

# LEARNING THROUGH OVERSEAS INDUSTRIAL TRAINING PROGRAMME CUM COMMUNITY SERVICE PROJECT

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## ABSTRACT

This paper describes the experiences of learning through an overseas community service project carried out, over 18 days, in February/March 2008, in Makassar, Indonesia. As part of their second year curriculum, Singapore Polytechnic (SP) students are required to attend an industrial training programme (ITP) of seven weeks duration at the end of the year. Those who opt for ITP overseas do a shorter stint to reduce cost. In the School of Architecture & the Built Environment (ABE), every year, about 30 – 35 % of the cohort go overseas for 3 – 4 week stint on an overseas ITP and/or community service project. In the paper we discuss how students and staff from ABE collaborated with the Department of Civil Engineering, State Polytechnic of Ujung Pandang, Makassar, on the construction of a pedestrian cum light vehicular bridge at a fishing village in Nelayan Untia, Makassar. Feedback from students, during and after the trip, showed that they benefitted greatly from this unique form of out-of-classroom learning. They developed a global perspective by recognizing the similarities and differences in the social, cultural, economic, environmental and technical conditions of the two countries.

**KEYWORDS:** Community service, Global perspective, economic, environmental, social.

## INTRODUCTION

The purpose of the overseas industrial training programme (OITP) in Makassar is to expose Singapore Polytechnic (SP) students from the School of Architecture & the Built Environment (ABE) to the economic conditions of the less well-known but important island of Sulawesi in neighbouring Indonesia with a population exceeding 230 million. Makassar is the capital city of South Sulawesi. Collaboration with the State Polytechnic of Ujung Pandang (SPUP) on OITP started following the signing of a Memorandum of Cooperation between SP and SPUP on 1 July 2006.

The first community service project from 26 February – 16 March 2007, involved the renovation of the Central Library at SPUP. The second community service project from 18 February – 7

March 2008, consisted of the construction of a reinforced concrete bridge to replace an old dilapidated wooden bridge at Nelayan Village. The community service projects are conceived with the active participation of the staff of the Department of Civil Engineering at SPUP. The rapport and network established between SP and SPUP students will give SP students first hand knowledge of working with international students of another culture.

As many infrastructure works by Singapore companies are carried out in ASEAN, China, India and the Middle East, the overseas ITP and community service project experience acquired by the students will enrich them with a broader mindset and the ability to venture outside Singapore soil when needed.

## **COMMUNITY SERVICE PROJECT**

In February 2008, 18 second year students accompanied by 2 academic staff from ABE, left for Makassar, Indonesia for their overseas ITP. The ITP is compulsory for all SP students and a pass grade is required before the award of a diploma. The majority of the students do their ITP through attachment to local companies. However, increasingly more and more students are encouraged to go for overseas industrial attachment and carry out community service projects. The aims are to train students in acquiring a global perspective, learn habits such as resourcefulness, compassion, graciousness and develop skills such as teamwork and communication. The community service project that was proposed was the construction of a concrete bridge to replace an old timber bridge at a fishing village. Its implementation followed the key steps: Conceive – Design – Implement – Operate.

### ***Conceive***

The fishing village of Nelayan is located on the eastern side of Makassar, the capital of South Sulawesi (Figure 1). It is about 16 km from the city with the main livelihood of the villages being fishing. The village is surrounded by small canals which provide easy access to the sea. Timber bridges were constructed across these canals to provide access for humans and light vehicular traffic. However, in the long-term, timber bridges are not considered feasible what with the more frequent use and heavier vehicle loads in the future. Thus a community service project was conceived to replace the main access timber bridge (Figure 2) with a concrete bridge.

