

## **A Volunteer Service of Vietnamese primary school library construction**

### **Introduction**

Cooperated with World Vision Vietnam, 7 Civil Engineering Students, 10 Social Science Students and 2 Comparative Literature Students from the University of Hong Kong volunteered to assist in creating an enjoyable reading environment for children in a Vietnamese village, Trung Dung commune, in the summer of year 2017. The focus of the service is to construct a national standard library for Trung Dung primary school. Other than library construction, under the requests from World Vision Vietnam, we shared our core living values with Vietnamese children and conducted surveys about their reading habits, living environment, and potential hazards etc. Spending Seven weeks in Vietnam, led by Lecturer Dr. Ryan Wong, we have learned and experienced so much more than what we gave. These multicultural learning experiences have made this usual service trip extraordinary.

### **Library Construction**

The construction project is located in Trung Dung Primary School in Dung Trung commune. The project is a 45-days contract which lasted from 4 June to 17 July. The client of the project is World Vision, and the students from The University of Hong Kong played the role of an assist resident engineer to participate in the process. The library building is a typical vietnamese style one story building. The one-story library has a gross floor area of 64.8m<sup>2</sup> and a total height of 5 meters including the roof. The library consists of two rooms. The larger room with area of 43.2m<sup>2</sup> is designed for the library while the smaller computer room with area of 21.6m<sup>2</sup> is for teachers.

The construction work can be briefly divided into various parts, including foundation; construction of columns and walls; construction of ceiling, roof and drainage system; and lastly the doors, windows, tiles and building services.

A reinforced concrete foundation with depth of 1.32m was built. Stepped wall footing and stepped column footing was used. Both wall and column footings were made of reinforced column. Above the footings, there are a total of 12 columns designed to support the building. 8 of the columns were brick columns while 4 of them are RC columns. Among them, 4 RC columns were established along the outer side of the corridor. Each column consists of four steel bars with stirrups tied at regular interval. Steel bars are used as reinforcing material in concrete to increase its tensile and compressive strength while stirrups are used to prevent any shear failure in columns. Wooden formwork was used for concreting. The wooden formwork was fixed in place with nails and supported by wooden falsework. Steel rod was used to compress the concrete inside the mold to simulate vibration so as to remove air bubbles in concrete.

In total, there were 3 doors and 5 windows in the library building. Concrete lintel, a structural horizontal block that spans the space or opening between two vertical supports, was designed above the doors and windows for the support of the bricks right above the

openings. It is used to bear the load of the bricks on top of it and transfer the load to the brickworks below. The lintel was prefabricated, the right dimension of formwork of the lintel was pre-casted before assembling in the building. This method can save time as in-situ casting of concrete is time consuming.

A double roof system was designed for the library building. There was a horizontal RC slab at the bottom. A gable roof was made by metal plates with trenches to allow drainage of water. This kind of design may help to reduce direct heat gain as the space between the two layers of roof is a good insulator.

For the process of pouring concrete to the roof, two vehicles arrived on site. The first one is the concrete mixing transport truck which transported the concrete to the site. The metal drum carried by the truck will keep turn to maintain the material in liquid state. Then concrete was transferred to the second vehicle, which is the concrete pump. It pumped the concrete through its robotic arm and drop concrete vertically on the roof. One worker held the pipe such that the concrete can fall to the exact location, another worker followed the path of the first worker and compact the concrete using a vibrating pen. The time for compaction have to be precise as too much or too little compaction will both lower the strength of the concrete. As there were a few batches of concrete, the concrete truck had to transport a few times.

After the concrete dried, the construction of the brick walls above the concrete roof begun. Hollow bricks were lifted to the slab for building walls. In the process, noncompliance with the drawing was found. According to the drawings, the columns of the brick wall should be facing the left direction of the building. However, based on site observation, the direction was the opposite. After a discussing with the contractor, as it has no effects on the structure, no change has to be carried out.

After the concrete roof is done, triangular brick walls were built on top of it. The metal roof was installed by connect the metal hook on the brick walls to it. The electricity system and appliances were installed after that. The window and doors were installed after completion of electricity system.

After finishing all hardware of the library, we started the decoration of the library. The bigger room is separated into 4 corners. Each group of students were responsible for one corner. The theme of the decoration is the nature, it was decided based on the opinion from students.

