin Zhuang. (2015) *Thinking after the course of open architectural design teaching design tutors*. *Architectural Education*, 7, 120-131.