

A Study on the Process of Planning, Constructing and Educational Program Designing of Dazu Primary School

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This research takes the Dazu primary school, which is located in Luguhu Sichuan Province, as the object of the case study. Through the field survey and interviews with the teachers, the headmaster and the school designer, I want to achieve the following 3 goals: 1) to clarify the process of rehabilitating Dazu Primary school; 2) to reveal the process of planning and constructing the new school-house; 3) to explore the process of designing the new educational programs related to the local traditional culture and industry.

According to the research, I argue that: 1) the participation of the external volunteer team and the local villagers is the reason for rebuilding Dazu Primary School; 2) the initiative of the architect and the participation of the local villagers and artisans in the planning and construction process lead to the spaces with spatial openness and flexibility in new school-house; 3) the cooperation of the volunteer team, volunteer teachers, local teachers, and the external experts is crucial in designing the new educational programs.

Keywords: *Small Primary School, Rural Area, NGO, Education Programs, Local Community*

1. Introduction

1.1 Background

With the rapidly developing economy in China, the gap between the rich and the poor is becoming wider and wider. At the same time, the gap of education and school facilities between urban area and rural area is also widening. However, in the recent ten years, many creative Hope Primary Schools¹ were built in poverty-stricken rural area with the outside help of architects and NGO, and the cooperation of local communities because of the increasing concern about the school architecture in rural area and the occurrence of the necessity of the rebuilding schools in the post-earthquake reconstruction. These schools have two features which the conventional urban schools do not have. The first one is that they have spaces with spatial openness, flexibility, and diversity, which are designed by the cooperation between schools and local communities. The second one is that some new education programs connected with local culture and industry are created in order to improve the educational quality and support the

management of the schools. Dazu Primary School is a typical case among those small rural schools.

1.2 Research Purpose

This research takes the Dazu primary school, which is located in Dazu Village, Luguhu Town, Yanyuan County, Sichuan Province, as the object of the case study. The purposes of this research include: 1) to clarify the process of rehabilitating Dazu Primary school; 2) to reveal the process of planning and constructing the new school-house; 3) to explore the process of designing the new educational programs related to the local traditional culture and industry (hereinafter referred to as the new educational programs).

According to studying the process of construction and current situation of Dazu School, we aim to provide a good example and gain the knowledge of closing the gap of education between urban area and rural area and rebuilding schools in the post-earthquake reconstruction with the help of NGOs, external experts, and the local community.

1.3 Research Methods

In order to achieve research purposes, firstly, I interviewed the teachers, headmaster, the director of school and NGO members who has donated and is helping the management of Dazu Primary School in June 2015, March 2017 and June 2018. Secondly, I also interviewed the architect who designed the new school-house of Dazu Primary School in May 2016 and clarified the procedure of the project starting, the background and the process of the planning and constructions of the school. Moreover, I implemented a field survey on Dazu Primary School in June 2015 and began to follow the activities that were reported in Wechat Official Accounts of school from 2015 to present to reveal the current situation.

2. The Outline of Dazu Primary School

2.1 The Outline of Dazu Village

Dazu Village, where Dazu Primary School locates at is an ancient village which belongs to a minority nationality-Naxi nationality. There are more than 900 villagers and 150 households. 95% of the villagers belong to the Naxi nationality, can speak Naxi language, belief in Tibetan Buddhism and Dongba religion, and still retain many of the traditional customs and living habits of the Naxi nationality. Although Dazu village adjoins to the Lugu River which is a famous tourist attraction in China, its tourist industry is not as well developed as the other surrounding areas of Lugu River. The Villagers support their families by out-migrating for work, farming or woodworking. Nevertheless, Dazu Village, which has abundant natural resource and the superiority of natural scenery, still has excellent potential for development (Fig.1).

