A study for Application Research of "Regional" Architectural Culture in Architectural Design Courses

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Abstract. Under the impact of the globalization culture, the city's style looks like the same in many cities in China. It has caused the reflection of the architects and hopes to integrate regional culture into the architectural design. This article takes the design topic “Pedestrian Commercial Street Design” in architectural design teaching as an example. By comparing the learning effects of students before and after study, it provides practice and reflection for regional architecture design. Firstly, it reviews and discusses the development of Yinchuan regional architecture and regional theory as the basis of teaching process. Secondly, through the practical operation of design teaching, students are guided to complete relevant design content. Finally, through the questionnaire survey on the learning effect before and after the students' study, the students' regional academic operation results are summarized. By reflecting on the concept of regional architecture in the process of design teaching, the author tries to put forward some suggestions on the development of regional architecture.

1. Introduction

Globalization has gradually led to the disappearance of China's regional cultural characteristics, the integration of architectural culture and urban culture, as well as the unique crisis. In this context, many scholars and architects are trying to integrate regional culture into architectural design. Architects extract some symbols from the regional culture to express regional culture, but most of them are only copies of regional culture. At present, most of the architects in the industry are architecture majors, and their ideas are influencing the whole architectural design. In the school education, the teacher's thoughts often affect the students. Therefore, what school education needs to consider is how to reasonably integrate regional design concepts into architectural design courses, guide students to think about how to respond to regional culture in design, and reflect regional culture in architectural design.

This paper discusses the regional architectural design strategy of pedestrian street based on the study of regional culture. It is not just about providing a design approach, but more importantly, the process of shaping local cultural awareness. The previous design topics are directly given by the teachers, including the design conditions and design content. The students are basically designing operations under the set theme. Students basically design and operate under the setting theme, and at most analyze the current situation of the base, lacking the understanding of users' needs. Therefore, the field-based
research practical teaching mode is adopted to allow students to experience participation in person and cultivate students' observation ability, analysis ability, innovation and exploration ability.

2. Literature review
Through the above background analysis, the school's architectural design curriculum was reformed, and regional culture was integrated into the architectural design education. Our school is located in Ningxia, and most of the students are local students. Students have already rooted the regional culture in their minds. Therefore, the content of Ningxia's local characteristics should be added to the course, so that students can analyze regional culture from the perspective of architecture and dig into the design elements of Ningxia's local characteristics, so as to meet the needs of local professional design talents.

2.1. Architectural design teaching mode
The traditional architecture teaching system is based on Taylor's principle. It has the advantages of complete knowledge system, strict training process of basic skills and mature teaching contents. Through design teaching operation, the ultimate goal is to enable students to master the basic thinking mode and working method of architectural design. The “Architectural Design” series is the main course of the five-year architecture major. It integrates all the competency courses of architecture teaching and combines theoretical teaching with engineering practice. It is a professional course which combines theory teaching with practice teaching.

2.2. Regional architecture
The meaning of regional architecture can be divided into narrow sense and broad sense. Regionalism in the narrow sense refers to the response of architectural works to local factors such as individual environmental and climatic conditions. Regionalism in a broad sense refers to the expression that corresponds to the cultural system. Lewis Mumford proposed a regionalist architectural view earlier in 1924. He believed that regionalism was far more versatile than international ones. Kenneth Frampton, a British architectural theorist, recognized the positive response of vernacular architecture to local characteristics in architectural design, which was due to the adaptation of regional sites. The localism of Alexander Jones and the critical localism of Frampton provide an effective theoretical guidance and practical summary for the development of regional architectural creation theory.

2.3. The status of Yinchuan regional culture
Yinchuan City is the capital of the Ningxia Hui Autonomous Region and has developed a unique regional culture under the influence of a unique climate. Yinchuan has three administrative regions, namely Xingqing district, Jinfeng district and Xixia district, forming the urban characteristics of Hui traditional architectural style, modern architectural style and Xixia style architecture.

3. Research method

3.1. Research procedure
Through the review of regional architectural culture and related theoretical literature in Yinchuan city, this paper takes it as the basis of regional design subject. Investigate and analyze Yinchuan Pedestrian Commercial Street, obtain relevant design knowledge, construct a regional architectural composition model, and learn how to embody regionality in design through the practice of designing courses.

This case teaching method selects the second design topic pedestrian commercial street design in the undergraduate third-year architectural design course. The 8-week design course was conducted and the teaching activities of field investigation on regional architectural design were introduced. The whole course is divided into three stages: the preliminary research stage, the process analysis stage and the post-production stage. First of all, a pre-test was conducted before the start of the study. Secondly, the teaching mode of field investigation on regional architectural design was integrated into the 8-week
teaching activity. Finally, after the end of the homework, a teaching effect survey was conducted to compare the learning effect before and after the study.

