

RECONSTRUCTION AFTER

the 512 Earthquake

Knowledge exchange and experiential learning
projects in sichuan by hong kong professions



Sichuan



Renewable Energy



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Preface

1.1 Mr. Henry Tang, Chief Secretary for Administration, HKSAR

On the morning of 1 September 2009, the Yuanjia Primary School in Deyang City held a new-term ceremony, but it was not just another new term ceremony. Thanks to the concerted efforts of many dedicated people in Sichuan and Hong Kong, the Yuanjia Primary School, which collapsed in the massive earthquake on 12 May 2008, opened its door again. After just over a year of reconstruction work the school was ready to welcome back its highly committed teachers and students.

On that morning, the national anthem and the flag raising ceremony plucked particularly hard at the heart strings of all those present. Tears welled up in the eyes of many as the national flag was slowly raised. It brought back memories of the earthquake and its aftermath for students and teachers alike.

The post-quake restoration and reconstruction mission in Sichuan is arduous and long term. Besides resources, it also requires the joint efforts of the government and all sectors of the community. The Yuanjia Primary School reconstruction project is a clear demonstration of the “Government-led, full community involvement” principle upheld by Hong Kong in supporting the mission.

The work at Yuanjia Primary School was undertaken jointly by the Rotary Club of Kowloon West and the Association of Engineering Professionals in Society Ltd, and financed by the Trust Fund in Support of Reconstruction in the Sichuan Earthquake Stricken Areas set up by the Government of the Hong Kong Special Administrative Region.

In this regard, Legislative Council member Dr Hon Raymond Ho Chung-tai, the Association of Engineering Professionals in Society Ltd, the 512 Young Engineers Alliance and the teachers and students from the University of Hong Kong have helped to raise funds for the project. Through their frequent visits to Sichuan, they have dedicated their time, effort and expertise to the planning, design and implementation and supervision processes of the project. Apart from working hard to rebuild the school campus, they have also arranged online study classes for the students. Through these efforts, they have brought the love and support of Hong Kong people to the teachers and students of the Yuanjia Primary School.

Today, the Yuanjia Primary School has an improved campus where some 600 teachers and students can work and learn in a pleasant and safe environment. I also hope the joint work and collaboration in restoring the school will continue to be a strong bridge of friendship between Hong Kong and Sichuan for many years to come.



Mr. Henry Tang Ying-yen, GBM, GBS, JP
Chief Secretary for Administration, HKSAR

1.2 Ir. Dr. Raymond Ho Chung-tai

Natural disasters cause heavy losses in human lives and properties as well as great human suffering. An 8.0- magnitude earthquake hit Wenchuan County of Sichuan Province on 12 May 2008. It claimed more than 69,100 lives nationwide while over 374,000 were injured and around 18,000 were missing. More than 45 million people were affected by the quake and about 15 million have been evacuated. It was one of the worst earthquakes in recent human history.

Shocked by heavy loss of life and the scale of devastation caused by the tremor, compatriots in the Mainland, Hong Kong and Macau and even those living abroad have joined forces in making large-scale relief and reconstruction efforts in Sichuan to help earthquake victims. After learning the catastrophe, I was shocked and felt sad. In June 2008, I together with several engineers visited the earthquake stricken areas. I tried hard not to let the emotion and sadness to overwhelm me and pondered the possibility of the involvement of Hong Kong engineers in the relief efforts. I made an immediate appeal to fellow engineers in Hong Kong to make donations for the relief of the earthquake victims. The Hong Kong community has dipped deep into the pockets for the relief donations while the HKSAR Government and local relief organisations have promptly sent rescuers and volunteers to Sichuan.

First, our attention focused on the immediate rescue operations, which were crucial for saving more lives and on the emergency efforts including the provision of clean water, food, temporary shelters and medical facilities to the victims. It did not take long for us to work on the resettlement of the victims and long-term reconstruction of the devastated areas. A large number of module houses were built to provide temporary shelters with supporting facilities such as water supply, sewage, waste treatment, temporary schools. However, large-scale reconstruction is necessary for their permanent settlement so that the victims in devastated areas can return to their normal lives. Hong Kong engineers have been involved in every possible way so as to expedite the above processes.

Schooling of the children in the devastated areas is of particular concern to us. The Association of Engineering Professionals in Society, of which I am the Chairman, the 5.12 Young Engineers Alliance, of which I am the convenor, launched a donation campaign for building new schools

in the areas. Yuanjia Primary School(袁家小學), Deyang(德陽市), Sichuan (四川), is amongst one of these newly built schools. Its reconstruction was financed by funds partly raised by the AES, partly by the HKSAR Government's "Trust Fund in Support of Reconstruction in the Sichuan Earthquake Stricken Areas" and the Rotary Club of Kowloon West. The school has adopted advanced earthquake resistant design involving separation between foundations and superstructures in the form of rubber pads sandwiched by thick steel plates. E-learning is also introduced into the school thanks to the efforts of faculty members and students of the University of Hong Kong. Some 600 students moved to the new school premises in the new school year started on 1 September 2009.

I would also like to take this opportunity to thank the Central Government, Liaison Office of the Central People's Government in the HKSAR, Sichuan Province Government, Guangdong Province Government, HKSAR Government and many of other organisations, which have helped coordinate our relief efforts.

Finally, I must say that compatriots in Sichuan, particularly those affected by earthquake, have left me a great impression with their strong will, optimism and resilience to surmount all difficulties in order to live a normal life again. Their persistence and determination is a great inspiration to all of us.



Raymond Ho



Ir Dr the Honourable Raymond Ho Chung-tai, SBS, MBE, S B St J, JP
Member of the Legislative Council (Engineering Functional Constituency)
Hong Kong Deputy to the 11th National People's Congress of the
People's Republic of China

1.3 Stephen S.L. Lam: Secretary of Constitution and Mainland Affairs Bureau, HKSAR

Back in May 2008, communities around the world including Hong Kong were alarmed by the tragic and massive earthquake in Sichuan. Tens of thousands of our fellow countrymen were killed and injured, leaving millions homeless. Post-quake restoration and reconstruction is a colossal and urgent task which requires the support of all.

Hong Kong has actively participated in the post-quake reconstruction work. This fully reflects the concept of “all parties coming to the rescue” (一方有難，八方支援). With the support of the Legislative Council, we have obtained HK\$9 billion to take forward reconstruction work in Sichuan. Our post-quake reconstruction efforts have been proceeding smoothly. We will continue to liaise closely with our Sichuan counterparts, and will maintain the momentum of the projects.

With enthusiasm and concern, Ir Dr. Hon Raymond Ho, teachers and students from the University of Hong Kong, as well as professionals from the 512 Young Engineer Alliance (512YEA), the Association of Engineering Professions in Society (AEPS), the Rotary Club of Kowloon West, and other parties have been making an invaluable contribution to Sichuan reconstruction. Their efforts include the rebuilding of Deyang Primary School and Wenchuan Primary School, and the setting up of e-learning facilities, as well as an interactive networking platform for the students in Sichuan.