2.2 The Outline of Dazu Primary School

Dazu Primary School was rebuilt in 2004 and run by local civilians. It has only preschool and first grade at the preliminary stage. After 14-year development, it currently has pre-school and grade 1 to 6, with 79 students, 10 local teachers and 3 volunteer teachers from outside² (hereinafter referred to as external

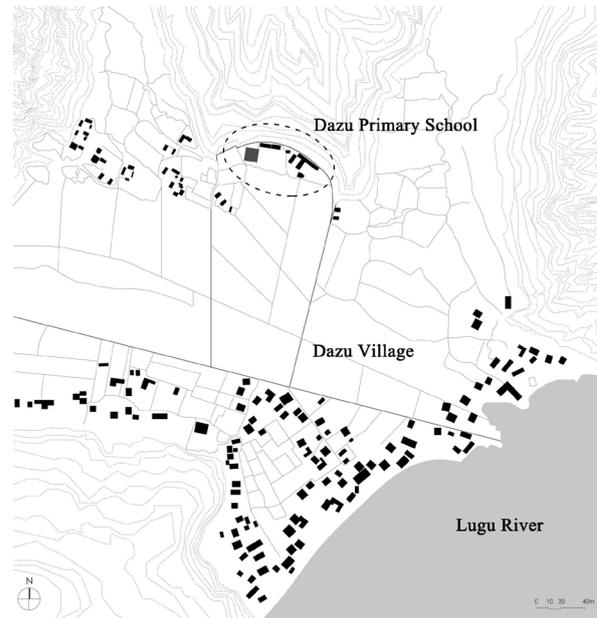


Fig. 1 The Masterplan of Dazu Village ³

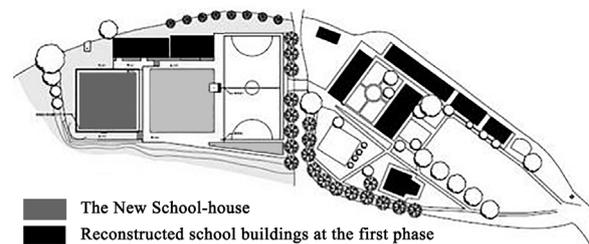


Fig. 2 The Masterplan of Dazu Primary School

volunteer teachers). Nowadays, the enrollment rate of Dazu Village, where the dropout rate was high, has reached 100%.

The construction of the school building is mainly divided into 2 phases. The first phase is rehabilitating and rebuilding on the basis of the original old school-house. The second phase is constructing a new school-house (Fig.2). Both of the construction phases were completed by the interaction and the cooperation of the volunteer team, NGOs, external experts, and the local community. Moreover, with the cooperation of these groups, the school has also designed and is developing various new curriculums and educational activities that are related to the local culture and ethnic characteristics.

In the following section, I will mainly discuss and analyze how these volunteer team, NGOs, external experts, and the local community collaborate to rebuild the school, to plan and build the new school-house, and to design the new educational programs.

3. The Rehabilitation of Dazu Primary School

3.1 The Cooperation of the Volunteer Team and the Local Community

In 2000, the School had no choice but closed due to the lack of funds and some government's policies. As a result, the students had to walk to the school in the neighboring village for a couple of hours. This situation led many students to drop out of school to take up farming. In 2004, a volunteer team from Taiwan who pays close attention to the education of rural area made a decision to assist the village to rebuild the school after finding the difficulties of obtaining education for children in the village. After 4 months, they rebuilt and expanded 8 wooden school buildings with local traditional features on the basis of the original buildings through self-sufficiency and raising construction funds from the charitable organizations and compassionate public figures. At the same time, they encouraged the villagers including elders and children to contribute their labor force. During the rebuilding process, there were no professional architects involved. Led by the volunteer team founder, the local villagers, who have the experience of building their own local dwelling houses, built classrooms, teacher offices, dormitory, bathrooms, computer room, library, kitchen, dining room, teaching pavilion, and basketball field. The construction materials such as bricks and timber were taken locally or voluntarily provided by each household in the village.

3.2 The Initial Operation Status

After the school rehabilitation, the founder of the volunteer team became the headmaster in 2005. At that time, most of the teachers were volunteers, since the illiteracy rate of Dazu village is as high as 90%,

and the local villagers did not have sufficient quality to complete the school's teaching tasks. In order to solve this issue, the school also arranged a night class for adults to improve the overall educational level of local villagers at the beginning stage.