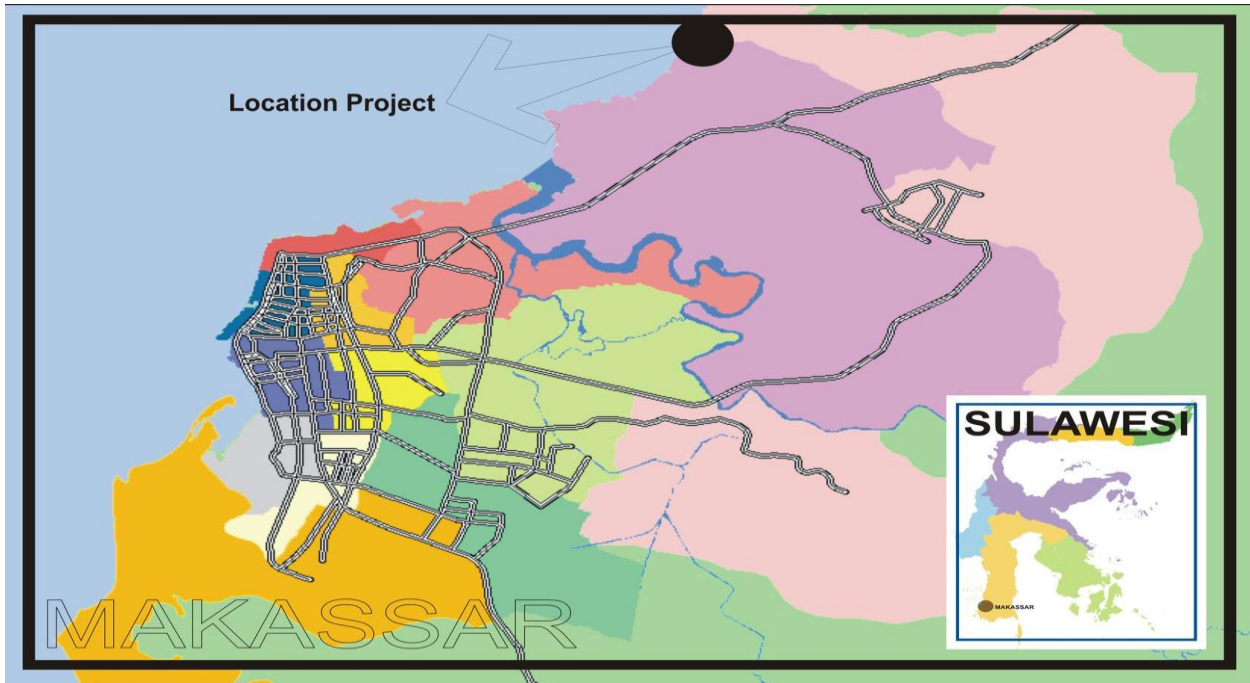


Figure 1: Location of Nelayan Village in Makassar



Figure 2: View of Existing Timber Bridge in Nelayan Village

## Design

The type of bridge design was decided through discussions between SP's OITP team and SPUP when they visited the fishing village during the first OITP in February/March 2007. Main factors that were considered in arriving at the design were its function, structural strength, ease of construction and cost. Eventually the final design consisted of a reinforced concrete bridge, 8 m long and 1.8 m wide, standing 2 m above the high tide level. (Figure 3)