This contribution will have a multi-dimensional and far-reaching impact. The reconstruction of schools will provide children in the quake-stricken areas with quality education and a safer learning environment. Students in Hong Kong and Sichuan can be connected through the telecommunication network set up by the 512YEA and AEPS. This seamless connectivity will help forge friendship among students in Hong Kong and Sichuan. Furthermore, the Sichuan side will benefit from the reconstruction projects and acquire professional skills and technical know-how on the engineering and project management fronts.

I firmly believe that the contribution made by the Hong Kong students, teachers and professionals will bring hope and assistance to Sichuan. This will also help to broaden the horizons of the next generation.

Hong Kong cherishes the opportunity to take part in Sichuan's reconstruction and we are heartened to see these projects coming to fruition. The participation and contribution by our students, teachers and professionals will be much appreciated for years to come.



Mr. Stephen Lam Sui-lung, GBS, JP,
Secretary for Constitutional and Mainland Affairs, HKSAR

1.4 Ir. C.K. Mak, Permanent Secretary for Development (Works), HKSAR

On 12 May 2008, a devastating earthquake measuring 8 on the Richter scale hit Wenchuan, Sichuan. In minutes, it took away the lives of tens of thousands and destroyed the homes of many more.

Natural calamities are merciless and Heaven and Earth make no discrimination on all things, but the world is filled with love and compassion. Hard on the heels of the quake, the whole nation lost no time in the rescue efforts and in mobilizing relief support for the victims, bringing into full play comradeship and selfless care for our fellow countrymen. Following the relief work was the arduous task of reconstruction. It is heartwarming to see the Government and the whole community of the Hong Kong Special Administrative Region gave their greatest possible support to the Sichuan post-quake reconstruction work. Non-governmental organizations in Hong Kong also responded positively to the call “government-led, full community involvement”. It is gratifying that Hong Kong could do something, however small, for the victims of Sichuan.

The Yuanjia Primary School (袁家小學) in Deyang City was severely damaged in the 512 earthquake. As the result, the students had to have their classes in make-shift huts. With the concerted efforts of 512 Young Engineers Alliance and the Association of Engineering Professionals in Society, a sum of HK\$2.5 million had been raised for rebuilding the school. The two groups also joined hands with the Department of Electrical and Electronic Engineering of the University of Hong Kong (HKU) to install an on-line multimedia e-learning system for the school so that students could learn through the distance learning video system and have exchanges with students in Hong Kong.

In August 2009, teachers and students of HKU went to the School again and installed the hardware and software for an education system in the School. The modern day technology has made possible on-line linkage of the Yuanjia Primary School in Sichuan and two schools in Hong Kong, though they are thousands of miles apart. Teachers and students in the two places were able to communicate with each other through the interactive video system. The efforts of the young engineers and the HKU teachers and students who took part in the Sichuan reconstruction are highly commendable. I believe their hands-on experience also enabled them to gain better insight into the Sichuan reconstruction as well as the

educational development in our motherland. The teachers and students of the Department of Electrical and Electronic Engineering have decided to publish a book to share their experience of participating in the reconstruction work. This is indeed very meaningful and worthwhile.

In the morning of 1 September 2009, I attended the Opening Ceremony of the newly reconstructed Yuanjia Primary School. I saw the innocent smiling faces of the lively students everywhere on the new campus. Their smiles had left indelible impression on me.

On my flight back to Hong Kong, I stared at the blue sky and the white clouds but my mind kept flashing back to those smiling faces, and also the reminiscences, memories and thoughts in my university years ... HKU, China, the rest of the World ...



Ir. MAK Chai-kwong
Permanent Secretary for Development (Works)
Development Bureau, HKSAR



Ir. C.K. Mak giving a talk at HKU to the EEE students

1.5 Professor Lap-Chee Tsui : HKU Involvement in Sichuan Reconstruction

On 12th May, 2008, Sichuan Province was struck by a catastrophic earthquake, which brought with it enormous destruction and took tens of thousands of lives. Countless Sichuan residents lost their homes and loved ones, and it remains difficult to estimate the number of families affected. The sadness and pain of those affected by the earthquake was truly heartrending to witness. But even as the rescue teams were searching for survivors and moving them to safety, HKU staff, students and alumni were following the progress of the rescue closely and trying to think of ways they could help. We are aware that the extensive destruction to the region and the long-term impact of the quake will not be resolved in a year or two. We therefore believe that providing long-term support for the education of the Sichuan children would be an effective strategy to help the survivors rebuild their lives.

In October 2008, the “512 Earthquake Roundtable Fund: Internal Seed Funding Exercise” was set up with the support of HKU staff, students and alumni, under the leadership of Pro-Vice-Chancellor Professor S P Chow. The funding subsidized fifteen seed projects, including the “Establishment of Standards for Multimedia E-learning Classrooms in Sichuan’s Rebuilt Schools” project. I am pleased to see that the seed funding has borne fruit. This project will provide not only advanced teaching systems for the new schools, but also valuable experiential-learning opportunities for HKU students. For even as they were bringing the knowledge and skills of their respective disciplines to the rebuilding activities they took part in, our students were also gaining a great deal of life experience, learning lessons that cannot be taught in the classroom.

That this project was successfully launched in 2009, the 60th anniversary of the People’s Republic of China, made the contributions of the HKU community all the more remarkable. Our faculty members and students do not only strive for the best in their own specialized fields – such as engineering, education, medical science and nursing – but have also put their knowledge into practice in their relief and rebuilding activities, thus bringing the Sichuan and Hong Kong communities closer together.

Their selfless endeavours have once again demonstrated and strengthened the University's founding mission to be of service to Hong Kong and China.



Prof. Lap-Chee Tsui
Vice-Chancellor and President
University of Hong Kong

1.6 Professor S. P. Chow

It is the honor of our University to collaborate with the Association of Engineering for Society and the 512 Young Engineers Alliance to jointly reconstruct the Yuanjia Primary School in Sichuan. A team of fifty students and teachers from various faculties of our University contributed their professional knowledge to design and install a few challenging systems for the reconstructed school. These systems included a renewable energy system, multimedia classrooms, an e-learning system and a satellite educational TV. I am very proud of our students for their great efforts and strong commitments to complete this difficult mission efficiently within such a short time period. Without the unfailing supports of our alumni and supporting organizations, this project could not be that smooth and successful.

After the 5.12 Sichuan earthquake, a Sichuan Earthquake Roundtable had been formed in the University. Besides this school reconstruction project, the Roundtable also supported 15 different projects which included research, school reconstruction, medical care support, earthquake-resisted design and mental recovery. We targeted to contribute different professions in our University and provide all-rounded supports to people in Sichuan. With the newly installed system, students in both Sichuan and Hong Kong can be linked together easily for interflow, knowledge exchange and spiritual supports.