The operating funds were mainly sponsored by some philanthropic individuals and organizations, lacking of a long-term guarantee. In 2006, the Dazu Public Welfare was established to provide primary education, poverty alleviation, students support program, environmental protection, cultural protection and ecotourism. With the efforts of the volunteer team, therefore, sustainable operating funds is finally secured by an NGO of Taiwan.

4. The Process of the Planning and Constructing the New School-House

The rehabilitation of the school has attracted students from Dazu village and surrounding villages. As a result, the space of school buildings cannot meet the requirements caused by gradually increasing students. Moreover, at that time, the school reconstruction activities after Sichuan earthquake in 2008 was being carried out, and the hard conditions of educational facilities in rural areas had received an attention from various fields. In this context, a new school-house was built with the cooperation of the external architect, NGO, and local villagers in 2010.

4.1 The Outline of the New School-House

The new school-house of Dazu Primary School is a single-story building with a composite structure of a C-shaped lightweight steel framing and foam board. It consists of two standard classrooms, a multi-purpose classroom and a reading room. Instead of the traditional side corridor type classroom layout, the architect arranged four compact rooms in a square-plan school-house, using doors, removable partition walls and small common spaces to connect all rooms for allowing users to enter and exit each classroom conveniently (Fig.3). This kind of classroom layout not only saves the corridor space under the condition of low construction cost, but also

makes the classrooms more similar to the ordinary living space in order to create a “feeling at home”. In addition, the walls of each room are made of translucent U-shaped glass, which allows each room to borrow light from the next room and makes the students feel that the whole space is more open (Fig.4).

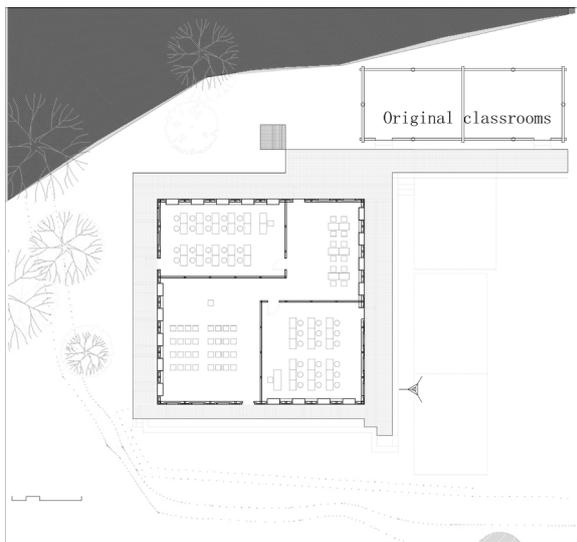


Fig. 3 The 1st Floorplan of the New School-house



The New School-house (this photo is from www.ikuku.cn)



The classroom



The glass wall of room

Fig. 4 The Pictures of the New School-house

4.2 The Procedure of Starting the Project

When starting the project of the new school-house, the procedure can be divided into four stages. The first stage is that the NGO of Hong Kong implemented a field survey around China to collect the information on the current situation of the rural school facilities and financial contributions in order to meet the requirements of rebuilding schools after the Sichuan earthquake and improve the learning environment in the rural area. The second one is that they chose the foundation for aiding the school construction and selected the architect who is also a university teacher with good reputation. The next is that the NGO conducted a further investigation on the current status of Dazu Primary School with the architect together when they completed the preparation of construction funds. After they obtained the information about the demand for a new school-house, learned that the condition of local transportation and infrastructure is appropriate, and received assurances that the volunteer team will manage the school, they finally decided to start the donation for Dazu Primary School. Lastly, the architect began to design the school-house when they got the building permit of the project from the local government (Fig.5).

The analysis above shows that the project was initiated by the NGO firstly and developed through the cooperative promotion of the NGO and the architect.

4.3 The Flow Process of Planning and Constructing

Through an interview with the architect, the flow process of planning and constructing the new school-house is as follows (Table 1).

In the planning and design phase, the architect studied the design concept at first. After making a general decision, the architect held the first meeting locally, discussed the design concept with the school management team members, the local villagers and the local government officials, and made the final decision together. The time for this phase was about 1 to 2 months.