3.2. Questionnaire design
The questionnaire was designed to investigate the learning satisfaction and learning effect of junior students in Ningxia University. The questionnaire type mainly adopts the Closed-Ended questionnaire format, and the questionnaire option is the Likert-type Scale, from the lowest level of consent to the best agreement and give 1 to 5 points respectively. Questionnaire design mainly includes three aspects: basic data, teaching method and learning effect. Questionnaires had been sent in person from May 1, 2018, and collected immediately after completion.

3.3. Research methods
This study used a triangular crossover test to validate the results of the study through action studies, paired-sample t-tests, and teaching effectiveness surveys. The following is a summary of the action study, the paired sample t test and the teaching effectiveness survey:

- Action research. Through the method of action research, this study analyzes the learning process of students in the field research teaching. Through the reflection of interaction, we understand the impact of field research teaching on students' learning.
- Paired samples t verification. The paired sample t test is significant in testing whether the student's learning effect is improved before and after the field research and construction design teaching mode. The research tool uses DTT assessments adapted from TTCT.
- Teaching effectiveness. The researchers used the Likert five-point subscale design to prepare a total of 21 questions for the teaching effectiveness questionnaire, and used the network questionnaire to investigate before and after the study.

4. Regional project design content
4.1. Investigation and research on Yinchuan Pedestrian Commercial Street
This paper takes Gulou South Street of Yinchuan pedestrian commercial street as an example. Yinchuan Gulou South Street is located in Xinhua Street, the most prosperous commercial district in Yinchuan City. It is an old street with a hundred years of history. Gulou South Street is from Yinchuan Mall to Drum Tower. The whole block is a walking block with Gulou, Keyuan and Xinhua mosque as nodes. The Drum Tower is a historic building in Yinchuan City. The Keyuan is a historical building with gardens. The Xinhua mosque is an Arab-style mosque building.

4.1.1. Analysis of surrounding traffic environment
The main road is the main passageway through which all the vehicles and pedestrians in the urban area pass through. As a result, the traffic order at the entrance and exit of the pedestrian street is chaotic, and the traffic jam situation is very serious (Figure 1).
4.1.2. Functional partition analysis
Gulou South Street is divided into comprehensive commercial, catering, and clothing functions. The shops are mostly front and back courtyard space, which is mainly based on the traditional layout of door and “口”shape. The building community has a clear division, reasonable function and compact layout. The contradiction among different functions of processing, wholesale, retail and residence is well handled.

4.1.3. Comparative Analysis of Regional Composite Spaces with Mosques as Nodes
Xinhua Mosque is located in the prime location of Yu Huang-ge South Street in the bustling commercial district of Yinchuan City. It is an Arabic architectural style with 2 floors above and below. The front of the main hall is a courtyard. There are 3 rooms on the north and south sides of the courtyard. There are meeting rooms and accounting rooms in front of the lower level of the temple. There is a full-length dormitory on the south side, a kitchen, a warehouse, a boiler room, and a shower room on the north side (Figure 2).

4.1.4. Analysis of business distribution
There are 79 commercial facade stores, which are mainly integrated shopping malls. It is mainly specialized in clothing, shoes, hats, household appliances, and specialty stores. Others are supplemented by catering, which basically covers all the formats of clothing, food, housing and transportation.

4.1.5. Comparison of street space patterns
The street aspect ratio city constitutes an important factor in the feeling of street space. The ratio of the street width D to the building height H along the street determines the different street space feelings. Through on-the-spot investigation and measurement, the D/H of Gulou South Street is slightly larger than 1 or slightly less than 1. It is suitable for people to walk, do not feel oppressed, and bring people an intimate feeling. Gulou South Street has a linear pattern of street, its spatial scale and architectural texture have been continued, and the overall relationship has been preserved. The direction of the street is clear, and continue to show subtle shrinkage, enlargement, and turning, so that people can not feel the existence of a straight line(Figure 3).

4.1.6. Analysis of existing problems
Through the analysis and research of the field research in Gulou South Street, the problems existing in the current situation are summarized. The following are the problems that are summarized: (1) Single function. (2) The layout is unreasonable. (3) Features and style are not fully reflected. (4) The green area is too small. (5) The traffic is crowded and the shopping environment is poor.

5. Research result
The study sample consisted of 34 students in the third year of the architecture department, including 21 boys (60%) and 13 girls (37.1%). There are 28 students from rural areas (80%) and 6 students from cities (17.1%). The second design period for the second semester of 2017-2018 during the study period. The teaching effect questionnaire of 21 questions was used to investigate the teaching effect of students before and after receiving the teaching mode. The questionnaire was based on the Likert-scale five-point scale. The answers were divided into five options: “very dissatisfied, dissatisfied, general, satisfied, and very satisfied”, with 1-5 points.