Prof. S.P. Chow
Pro-Vice-Chancellor
Chairman of HKU Sichuan Earthquake Roundtable

1.7 Professor Paul K H Tam

If the concerted effort to re-build Sichuan after the devastating earthquake that happened on May 12, 2008 is likened to a river, this should be one that continues to run, and the contributions made by our colleagues and students are fresh streams flowing into the river, integrating with it.

It is beyond doubt that the post-quake reconstruction of Sichuan has been and remains a high priority on public and political agendas. What seems perhaps less immediately noticeable, from the community's point of view, is that reconstruction of such an enormous scale, would require various platforms for putting specialist knowledge and research into real-life practical applications. Shocked and saddened by the massive destruction caused by the catastrophic earthquake, colleagues, students and alumni of the University of Hong Kong not only dug deep into their pockets to help provide immediate relief to the grief-stricken survivors, but also organized themselves in the most efficient manner to make best use of our strengths as an institution of higher learning to help the people of Sichuan in tangible ways. Within a short period of time after the earthquake, many members of the HKU Family were already at the front lines offering assistance and assessing how they could help the area rebuild in the long term.

The Yuanjia Primary School project saw our faculty members in Engineering and a zealous group of students across different disciplines, Engineering, Architecture, Business and Economics, Law, Medicine, and Social Sciences, bringing their knowledge and expertise to Sichuan to build a solar-powered multimedia satellite e-learning system for the reconstructed school. Imbued with a strong sense of purpose and determination to help the people of Sichuan, they contributed their expert knowledge in computers, networks, programming, solar energy, multimedia, and e-learning; they introduced the concept of renewable energy to local students and promoted their awareness of environmental protection; and they made use of their communication skills and creativity to play with the children there. Their accomplishment exemplifies HKU's commitment in knowledge exchange, which, together with teaching and research, form the three pillars underpinning all the University's activities. Just imagine the joy of all those present on August 5, 2009 when the first Sichuan-Hong Kong interactive class was held in the new multimedia computer laboratory, where enthusiastic Yuanjia students talked to staff, students and guests at HKU through the multimedia network newly installed in their school that had been rebuilt from rubble. It is heart-warming.

The University sees knowledge exchange as the proactive two-way flow of knowledge between the university and non-academic sectors of society for the benefit of both. This project presented a great opportunity for our students to put their knowledge into practice. The precious experience they gained in teamwork and problem solving will prove to be invaluable for their future. Their passion to serve the community, wherever they go, wherever there are people in need of help, epitomizes the core values of HKU students.

The University believes in the power of the knowledge we create to make a difference in enhancing quality of life. The University is keen to share the wealth of its knowledge with the public through the knowledge exchange activities and community services of our teachers and students. This special book gives a first-hand account of such efforts dedicated by a group of selfless individuals; and this is again sharing – of their knowledge, their hard work, their experience, their feelings, and their reflections – with everyone.



Prof. Paul K H Tam,
Pro-Vice-Chancellor/Vice-President (Research),
The University of Hong Kong

1.8 Prof. Amy B.M. Tsui

The Sichuan earthquake was a devastating experience for numerous families who lost their homes, their loved ones and their friends. People from different parts of the world and all corners in Hong Kong poured in to help them to rebuild their homes, to cope with their loss and to lead a normal life. I am proud to see that at The University of Hong Kong, staff and students responded very quickly and mounted various reconstruction projects, one of which was to build advanced e-learning systems in a reconstructed school.

Confronted with a situation that they had never come across before and did not know even where to begin, HKU students and professors spent hours brainstorming, assessing the highly complex situation, identifying critical areas where help was needed and deliberating how they could best contribute. A group of Engineering and Education students and professors decided to draw on their knowledge of computer engineering and education to build e-learning systems so that Sichuan children could stay in touch with the outside world and continue to learn under such adverse conditions.

In the past few years, in the course of the 4-year undergraduate curriculum reform, the University has been revisiting the aims of undergraduate education and pondering the kinds of learning experience that will help students to achieve these aims. After months of deliberation, the university community has agreed that in addition to academic excellence and life-long learning, students should, amongst other aims, develop capabilities to deal with situations that they have never encountered before and where problems are not well-defined. They should also cultivate the qualities of future leaders and global citizens, and act as advocates for the improvement of the human condition so that the world would be a better place to live in. The Sichuan reconstruction project undertaken by students and professors is an excellent exemplification of some of these educational aims.

In this reconstruction project, students as well as professors were confronted with a situation where they had to define the problems themselves and come up with feasible and effective ways to address the needs of Sichuan children. To do that, they had to listen, to empathize, to understand the physical and human constraints and to decide what could be best achieved under those constraints. We can see from the stories in

this publication how this has been an enriching experience for our students,

not only in deepening their (inter)disciplinary knowledge, but also in developing their compassion for the unfortunate and the underprivileged and in enhancing their sense of responsibility as a global citizen. This very powerful form learning, which we coined “experiential learning” at HKU, will be one of the fundamental parts of the new curriculum. It takes learning outside the traditional boundary of the classroom, and facilitates the development of an integrated and holistic understanding of issues.

I wish to congratulate both the students and the teaching staff of the Faculties of Engineering and Education on the successful completion of this meaningful project. I look forward to seeing more projects of this kind in the University.



Prof. Amy B.M. Tsui
Pro-Vice-Chancellor and Vice-President
(Teaching and Learning)

1.9 Prof. Paul Y.S. Cheung

The great earthquake in Sichuan in May 2008 had shaken the hearts of many all around the world. Out of intense care and concern for the survivors and the future of Sichuan, HKU researchers and students across different disciplines have since joined force to provide assistance in numerous projects to contribute to the reconstruction of Sichuan. I am so pleased to see a group of students and staff from the Faculty of Engineering of the University of Hong Kong got involved in the rebuilding of the disaster-struck schools in Sichuan. I have always believed that the purpose of education, and in particular engineering education, is to prepare the individual to contribute to the society through solving real and practical problems. Social and community engagement should be part and parcel of university education anywhere.

My first involvement in social engagement dated back 1972 when I was an undergraduate student at Imperial College and worked in a project on Meal-on-Wheels service for the elderly – bringing cooked lunch to elderly people in one of the poorest Boroughs in London, Hackney. The experience helped me to understand the essence of being an engineer, the relationship between technology and people, and how we can contribute to a warm humanity through social involvement, in ways big or small. From that time on, I have always been active in various kinds of social engagement, including the relief and rebuilding work in Aceh, Indonesia after the tsunami in December 2004. All these are valuable and irreplaceable experiences for me, and radically shaped my outlook in life, my value system and strengthened my empathy to fellow human beings all round the world.