The following step is the preliminary design phase. When the preliminary design was completed, the architect went to the local area to arrange the second meeting for adjusting and confirming the preliminary design with local constructors and artisans and completed the construction of the foundation with the help of volunteers from universities and local constructors at the same time. After the inspection towards the foundation construction, the project proceeded to the construction drawing design phase. When the architect completed the construction plan, he held the third meeting locally to confirm the final

design plan and implement the preparation as well as the re-inspection. The preliminary design phase and the construction drawing design phase took about 2 months. In the next step, the construction phase, the school-house was built by the design group and the constructors with the cooperation of the volunteers, local villagers and local artisans. This phase took about 2 to 4 weeks. After that, the architect went to the local area for the construction inspection for the fourth time. The architect continued to implement post-use evaluation studies for more than 9 months after the

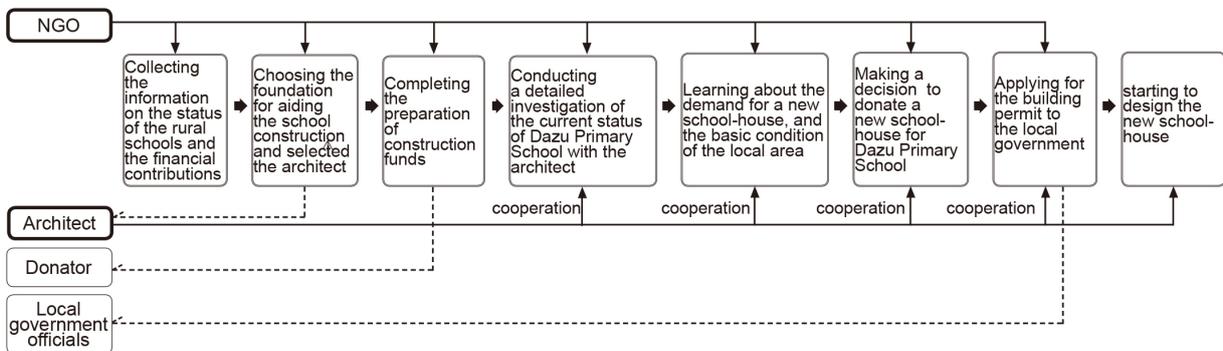


Fig. 5 The Procedure of Starting the Project

Table 1 The Flow Process of Planning and Constructing

Participants	The Flow Process of the Planning and Construction of the New School-House						
	Background	Preparation Phase	Planning and Design Phase	preliminary design phase	construction drawing design phase	construction phase	After the Completion of the Building
		3-6 Months	1-2 Months	1-2 Months		2 Months	More than 9 Months
Donator		preparing the construction funds					
NGO	supporting for the rebuilding schools after the Sichuan earthquake	collecting information of school and funds selecting the architect and donator					hand over
Architect		getting the information from NGO	concept study 1st meeting: discussing the design concept	preliminary design 2nd meeting: adjusting design foundation construction inspection	construction drawing design 3rd meeting: confirming final design & preparing construction inspection again	4th meeting: inspection for completion construction	raising the volunteer teachers: teach them how to use the new school space, and ask them to collect the users' evaluations and the information and data concerning environmental measurement
School management team members and local community people			participate concept discussion				
Local government officials			participate concept discussion				
Local constructors and artisans				participate concept discussion	cooperation	construction	
External volunteers							cooperation after the completion

new school-house was completed and handed over. Meanwhile, the architect assisted in recruiting volunteer teachers, taught them how to use the new school space, and asked them to collect the users' evaluations and the data concerning environmental measurement. In addition, the architect passed on the maintenance methods to the local artisans so that the school-house can be maintained smoothly in the future when it is necessary.

4.4 The Features of Planning and Constructing

After analyzing the procedure of the project and the flow process of planning and constructing, I found there are several distinct features that urban schools do not have.