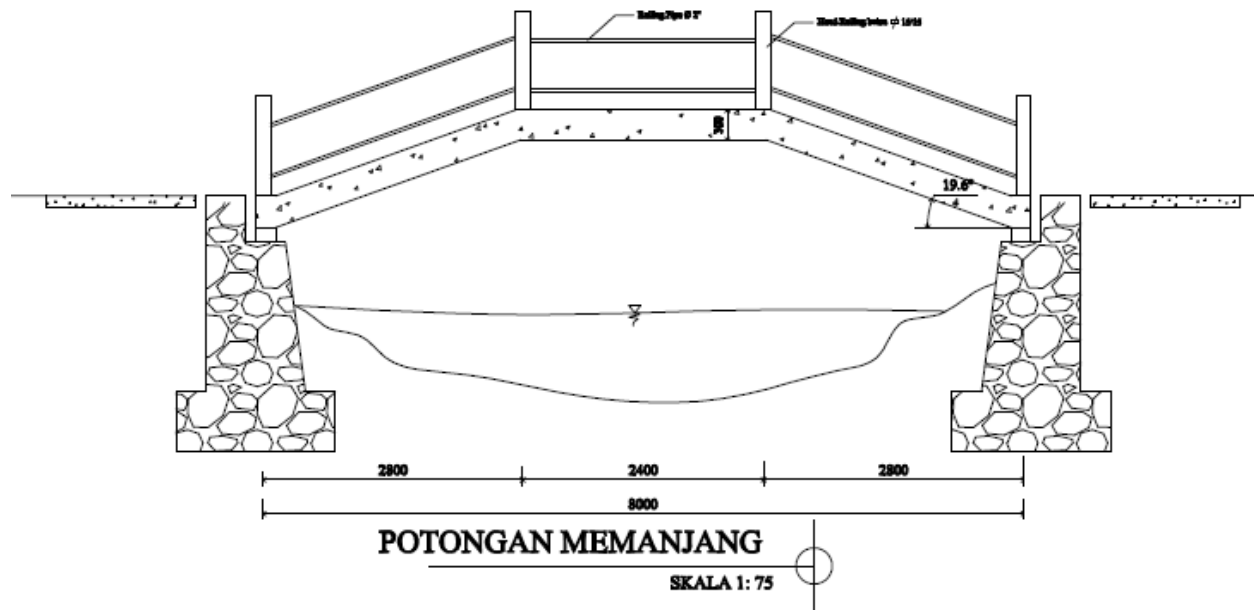


Figure 3: Proposed Design of Bridge

## Implement

Construction of the bridge started on 19 February 2008 with a grand project launching ceremony graced by the Mayor of Makassar, Mr Ilham Arief Sirajuddin. The sponsors of the project were Singapore Polytechnic, State Polytechnic of Ujung Pandang and a major local contractor, Bosowa Corporation. The new concrete bridge was constructed next to the existing timber bridge which served to transport building materials during the construction phase as well as served to facilitate movement of the villagers. Work on the bridge was divided into two main parts:

- Substructure consisting of wing walls and abutment constructed using stone masonry
- Bridge deck consisting of beams, slab and handrailings

Construction materials were sourced locally from Makassar. Staff from SPUP served as the project management team. SP and SPUP students worked intermittently alongside the contractor during the construction stage. SP students assisted with tasks such as cutting and bending of steel bars, sawing and nailing of timber for formwork (Figure 4), wheel barrowing sand and aggregates for mixing of concrete and lifting of logs to support the bridge deck (Figure 5). The construction schedule is shown in Table 1.

Table 1: Bridge Construction Schedule

No	Work Item	Duration (week)		
1	Wing Walls & Abutments			
2	Girder Beams			
3	Slab			
4	Handrailing			
<b>Overall Construction Work</b>		<b>3 weeks</b>		

The cost of construction was around Rp 83,000,000 (S\$12,969). Singapore Polytechnic contributed S\$5000 to fund the project.



Figure 4: Nailing of formwork



Figure 5: Lifting of logs for propping of bridge deck

The students found this stage to be exciting as it gave them the opportunity to put into practice some of the civil & structural engineering knowledge that they had learned over two years in the Diploma in Civil & Structural Engineering course. Especially relevant were construction technology and reinforced concrete design. The students were also able to differentiate between the method of construction adopted on this project, in a rural setting, versus similar projects in Singapore especially in areas such as the use of machinery, manpower and safety. As the students were working alongside the contractor's workers and other SPUP students, there were also occasional frustrating moments due to the language barrier although this did not pose much of a problem as they were, by then, sensitized to their working environment. Further the close guidance and encouragement from the staff served to motivate the students.