Visit to one of the camps in Wenchuan in Aug 2008, three months after the earthquake. [From left – Prof Paul Cheung of HKU, a lovely child in the camp and Prof S Y Kung of Princeton University]

I believe the opportunity for our students to be part of the team in helping schools in Sichuan to rebuild their campus, in particular, to deploy computer networks to enhance their learning environment had been a unique and most beneficial experience to those who took part in the project. I am most grateful to Dr Wilton Fok, the champion of this project, and to the Hong Kong Institution of Engineers (HKIE) for their leadership, support and dedication to this very meaningful project. The publication of this book serves as a documentation of what had been done in this project, and provides a reference for those who follow. I hope this successful project will inspire and encourage an ever increasing number of colleagues and students of the HKU Faculty of Engineering to participate and share the joy in social engagement and community service for many years to come.



Prof. Paul Y S Cheung
Professor in Electrical & Electronic Engineering
Director of Technology Transfer Office
The University of Hong Kong

1.10 Prof. W.C. Chew, Dean of Engineering

It is a pleasure to see our colleagues being so very active in the Sichuan earthquake rebuilding project. They remind me of the spirit of the Medicin San Frontiere, or Ingenieur San Frontiere. They generously donate their times to help with the establishment of an e-learning environment, the establishment of a communication satellite, the building of solar panels, and the use of information and communication technology to make classroom learning more interesting, and the incorporation of earthquake resistant technology to build the classrooms. They not only build these facilities, but got the involvement of both HKU students and the local students. I am sure these projects are deeply satisfying and rewarding to the participants involved.

It is amazing how technology has changed our livelihood. It is also heart-warming to see how technology can affect the lives of people living in the remote parts of China. Electrical and electronic engineering technology is pervasive and it is no surprise that it has invaded the classrooms in the rebuilding project. What is more amazing is that this technology now connects the hearts of people of Hong Kong and Sichuan. This technology now also helps to connect the students in a classroom in Sichuan to the rest of the world.

When I think of Sichuan, many things come to my mind. One is that Sichuan has a proud technological tradition of her own as well. We still see the Du Jiang Yan in operation today even though it was constructed over 2000 years ago. Du Jiang Yan brought wealth and prosperity to the Chengdu plain, making it into the “paradise”, or so-called “Tian Fu Zhi Guo”, of China. The high standard of living allowed scholars and poets to enjoy a leisurely life in Chengdu. In addition, Sichuan is famed for having some of the earliest salt mines and oil wells by the drilling technology of ancient China that allowed wells over 1 km depth to be drilled. Modern technologies have brought wealth and prosperity to Sichuan, and we hope that these technologies will continue to improve the livelihood of Sichuan people. We further hope that this collaboration will stimulate the interest of the youth of Sichuan in science and technology, and that many of them will seek a career in developing new technologies

There are also the mysterious cultures of the Sanxingdui people, and the Jinsha people who seem to have advanced cultures before the Han Chinese went to Sichuan. Sichuan basin is still a melange of many

different cultures and civilizations even up to this day. The earthquake disaster zone affects Tibetan minority, the Qiang minority, as well as the Han people. But the disaster brought peoples to work together to overcome the extreme difficulties that they face, irrespective of their creed, religion, or race.

This project also brought teachers of HKU and UESTC together. This is a clear indication that in the midst of disaster, there are always a silver lining and hope in people: the best is brought out of people. There are lessons to be learnt from the disaster, and the lessons we learn from natural disasters serve to make the world a better place to live in for the generation to come.



Prof. W.C. Chew
Dean of Engineering

1.11 Prof. Victor O.K. Li, Associate Dean of Engineering

I am very happy that our students and colleagues have contributed their engineering expertise in this project. On the one hand, our students contributed their knowledge in Sichuan reconstruction and help those in need. On the other hand, it was a valuable opportunity for our students to learn and apply their knowledge.

Recently, some potential engineering students may be discouraged because they have the impression that engineering subjects are difficult. There are many equations and difficult concepts to be learned. However, this project demonstrates a different aspect of engineering education. Studying engineering is very interesting and meaningful. Engineers are the main drivers for technological advancement and enhancement of our living standards.

This project involved the design and installation of solar energy systems, multimedia classrooms, satellite TV and e-learning systems. It was a great opportunity for our students studying Communication Engineering, Information Engineering, Computer Engineering and Electrical Engineering to practice their knowledge acquired in lectures. I am very impressed by their efficiency. Under an environment with inadequate resources and facilities, they managed to complete the project within a few days.

I believe that our students had learnt a lot in this project. They acquired practical engineering knowledge and skills. But perhaps more importantly, they also experienced the importance of engineering and technology in the development of our country and the world.



Prof. Victor O.K. Li
Associate Dean, Faculty of Engineering
Acting Head, Department of Electrical and Electronic Engineering

1.12 Ir. K.P. Yim: Engineer: Professionalism for Society, Dedication in silence

People said “Scientists always ask the questions of “why” and engineers ask the questions of “why not”. The statement shows the difference of the two. Scientists are seeking methods and rules of the phenomenon, while engineers are looking for solutions to problems. To become a successful engineer, one should possess pragmatic, rational and equitable characters. All these equip engineer to better solve problem and to better serve the society.

Engineer is an honourable profession. Engineer has the responsibility and vision to build a better environment for the people. Every Engineer has a mission to provide the best engineering services to the people.

Engineers also participate in various community works, and are dedicated to help victims of natural disasters. The 5.12 Young Engineers Alliance (YEA) is a charitable organization composed of members of the Association of Engineering Professionals in Society (AES) and young engineers, who share the same mission and passion to serve the community.

After the 5.12 Sichuan earthquakes, Hong Kong engineers, including young engineers, promptly set up the 5.12 YEA with the help of the AES. The union initiate the Project, “Everyone Contributes One Unit Area, Together We Re-build New School (一人一平方，共建新學堂)”. The project also aims to help school children to rebuild their school life and their confidence to life. Soon after the quake, the AES and young engineers visited Sichuan disaster areas. They witnessed the scene of destruction and devastation. They were distressed with the horrible scenery.

When engineers saw the children studying in the tent, they realized that they have the obligation to help those children to rebuild a permanent school. The rebuild of the “Yuenjia School” has therefore been put into the agenda. Rebuilding the school is the responsibility of the engineers. The union has visited the 2000 years old Dujiangyan Irrigation System, which was still able to survive under the earthquakes. Engineers were impressed by the robustness and durability of this ancient infrastructure. They realized the importance of rebuilding safe, robust and durable school building for the school children.

To ensure the safety of the school, engineers brought in a new technique

to the School project, “Rubber Seismic Isolation Technique (RSIT)”. This new technique helps to minimize the level of earthquake force transmitted to the buildings and ensure the building safety. The Rubber Seismic Isolator is placed between a structure and its foundation to absorb the earthquakes’ energy. This base isolation allows the ground to move while the building, restrained by its inertial mass, remains relatively static.

At the beginning, the local government did not accept the new technology and refused it, on the grounds of no experience and higher cost. However, engineers insisted on the application of the technology and they finally persuaded the local government after giving them many proofs. And Engineers raised more money for the increase of building cost due to the application of the technology. The engineers also changed the building layout to a symmetric form so as to provide better stability against future earthquakes. Some amendments were made on the design, such as, the ratio of the girl/boy toilets, two exit doors per classroom, the direction of the exit corridors and staircases.