5.1. Paired sample t test
In this study, a paired sample t-test method was used to study whether the students' learning effect was significant before and after the practical teaching mode. The students conducted questionnaire surveys before and after the study. A total of 34 questionnaires were issued, 0 invalid questionnaires and 34 valid questionnaires. The effective rate of the questionnaire was 100%. After calculation by SPSS Statistics 17.0 software, the Cronbach's coefficient is 0.936, which satisfies the level of high confidence.
5.1.1. Teaching objectives research hypothesis verification

- H0: The intervention of the field research teaching method has not significantly improved the completion of the “regional” architectural design teaching objectives.

| Item                                                                 | Before Learning | After Learning | t     | df  | p    |
|----------------------------------------------------------------------|-----------------|----------------|-------|-----|------|
| 2. The intervention of field research teaching methods can help you  | Mean            | Standard       | Mean  |     |      |
| better achieve your learning goals?                                 | Standard        | deviation      | deviation |   |      |
|                                                                      | 4.44            | .613           | 3.88  | .640| .002 |

The results of the study found that the pre-test average (M=4.44, SD=0.613) was significantly lower than the post-test mean (M=3.88, SD=0.64), t=3.396, df =33. p=0.002 is less than 0.05. It shows that after students accept the case teaching mode of architectural design, the degree of completion of “regional” learning goal is significantly improved, and the research hypothesis H0 is not accepted, as shown in Table 1.

5.1.2. Learning ability research hypothesis verification.

- H0: Through the field research method, there is no significant improvement in the ability of students to learn “regional” knowledge independently.

| Item                                                                 | Before Learning | After Learning | t     | df  | p    |
|----------------------------------------------------------------------|-----------------|----------------|-------|-----|------|
| 10. The way of field research allows you to pay more attention to  | Mean            | Standard       | Mean  |     |      |
| your usual learning and improve your ability to learn independently.| Standard        | deviation      | deviation |   |      |
|                                                                      | 4.21            | .729           | 3.65  | .734| .008 |

The results of the study found that the pretest average (M=4.21, SD=0.729) was significantly lower than the post-test mean (M=3.65, SD=0.734), t=2.810, df =33. p=0.008 is less than 0.05. It is indicated that through field research, the ability of students to learn “regional” knowledge independently is significantly improved. The research hypothesis H0 is not accepted, as shown in Table 2.

5.1.3. Learning effectiveness research hypothesis verification

- H0: Through the field research method, there is no significant improvement in the students' learning of “regional” professional technical knowledge.

| Item                                                                 | Before Learning | After Learning | t     | df  | p    |
|----------------------------------------------------------------------|-----------------|----------------|-------|-----|------|
| 13. I think that the benefits of this course in the professional and | Mean            | Standard       | Mean  |     |      |
| technical knowledge are great.                                       | Standard        | deviation      | deviation |   |      |
|                                                                      | 1.008           | 3.71           | .676  | 2.511| .017 |

The results of the study found that the pre-test average (M=4.21, SD=1.008) was significantly lower than the post-test mean (M=3.71, SD=0.676), t=2.511, df = 33. p = 0.017 is less than 0.05. It is said that through field research, the students' learning of "regional" professional and technical knowledge has been significantly improved, and the research hypothesis H0 is not accepted, as shown in Table 3.

6. Research conclusions and recommendations

This study uses questionnaires to collect and analyze the learning effects of students before and after study, and to understand the phenomenon of architectural design education through field research. Then, descriptive statistics and paired sample t test analysis were carried out with SPSS software to explore the learning effect of field research and practical teaching mode. Finally make recommendations.
6.1. Design Strategy
Regional culture can reflect local history and culture, folk customs, religious beliefs, etc., and architecture, as a carrier of culture, bears the responsibility of embodying regional culture. This paper starts from the regional culture and studies the unique regional architectural type of Yinchuan Pedestrian Commercial Street. Through the analysis of the basic environment of the research object, the entrance and exit space, the node space, the street vitality, the architectural style, etc., the design method of the pedestrian commercial street into the regional culture is discussed, as shown in Table 4.

| Design method combining regional cultural elements | Continuation of urban style and culture |
|--------------------------------------------------|----------------------------------------|
| Xixia District - Xixia Style Modern Architecture   | Jin Feng District - Modern Architecture |
| Xing Qing District - Modern Hometown Style        | |

Table 4 Summary of design strategy

6.2. Conclusion
The research results show that students can learn the complex space design method through the field research Yinchuan Pedestrian Street. Through the practice and case study, the differences between Yinchuan characteristics and culture can be clearly known. In the design, the regional composite space of the building is integrated, and the local regional design techniques are integrated into the pedestrian street space design. The differences and analysis of the students before and after the study are studied and the following conclusions are obtained.

- The teaching goal of architectural design has a significant improvement effect. Through the field research methods, the completion of learning objectives has been significantly improved. The ability to understand teaching content and deepen the teaching content more clearly, and the ability of students to apply knowledge about architectural design has also been significantly improved.
- The learning ability has a significant improvement effect. Through the field research methods, the students' ability to learn independently, the ability to solve complex problems, and the broad vision of students have been significantly improved.
- Learning effectiveness research hypothesis verification. Through the field research and teaching methods, the students' professional and technical knowledge and the learning effect have been significantly improved. Students hope that the future courses can also be studied by field research.

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