### ***Operate***

This was the most rewarding part of the project marking the successful completion of the construction work. The handover ceremony of the completed bridge (Figure 6) was again officiated by the Mayor of Makassar and carried out on 7 March 2008 – that same afternoon the SP students and staff left for Singapore.



Figure 6: Completed reinforced concrete bridge

### **Students' Reflection on the OITP cum Community Service Project**

All student participants were asked to reflect on their trip to South Sulawesi so as to gauge whether they found it to be interesting and meaningful. Sample students' reflections, edited for grammar, are shown below each learning behaviour:

#### **Flexibility in Thinking**

The project offered students with many opportunities for creative thinking during the implementation stage. They had to adapt to the environment and accommodate each others views.

As one student noted: "Upon reflecting on this wonderful trip, I have learnt that it is very important to adapt and accommodate in order to enjoy the stay in any foreign countries or even in Singapore. There is a saying that a person should change to suit his surrounding and not expect his surrounding to change to suit him. In short, it was a wonderful and enriching stay in Makassar and I have really enjoyed myself. It was an experience like nothing else on earth."

#### **Teamwork**

In order to successfully complete the project over a short duration, teamwork across cross-cultural lines was paramount. As a student opined:

"This trip has provided me a great opportunity to get along with other polymates and bond with them. I am also happy and like to show my appreciations to the local helpers who assisted and the guided us throughout the whole trip. Their sincerity and commitment really warmed my heart."

### Appreciation of different social and economic conditions

Living and participating in various activities in South Sulawesi also allowed students to think positively about their fortunate lot in Singapore. As a student reminisced:

"After staying for three weeks in Indonesia, I have come to realize that I was born with an advantaged background. I have much more than other people in Indonesia on comparison, the things I do day-to-day are so different from them. I bury myself with studies and computer games, while failing to appreciate the simple walks of life the Indonesian spent their day with. I have actually become more understanding about the surroundings and I am more appreciative towards the things I have, hence not to take things for granted. Time to me, is more precious than ever before."

### Discipline & Time Management

Students appreciated the value of discipline and time management to make a success of the trip.

According to one participant: "Certainly, I have no regrets about choosing this Makassar trip for my ITP. We really put our hearts and minds together to make sure it was a successful one. This ITP also made me realize the importance of discipline by becoming more responsible and dedicated to the duty that was given to us. When there are any problems between our team mates, we try to sort things out by having calm talks and give each other encouragement. Time management is another important lesson that I've learnt in this ITP. It's been a good and fun experience for me because I've learnt lots of things during this period and I hope I can have the honor to take part again in the future."

### Communication

Students saw the value and benefit of mixing and working with total strangers. Appreciating the importance of as such a life skill for their future, a student commented:

"I believe that it is more important to learn about different country's culture and learn about how to communicate well among people. Before this trip, I was actually a complete stranger to the other 17 students who we traveled together and also strangers to the students of SPUP. However, during the 18 days, we got to communicate and learn about how to care for each other. Though we had some communication problems with the students of SPUP, however we tried our best to converse with them. The students of SPUP learnt some English we also learnt as much Indonesian language so to minimize the language barriers between us. Thus, I suppose that if I do not know how to communicate well among people, I will surely suffer in a working world."

Besides the above reflections, a survey of the participants confirmed that this mode of learning was found to be refreshing, fun and enriching. They rated it at 4.3 out of 5 points.



## **CONCLUSION**

In the implementation of the Community Service Project in Makassar, CDIO concepts were adopted. The approach was found to be very effective in encouraging students to acquire domain knowledge, problem solving skills, teamwork and communication, compassion, graciousness and a global perspective.

Feedback from participants has shown that they find the annual OITP cum Community Service Project a meaningful and enriching learning approach and would like to see it expanded to other countries. In fact another group of 19 students and 2 staff were in Makassar in March 2009 to work on a Footpath Construction Project which would benefit around 400 village folks.

Both SP and SPUP are already in discussion to identify the next Community Service Project for 2010.

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