A group of HKU professors and students also applied their professional skill in helping the Sichuan victims. They worked with the engineers union and helped the setting up of the multi-media IT classroom and the solar energy devices. HKU also published the memorial book to share their feelings and experiences in the project.

The project is coming to an end. Students are now studying in a safe, modernised, well-equipped school and the engineers can feel the happiness of the children and their parents. The School promised that they will provide the best education to the students and the children promised that they will work hard for good study result. All of the engineers participated in this project feel the great joy of serving the people and they will continue to serve the people by contributing their professional knowledge.



Ir YIM Kin-ping
Senior Vice Chairman
Association of Engineering Professionals in Society

1.13 Zhou Lezhi , The Education commissioner of Jingyang District

People are not able to enjoy the sweet fruit without tasting bitter ones. The 5.12 earthquake is a painful nightmare for everyone. It has not only destroyed our homeland, but also lots of school campus.

Holding the common hope that revitalize the whole education system, reconstruct school campus and enable students to go back to school as soon as possible, people from different cities with compatriots from Hong Kong and Macao, they dedicated their time and love to the 80million students and teachers in Deyang Jingyang District.

The Association of Engineering Professionals in Society Ltd, the 512 Young Engineers Alliance and the teachers and students from the University of Hong Kong have helped raise the funding for rebuilding the schools in the disaster areas. The project called “Everyone Contributes One Unit Area, Together We Re-build New School” is another warm-hearted program initialed by them. Compatriots from HongKong SAR and the University of Hong Kong frequent visited Yuanjia School and follow the process of reconstruction work no matter how bad the weather and transportation is. They also built up helpful e-learning system which is to install a few multimedia classrooms and e-learning facilities for the school, so as to facilitate HKU to provide continue supports the School through the on-line distance learning. n the first Sichuan-Hong Kong interactive class, students in Sichuan have been involved by the warmly regards and interesting topics launched from the Hong Kong side . With the help of this system, students in Hong Kong and Yuanjia School can have the class together, communicate with each other, the learning experience through interaction would be precious for both side. I am sure after this meaningful project, the local students would regain the great encouragement to go through this painful experience and face the bright future.

So far, the rebuilding project has been almost finished, and the multimedia classrooms which have been set up by the University of Hong Kong are ready to use. The first step of education reconstruction has completed. 95% of the total students in this district would be able to continue their study in the permanence schoolhouse by the end of this year.

The great love can pass through the time and distance. The touching stories are happening all the times in the distressed area; the gratefulness

has been integrated into the students' running blood. All the warmly details have been all memorized by students in the disaster area both by pens and by their heart.

I believe that with the warm-hearted assistances from all Chinese from Mainland China, Hong Kong and Macao SAR, Taiwan, and all international friends, the educators in Jingyang Distinct would like the phoenix rise from the flame, start a brand new chapter. A better tomorrow awaits us!

We would thanks for what you have done, but we would better remember all of these treasure moment we shared with.

(translated by Wu Maomao)



Zhou Lezhi
Commissioner of Education in Jingyang District

1.14 Zeng Dayu — A Thank you letter to all Hong Kong friends in the Reconstruction Project

Dear compatriots from Hong Kong and friends in the reconstruction team,

The massive earthquake happened in 5.12 has destroyed our campus which caused the serious damages to all the school buildings, schoolhouse and the education facilities and resulted in a economic loose about 7.91million RMB. The people who are suffering this suddenly huge disaster is not only in Sichuan, but also the compatriot from Hong Kong. The 512 Young Engineers Alliance and the Association of Engineering Professionals in Society Ltd., has launched a touching disaster relief action which is unprecedented while the group of engineers even started a slogan called “Everyone Contributes One Unit Area, Together We Re-build New School” based on their own technique skills and knowledge. Moreover, they also came to the disaster areas to do the field trip by themselves and helped the reconstruction process. Through your great supportive attitude and extensive mobilization, all the attentions have been paid from various sectors of Hong Kong, Engineers, Educators, and the Charity of the Chevalier from all organizations in Hong Kong. Looking back to the last year, their effort sweat has been thrown no matter when raising the project funding, design the school building, organize the implementation or monitor the project quality and process.

In the past year, works to raise funds, the teaching building design, organization and implementation, quality control, progress monitoring, Hong Kong compatriots who have devoted a great deal of painstaking effort and sweat. You meticulous scientific, truth-seeking and pragmatic style of work left us with a deep impression, but also become examples to us all. Based on the facilities reconstruction greatly supported by you all, serious “human care” actions have been also put into practise, such as encourage students in Sichuan and Hong Kong making friends with each other, and the training plane designed for English teacher. In addition, on June 13th , we have started the contract to rebuild the multi-media classrooms which aims to speed up the modernization of school education. Past few days, the teachers and students from the University of Hong Kong have braved scorching sun, ignoring the fierce heat, helped to instal the multimedia classrooms and solar power supply system for our school, it is to ensure the smoothy process of first on-line interactive class between Hong Kong and Sichuan today.

Although the catastrophe is heartless, the compatriots everywhere they give us the love and care. You have traveled all way here, totally nine times come to the disaster area, we are greatly impressed by every details they have done for us, we are also inspired to dedicated into the next step of reconstruction process. Over the past year, under the strong leadership of the Jingyang government and the carefully organization by the Department of Education, we tried to solve different difficulties when implementing the reconstruction project by looking for the solutions and buying the infrastructure to make sure the smooth implementation of this greatly project. So far, the main part of this project has already finished. The Hong Kong SAR Government Chief Secretary for Administration Henry Tang visited in person on July 5th at our school to inspect the reconstruction work, and set his high value on the process as well.

I want to express my great thanks to the compatriot from Hong Kong who have helped us so much. This brand new school building will be the cradle for educating all the students here to be grateful to the whole society. It will not only be the witness of these unforgettable experiences which historical valued, but also a monument of love across time and space! On behalf of teachers and students in our school, I want to say "Thank you very much!" here to give our grateful to all the friends who have worked hard, selfless devotion and pay tribute to all concerned in support of disaster district education reconstruction. Your love charity, we will never forget your lofty ideas and spirit.

(Translated by Wu Maomao)



Zeng Dayu
Principal of Yuanjia Primary School



2.1 Editor's message: Dr. Wilton Fok



The 5.12 Sichuan Earthquake damaged a lot of schools and buildings and killed more than seventy thousands lives in Sichuan. When the earthquake happened, I was deeply impressed by the scenery showed in the TV news and was determined to do something for the people in Sichuan. In December 2008, we partnered with the Association of Engineering Professions in Society and 512 Young Engineers Alliance and kicked off a school reconstruction project in Deyang. In February 2009, when we recruited students in the University of Hong Kong, the response was overwhelming. More than 160 students applied to join the project as volunteers. In order to provide more opportunities for more students to learn and service, we extended the scope of the project and include other sub-systems such as solar power grid, satellite TV, e-learning and invited staff and students from the Faculty of Education to join our reconstruction project. Besides technical installations which reconstructed the school with new infrastructure, we also introduced new methodologies to their education system.