1) architect-led design and construction process:

The architect nominated by the NGO took the initiative in the entire process of the planning discussion and construction all along. At the beginning of the project, the architect actively participated in formulating the principles of the school site selection, implementing the field survey on the educational problems in the local area, and determining the scale and the location of the school. During the planning and design discussion phase, the architect decided the number of discussion meetings and the meeting participants and summarized the opinions of all participants. In the construction phase, the architect personally selected the constructors and the local artisans, conducted in-depth exchanges with them regarding on the construction matters, recruited the external volunteers who contributed to the school construction in the local. After the project was completed, the architect also did a long-term post-use assessment work to provide more useful information for future school design. Moreover, commissioned by the donor, the architect had full responsibility for the financing and management of construction funds, budget drafting, and funding plan. In sum, it is obvious that the architect controlled the entire planning and construction process and had a high degree of freedom in making the design.

2) the assistance of the local government officials:

In the process of urban school construction, government officials often participate in the discussion meetings about design concept and give their opinions to architects. However, the government officials of Dazu village only assisted in providing local information and granting construction permits instead of overly involving in the process of school planning.

3) the design process with the local community participation:

General design discussion meetings of schools need the architects, the client, and the school members to participate in. However, the meeting of the new school-house in Dazu invited the local villagers and artisans. They did not only discuss the design concept with the architect but also offered him the local construction technology and the information of the current status of local construction equipment. They also proposed further adjustments of the design that can be achieved under the local construction conditions. Hence, the architect got more design inspiration from local villagers and artisans in the design discussion phase.

4) the construction process of multi-participation:

In the process of building the new school-house, the architect, the local villagers and artisans, and the external volunteers have all participated in the construction work. It did not only increase local employment opportunities but also enabled the contribution funds to bring economic benefits to the local area. In addition, the local artisans can learn more advanced construction know-how when communicating with the architect and external volunteers, getting an opportunity to promote the local construction industry as well.

5. The Trigger and Process of the New Educational Programs Design

5.1 The Outline of the New Educational Programs

Except the unified curriculum prescribed by the state, Dazu Primary school has also been implementing many unique curriculums with ethnic characteristics that are closely linked to the traditional culture and

customs, crafts skills, and industries of the local community with the collaboration of the residents.

In order to transmit the traditional culture and techniques to the students, Dazu school carries out some relevant lectures and educational activities periodically. And sometimes local experts will be invited to teach “Dongba” script (a system of pictographic glyphs of Naxi race), traditional music, dance, painting, craft skills and customs of Naxi race. At the same time, they have introduced evening classes and weekend classes for adults and invited experts to teach the traditional culture and skills mentioned above to the local residents as well. Moreover, Dazu School has opened a school farm with the help of local villagers and introduced some curriculums related to the industry of local communities, such as the observation of local natural and the cultivation of organic agriculture. It also helps to solve the problems that the school and the local community are facing, such as the lack of school operating expenses, the decline of education quality, the deficiency of industry and the economic deterioration of the communities. In addition, the school has established a cooperative association with the local community to take charge of producing and trading organic agriculture, and use the profit for the school operation, the improvement of rural education, the revitalization and reconstruction of communities.

5.2 The Process of the New Educational Programs Design

At the preliminary stage after rehabilitation, the founder of the volunteer team suggested that the school act as a multi-functional platform which can provide the elementary education, primary education, poverty alleviation, child medical assistance, environmental and culture protection, ecological agriculture, and eco-tourism. Therefore, the new educational programs were primarily designed on the basis of those original ideas. The specific contents and the educational methods of these educational programs were planned and implemented by the operation team of Dazu school. The team consists of

the following three major groups. The first one is the volunteer team from Taiwan who has made the rehabilitation at the initial stage. In the role of a supervisor, they brought the capital, the new educational wisdom, ideas, techniques and a broader perspective to the local. The second group refers to the volunteer teachers who are recruited by the volunteer team in the mainland of China. They come from big cities such as Shanghai and Beijing, having a better understanding of Chinese affairs. Hence, they are responsible for the specific implementation of school operations and play the role of the middle manager. The third group members are the local teachers. They are initially trained by the above two groups in the school operation team. After they mastered the necessary teaching knowledge, they gradually began to take up the responsibilities of the school’s operation and management, instead of the volunteer team and the volunteer teachers. The preliminary design ideas for the contents of the new educational programs generated in the discussion among the three groups about the culture, resources, current status and future development direction of the local area. The implementation of these design ideas is promoted by the cooperation of the experts who come from various fields, such as community planning, agriculture, music, and national culture. These experts are playing a role as a consultant in the educational programs design process and ensure those programs can be implemented successfully.