The inauguration ceremony held on 26 July marked the end of the construction period and the start of the operation period.

Regarding the position of students in the construction, we are responsible for enhancing the communication between different parties and also supervise the whole construction. We were also required to report the progress of the construction by delivering site diary and meeting minutes. Furthermore, we had hand-on experiences in site, such as brick laying, fixing steel, which can't be learnt unless making our hands dirty. We not only participated in on-site work, but also had meetings with different parties, which helped us to have a better understanding of construction project.

Throughout the whole internship, we gained lots of experience through our first-person participation in the site and observation. We get to know more about the structure and procedures of a construction project. On top of that, we obtain soft skills which are more important than the knowledge gained from civil engineering field. This 2-months internship is a treasurable and life-long experience for us to have a reflection on how to be a all-rounded engineer.

### **Reading Habit Survey & Library Evaluation**

In week 2, we carried out a reading habit survey of the Trung Dung Primary School with the aim to understand the reading habits of the children and their difficulties. We carried out different survey methods like focus group discussion, interviews and household visits for different stakeholders. We learnt to use different facilitation skills like ten seeds method and drawing problem tree.

In week 3, we visited the Cuong Chinh Secondary School to evaluate the current situation of the library built last year by HKU students. While the social sciences students were evaluating the usage of the library, we civil engineering student inspected the library building. The library was in good condition and we also gave some suggestions and implications for the current construction.

### **Most Significant Change Stories & Need Assessments**

In week 4, we visited different communes to investigate how the children's lives changed and improved with World Vision's intervention. We produced the case studies in areas of health, livelihood, education, capacity building and sponsorship-child relationship. In the following week, we also conducted needs assessment in the communes through carrying out interviews and household visits. The needs assessment focused on safe house, traffic injury and solid waste problem. We would like to understand their current situation and needs. Then we analysed the root causes in order to propose innovative and locally adaptive solutions to the problems in order to protect children.

### **Living Value class**

Starting from week 2, we needed to prepare the teaching materials for delivering the living value class to the students in Trung Dung Primary school during week 2 to week 4. The materials are all about 5 living values which are respect, responsibility, cooperation, love and honesty.

The materials that we prepared are suitable for the primary students. We did not solely talk about the definition of each living value, we prepared games for them. For instance, we needed them to draw something to represent what they love and paint together to show their responsibility. The materials we prepared attracted the students to concentrate in the class that we believed they learnt a lot from the lesson other than the living values. It can also improve their creativities and drawing skills.

### **Cultural Exchange**

Working in an unfamiliar country, the language barrier definitely was a huge headache for us. Fortunately, World Vision Vietnam has granted us 5 interpreters from local Universities who were diligent and devoted to help us adapt to the local culture. Besides all the routine construction and translation works, we achieved a lot of memorable moments in this short but meaningful months. Together we exchanged the basic greetings in our own languages, tried out all sorts of local and exotic cuisines offered in the town, prepared a feast in the hotel that featured our culture's signature dishes, and even set off bold expedition into another province, getting soaked in the unpredictable Vietnamese downpour, just to witness the astonishing natural and cultural heritage of Ninh Binh. Adding to this Hong Kong and Vietnamese culture duo, we were glad to have a Korean student from HKU that brought us the most authentic Korean experience right in Vietnam. This is truly a remarkable journey that brings us closer to the exquisite Vietnamese culture.

**List of team members of this trip:**

Lau Chak Ming	BEng (CivE) (III)
Lam Man Sum	BEng (CivE) (III)
Lam Tak Po	BEng (CivE) (II)
Moa Ka Wa	BEng (CivE) (II)
Ng Wing Fung	BEng (CivE) (II)
Wong Cheuk Him	BEng (CivE) (II)
Yiu Tsz Kiu	BEng (I)
Dongjun Shin	BSocSc (V)
Tang Tseng Man	BSocSc (IV)
Ko Long Fai	BSocSc (IV)
Yip Chun Ting	BSocSc (III)
Guolin Gu	BSocSc (III)
Tang Yue Hin	BSocSc (II)
Kong Hoi Ho	BSocSc (II)
Yip Fu Ki	BSocSc (II)
Zhai Xinge	BSocSc (II)
Chan Sze Ying	BSocSc (II)
Shek Hoi Yiu	BA (CompLit) (III)
Lam Yin Man	BA (CompLit) (III)