This project was very meaningful. It not only helped students and teachers in Sichuan to recover their school and education, but also provide a good chance for students in Hong Kong to learn how to serve and contribute their knowledge to others. They acquired organization and communication skills, risk management skills, leadership skills and understood China in a more comprehensive and intensive way.

I'm particularly glad that students from different professions, including Engineering, Information Technology, Renewable Energy, Education, Architecture, Nursing, Journalism and Social work, could collaborate together and contribute their different expertise for the project. Although many of them had no former experience in any reconstruction projects, they were very hard-working and proactive and managed to solve problems by themselves. This project was not just an opportunity for our students to sever people in Sichuan. It is also an experiential learning opportunity for students to learn and generate knowledge through direct involvements.

We would like to thank our partners the Association of Engineering Professions in Society and 512 Young Engineers Alliance for our strong collaborations. Many units and departments in the University of Hong Kong had also contributed and supported the project, including but not limited to the Center of Development and Resources for Students, Initiative of Renewable Energy and Environment, General Education Unit, Computer Centre,

Electrical and Electronic Engineering Association of the Hong Kong University Students' Union. Some external organizations such as the CLP Group, Jiawei Solarchina, Hong Kong Institution of Engineers Electronics Division, Hong Kong Women Teacher Association, Internet Professional Association and Hong Kong University Graduates Association also support the project through direct sponsorship and sharing their professional experience and knowledge with our students. Without their strong support, this project could not be so smooth and successful. This is not just a project accomplished by a group of HKU students and teachers. It is a project of involved multiple disciplines and professions in Hong Kong.

After the completion of the project, students and teachers in the reconstruction team collaborated together again and published this book. We hope we can exchange our knowledge and experience gained in this Sichuan reconstruction project with others through this book so that we, as a community, can still earn something from this unwanted earthquake.

Dr. Wilton Fok
Principle Investigator & Project Director

2.2 Dr. Alfred Yu



I feel very privileged to have the chance to serve on the reconstruction team for the Deyang school rebuilding project initiated by the HKU Sichuan Earthquake Roundtable. I have always wanted to help rebuild Sichuan after the devastating earthquake. This wish has come true.

It has been a challenging experience, I must admit. I have been tasked to lead the installation of a solar power system for the Deyang school. It involves a lot of engineering planning, a lot of pre-trip preparations, and even worse, a lot of hard labor under the sun. Who in the world would be interested in doing this kind of dirty work with me? Martin, Ken, and Sharon were there to answer the call. It has been an honor to have them join our team as the core members. We literally started the project from scratch, working on various aspects of the project and shaping our team's directions.

Getting other members on board has been a special experience. Given our team's wide range of job responsibilities, we decided to recruit a group of enthusiastic people that can help us put together a diverse repertoire of skills. There was physical strength. There was technical wit. There was peer leadership. We had a vigorous interviewing process, one that was nerve-racking enough to make someone freak and cry out at the spot.

Ever since Day 1, we have been aware that there are various technical challenges to overcome. We are very grateful to Ir. C. C. Ngan of CLP Power Hong Kong Ltd. for providing us with a lot of professional insights on solar power systems. It was his unwavering support and advice that really got the ball rolling for our technical planning. We are also very delighted to have Dr. Sam Lam join our camp and lead us through the installation process. Dr. Lam's expertise and involvement have been instrumental to the success of this project.

Our team spent many days in the summer of 2009 together to prepare for the project. Buying tools, making frames, attending courses, practicing installations, all are tedious and time consuming tasks. I must say that I am delighted with everyone's professionalism towards this work. Yes, we had a break-in phase too just like many other teams in the real world, but the team chemistry has been remarkable in the end.

Everyone on the team deserves a big pat on the back. Eugene, Evonne, Lolo, Cindy, Karson, Ho Lam, Ken, Martin, Sharon: it was your commitment to work for it, fight for it, and believe in it, that made everything happen. I am sure that all of us were thrilled when the power meter started turning at the hour!

Dr. Alfred Yu
Assistant Professor,
Department of Electrical and Electronic Engineering

2.3 Dr. Y. C. Wu



It all began in Feb 2009 when Wilton mentioned this Sichuan project while we had lunch in Lee Hall Canteen. He was seeking teaching staff to oversee and lead students for several subprojects. I immediately said yes as I think this is a very meaningful project and a good way to contribute to the society. I took up the task to lead a team for building a computer lab in a reconstructed primary school in Sichuan.

Before the main trip, we went to a pre-trip in early April to visit the primary school we helped rebuilding. The primary school is located in a rural village in Sichuan. At that time, the damaged building was demolished and the construction workers were still working on the foundation of the new building. There was no sight of a new building.

We had meetings in temporary classrooms built after the earthquake with local officials, school principal and engineers responsible for reconstruction to make sure that the building will be ready to install the new equipments in the coming August. We also met with vendors in Sichuan for purchasing the computers, switches and routers for the computer lab. Besides looking at construction site and planning for equipment purchases, we were also gathering information (such as accommodation, transportation, logistic arrangement of the equipment, meal arrangement, etc) for the preparation of the main trip in August. We didn't want the trip to be luxurious, but tried to make sure that everyone would be safe.

After getting back to HK, we immediately began to recruit team members for different subprojects. There were overwhelmingly large numbers of HKU students showing interest to this reconstruction project. I pre-

screened a number of potential students and interviewed them. During the interview, I asked hard questions on how to build a computer network. Only those who can answer would pass. Since my part is to build a computer lab, the expert knowledge on computers, networks and programming is very essential. Otherwise, the task will have no hope of completion. Eventually, I selected 10 students from the EEE department.

Fast forwarding to the main trip in August. Before we departed from HK, I heard that there was heavy rain in Sichuan the week before, and the work progress of the building was falling behind. After we landed in Chengdu on 2 Aug, we directly went to the primary school to see the progress of the building, and made plans for the work for the next day.

Although the building was basically completed, the whole school was still simply a construction site. The staircase to the entrance was not ready, there was only a wooden board bridging the building and the ground. For most part of the building, there was no electricity. For the computer room, the floor was not ready. The delay in the construction squeezed the already tight schedule in our part. Eventually, we had only two days to complete a computer lab from an empty room. But thanks to the team's hard working and creative problem solving, we made it, and the first Sichuan-HK online classroom was also held on 5 August afternoon.

Besides engineering work, another unforgettable experience was when we visited the city Han Wang, which was seriously damaged and now abandoned. Along our way to the city center, it was shocking to see all buildings were full of cracks. We have been to the clock tower that stopped at 2:28pm during the earthquake. We performed a simple mourning. We stood in a circle next to the clock tower. Everyone in turn put a flower next to the tower. We also sang a song, and had a moment of silence. During the mourning, I realized how fragile a human being could be and how cruel fate can be. I also felt lucky enough standing there alive with all the people who care.