6. Conclusions

In this paper, I analyzed the rehabilitation of Dazu Primary School, the construction of the new school-house and the design of the new educational programs. And I found that they were accomplished by the cooperation of the volunteer team, external experts and local villagers. The details are summarized as 4 points. Firstly, the participation of the external volunteer team is the trigger for rehabilitation. Secondly, the initiative of the architect and the participation of the local villagers and

artisans in the planning and construction process lead to the school spaces with spatial openness and flexibility. Thirdly, the original concept of the volunteer team made a big promotion to the design of the new educational programs related to the cultural heritage of the local community and local industry development. And the discussion and cooperation of the volunteer team, volunteer teachers, local teachers, and the suggestions of the external experts from various fields are also crucial in designing these educational programs. Moreover, comparing the initial and current school operations, we notice that, instead of the volunteer team and teachers, the local teachers have taken the dominant position in school's management and teaching work after 13 years of school operation, which is reverse in the beginning.

7. Acknowledgment

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Note

1. Hope Primary School is a generic term for the primary schools which were built by a public activity called Project Hope. Project Hope is a public service project organized by NGOs and charities in China. It aims to bring schools into poverty-stricken rural areas by donation activities, and help children complete their elementary school education. Through Project Hope, the organizers also hope to improve educational facilities and to teach quality in poor regions.
2. The volunteer teachers from outside refer to the people who teach at rural schools voluntarily and who come from the big cities, such as Beijing, Chengdu, and Nanjing.
3. This diagram was made on the basis of the picture from the website: www.ikuku.cn.

References

Fang, Z.N., & Wang, L. (2011). Elementary School

in Maopin Village. *Architectural Knowledge*. 2011(2), pp. 70-75, (In Chinese).

Guo, P.Y., & Yu, M. (2015) The Inversion and Expansion of Spatial Performance. *Design Community*. 2015(5), pp. 56-71, (In Chinese).

Jiatu, C. (Edited) (2013). *Architecture Design Manual School Building*. Tianjin University Press, (In Chinese).

Li, Q., & Lee, K. (2013). *Contemporary Architecture in China-School Buildings*. Liaoning Science and Technology Press, (In Chinese).

Lin, J.H., & Joshua B. (2013). Mulan Primary School. *Architecture Technique*. 2013(2), pp. 152-154, (In Chinese).

NG, E., & Mu, J. (2009). Best Architecture Award-Maosi Ecological Demonstration Primary School. *New Architecture*. 2009 (3), pp. 57-59, (In Chinese).

Zhu, J.X. (2011). The Formation of New Bud Schools. *Time Architecture*. No.1, pp.46-53, (In Chinese).

Zhu, J.X., & Xia, H. (2010). Xiasi New Bud Eco School, Jiange, Guangyuan, Sichuan, China. *World Architecture*. No.10, pp.48-56, (In Chinese).

Zhu, J.X., & Xia, H., et al. (2013). Light Building Construction for Education_The New Bud Lecture Building of Chan Bik Ha Meishui Primary School in Dali Yunnan. *Time Architecture*. No.6, pp.68-75, (In Chinese).

Zhu, T., & Li, SQ. (2008). Huacun Project Hope Primary School, Tongshan Town, Zhongjiang County, Deyang, China. *World Architecture*. No.7, pp.54-61, (In Chinese).

Zhang, Q., & Xie, Q. et al. (2013). Wolong SAR Gengda Twelve-year School, in Wenchuan Sichuan. *Architectural Journal*. No.8, pp.52-55, (In Chinese)

Zhang,ZH., Cao,DT., Zhang,L. (2001). *Handbook of School Building Design*. China Architecture & Building Press, (In Chinese).