This trip was not very long, but a lot of things happened in a short time. I believe this is a very special educational experience to everyone and also a memorable trip.

Dr. Y.C. Wu
Assistant Professor,
Department of Electrical and Electronic Engineering

2.4 Dr. Philip Pong: Engineering and humanity-people orientation



This is a caring event. This is a people-oriented event.

In the morning of 2 August 2009, a zealous group of HKU engineering undergraduates with concerted efforts for Sichuan earthquake reconstruction departed from Hong Kong towards Deyang in the Sichuan Province. Their missions were to reconstruct and install a multimedia satellite education system for a primary school in the Yuanjia town which was severely damaged by the earthquake in Sichuan in May 2008. I was honoured to be one of the teachers leading the group for this reconstruction campaign.

This reconstruction campaign was a great opportunity for the engineering undergraduates to put the engineering theory into practice. Moreover, it enabled the students to realize how to have successful teamwork. Whether or not a team can accomplish its missions depends on the interpersonal skills, organizing skills, and leadership of its team members. Their previous experiences of organizing freshman-orientation camps, student societies, and various student committees in high schools and the university were of great use in this teamwork operation.

I myself highly encourage students to participate in extra-curricular

activities because students can learn how to interact and cooperate with others. This is usually an area where engineering students are not sufficiently trained in their curriculum. Engineering students can have outstanding performance in mathematics and physics. They have a rigorous mindset and can think logically. It is a great merit that they can solve complex problems analytically and orderly. However, on the other hand, due to the fact that engineering students are mostly immersed in mathematical equations, scientific theory, and computer programming, they usually have less time to develop their interpersonal skills comparing to, for example, undergraduate students from the Social Sciences. As such, engineering students tend to analyze problems mechanically and thus overlook the factor of humanity. They do not realize the importance of human factor in their decision making process. This kind of mechanical thinking has the advantage of solving problems efficiently and swiftly in the world of machines and computers. However, in reality, this may not work because our society is composed of people rather than machines. The factor of humanity plays a significant role in our everyday life.

The same applies to engineering. In the Romance of Three Kingdoms of China, one of the warlords, Liu Bei, said "One has to be people-oriented in order to achieve great ambition". Indeed, to have great accomplishment, we have to be people-oriented and take people's feelings and needs into consideration carefully. Engineering without humanity is like running an engine without engine oil which will just lead to internal friction and poor efficiency. Therefore, we, as an engineer, should always bear in mind the importance of humanity and people orientation. Only then the creativity and productivity of a team can be efficiently released and put into good use.

Through this Sichuan reconstruction project, I truly believe that our engineering students can have a deeper understanding on the principle of people orientation, which is not something professors can teach them in lectures. It is similar to learning to ride a bicycle; one can only learn it by experiencing himself.

Give is indeed more blessed than to receive.

Dr. Philip W. T. Pong
Assistant Professor,
Department of Electrical and Electronic Engineering

2.5 Dr. Sam Lam: An Unforgettable Trip to Sichuan

It was early 2009, when my old friend Wilton told me that there would be a meaningful event in the Department of EEE for the people in Sichuan who suffered from the disastrous earthquake in 2008, I was simply too glad to be part of it. I could still remember the heartache we had when we watched the misery scenes on news reports. Even though I was able to donate a few dollars to the disastrous-relief agents, it could never compare to the feeling of being there in person to devote our efforts!

In the course of the event, I felt relieved to learn that the team of smart students working on the solar system would be led by a young and energetic expert in the Department: Dr. Alfred Yu. His openness in communications and considerate attitude towards the team members proved to be the most effective way of leading the whole team to deal with the difficulties and challenges.

Unfortunately, the challenges came too soon and too often! Upon arrival, we found in front of us an empty roof, with neither the concrete plinth in place; nor the solar panels delivered as scheduled! Since it was a Sunday when we arrived, I could not even reach my colleague to chase for the panels. I simply could not imagine a project to install the solar system, when the basic components were missing!

Of course the panels and other critical components had already been on their way to the site, only that they came a few days behind schedule. On the first day of our work, they finally arrived. We tried awfully hard to urge the contractor to prepare a bit of foundation – if not plinth for us. Under the hot sun, we sweated like slaves. And yet, our hearts were filled with joy. The team members were cooperating so accurately as if we had been brothers and sisters for our whole life!

We might have been working too hard on the first working day, so that HoLam suffered from heat-stroke that night. On the second working day (the third day since our arrival), we had one team member unable to work and concrete foundation still behind schedule. We were lucky to have Sharon, who was constantly cheering us up and coordinating things. Martin and Ken were both very practical in their engineering operation. The foundations and the metallic frames were then just able to catch up with the program.

I am very proud to say that we overcame the difficulties with our determination and sweat! At the very last minute, we were able to put things together, although not in the neatest way it should be; and the solar system was up and running at last. It started generating and contributing to the electricity consumption of the new school building since then!

Through this wonderful trip, the whole team developed a strong sense of belonging and friendship. It is certainly an unforgettable trip that I would remember for the rest of my life!

Dr. Sam Lam
Jiawei Solarchina Co. Ltd.



2.6 Dr. Elaine Chan



Serving young people has been my life goal since I was as young as a teenager. It was a lot of joy to lead a video production team of young and intelligent HKU students and to cover their service project at a local school of Sichuan, China.

Before they embarked on their journey, they went through professional training sessions on video production and lessons on film theory organized by the General Education Unit. Although most of the students had no prior knowledge or experience in the area, they all learned fast and demonstrated superb creativity in planning and implementing the production.

I will never forget the pleasure I had when I went through their excellent works of assignment in my classes, the evenings we spent together for post-production, the jokes we shared and the friendship we have established. It will be a pain to see them graduating for a selfish reason sooner or later because I will not be seeing them around as easily and as much as I do now. However, I believe that our friendship will never end and what we went through will be cherished as a joyful memory.

I hope to take this opportunity to wish our students every success in their studies and careers and I hope that they would apply the same vigour and passion at school and work.

Dr. Elaine K.M. Chan
General Education Officer,
General Education Unit



A Look Back at 5.12 Sichuan Earthquake

3 A Look Back at 5.12 Sichuan Earthquake

3.1 Introduction

Author: Gong Chun Jade (Medical engineering Year 3),

On May 12, 2008, an earthquake of Richter scale 8.0 stroke Sichuan at 2:28 pm, killing 68,712 people and leaving 18,921 missing. A total of 46 million people are affected by the earthquake. The Sichuan earthquake is the most devastating earthquake since the establishment of People's Republic of China in 1949 and is the deadliest earthquake ever since the Tangshan Earthquake in 1976. The direct economic loss caused by the Sichuan Earthquake was estimated to be 845.1 billion yuan. About half of all the Chinese Provinces and some nearby Asian countries have been affected by the earthquake. Tremors were also felt in places as far away as Beijing, Shanghai, Hong Kong, Macau, Taiwan, Thailand, Vietnam and Pakistan.

Right after the earthquake, the Chinese government has dispatched more than 100 thousands soldiers and rescue teams around the country to the affected areas to help with the relief work. That was the largest rescue effort ever since the peacetime. By June 2, 2008, the teams have rescued 1.05 million people and 92 thousands of them were sent to the hospital. 68 thousand people have been discharged from the hospital already and 11 thousands of them were still receiving treatment in the hospital.

On May 18, 2008, the State Council has announced three days of national mourning starting from May 19, 2008. The national flags were flown at half mast and public entertainment activities were suspended to pay tribute to the earthquake victims.

Not long after the earthquake, donations came from all over the world. Not only residents in Hong Kong and Taiwan have donated for the relief work, the Chinese public in the mainland have also made large amount of donations that is unprecedented. Also, the HKSAR government and the Macau SAR government have allocated funds of HKD 350 billion and RMB 110 billion respectively for earthquake relief. Apart from that, Taiwanese have donated a total of TWD 2 billion (RMB 450 million); Kingdom of Saudi Arabia has donated USD 50 million and goods of total USD 10 million for rescue efforts; India supported the rescue work by supplying relief goods is worth USD 5 million; Japan provided 500 million yen for emergency rescue effort.

Besides, rescue teams from all over the world have joined the rescue. Hong Kong SAR has sent professionals from the Fire Services Department, Food and Environmental Hygiene Department and Government Flying Service to help with the earthquake victims. Macau SAR has dispatched a medical team of 20 people to Chengdu on May 23, 2008 for relief operations. Singapore has also sent 50 people to Sichuan; South Korea has sent a rescue team of 44 people to Shifang while Russia has sent 50 rescuers to Mianzhu.

Now that a year has passed after the earthquake, post-quake reconstruction of Sichuan is still continuing today and new buildings are now standing on the ground that was once full of rubble. People are still giving Sichuan a helping hand. Goods for and donated money for reconstruction are sent to the affected areas; volunteers help with mental reconstruction after disaster. With the help and care from worldwide, residents in Sichuan wiped away their tears and welcome their brand new life.

3.2 Warnings from the Sichuan earthquake

An earthquake with a magnitude of Richter scale 8.0 which has shaken half of China hit Wenchuan in Sichuan province at 2:28 pm on May 12, 2008. The earthquake has destroyed the beautiful home of many, taken away the lives of tens of thousands of people, but at the same time it awoke the kindness of our hearts. A year after the earthquake, the world is still very much concerned about the situation in Sichuan. The Hong Kong Institution of Engineers together with HKU Department of Electrical and Electronic Engineering organized the event “Sichuan Reconstruction by Hong Kong Professions”.

On August 2, 2009, we brought the love and care from all Hong Kong residents to Yuanjia Primary School in Deyang to help the school to install e-learning laboratories and multimedia classrooms so that the students can know more about Hong Kong and the world. The activity also allowed us to learn a precious lesson. When I saw the ruins in Hanwang, the relics of Dong Fang Electric and the ongoing reconstruction work in Sichuan, I was deeply impressed.

A Look Back at 5.12 Sichuan Earthquake

In the worst-affected areas like Hanwang, the houses were seriously damaged by the strong earthquake. Chengdu has been dubbed as the “Kingdom of Heaven” and no natural disaster has happened to such a beautiful place for thousands of years. Thus, people do not have alertness to natural disaster. Moreover, the buildings in Sichuan were not designed and built to resist severe earthquake. As a result, the earthquake caused heavy casualties. Besides, people in Sichuan have not been educated about seismic safety so they did not have enough knowledge about how to deal with earthquakes. As most of them have not dealt with any earthquake before, they panicked when Sichuan was hit by the giant earthquake. We should therefore be more alert to the any potential danger around us after such a painful experience. As the saying goes “Prevention is better than cure”. Therefore we should take precautions so that casualties can be minimized when accidents happen.

I have felt the warmth during the trip. The earthquake has linked all the Chinese together. No matter where we are from, no matter who we are, we are a family. We show how united we are - people have made donations and helped with the reconstruction work to overcome the difficulties that we all were facing. Residents from all provinces in China donated money and goods for quake relief and post-quake reconstruction; volunteers from Hong Kong or foreign countries stayed in Sichuan to help with psychological reconstruction of Sichuan people and relief goods from all over the world keep arriving in Sichuan. I believe that the power of love is so strong that even a spectator would be able to feel it.

I have felt the optimism and the courage of Sichuan people in the trip. Reconstruction work is under progress in Sichuan and people are getting their lives back on track. Buildings are being built and children’s smiles are as warm as sunlight. People in Sichuan have already wiped away their tears and sorrow. They are now facing their bright future with big smiles.

3.3 Understanding the meaning of life from memorial activities

Author: Yeung Hiu Fan Fanny (Faculty of Engineering, Year 3)

I learnt how destructive an earthquake could be, when I read the book “The Great China Earthquake” in secondary school. The Sichuan earthquake that happened more than a year ago showed me a real live picture of earthquake. This time, I do not see words but truths.



A Look Back at 5.12 Sichuan Earthquake

At 2:28 pm on May 12, 2008, an earthquake of Richter scale 8.0 hit Wenchuan. 34,073 people died in the ruthless earthquake by May 19, 2008 and the death toll was still climbing. I always felt suffocated when I saw the number as each number here means one life.

When I arrived in Wenchuan more than a year after the earthquake, I could still see the tottering buildings, the cracks on the walls and those sunken hills. We could imagine that the destruction right after the earthquake must have been a thousand times worse than what we have seen. Our reconstruction team arrived at Hanwang on August 6, 2009. Upon arrival, the social workers from The University of Hong Kong working there shared with us their working experiences from which we learnt a lot more about the relief work in Sichuan. After that, we mourned in front of the clock tower which stopped at 2:28 pm when the earthquake stroke Sichuan.

Memorial Activities included Yellow Ribbon Wearing, Flower Tribute, Singing Tribute, Poetry Reading and Silence Tribute. Yellow Ribbon Wearing is the highlight of all activities. Yellow represents hope. Wearing a yellow ribbon on one's wrist means bringing Sichuan people hope.

We could hardly tie a yellow ribbon on our own wrist by ourselves; we need other people's help to do so. This is exactly like the reconstruction process in Sichuan. Sichuan could hardly do it by her own power; she needs help from others. We went to Sichuan because we want to try our utmost to help with the relief and reconstruction work. There are so many ways to tie a knot, just as we all have different skills and expertise in solar power, satellite communication system, multimedia laboratories, etc. We come from different faculties but we have the same purpose in offering our help and support with our professional knowledge. The two ends of a ribbon are just like Hong Kong and Sichuan; we are not linked at the very beginning but we are now together after tying a knot. Although we are apart, technological advancement has brought us together. The first Sichuan-Hongkong Online Interactive Interflow is a breakthrough. It provided a chance for the primary school students of both places to experience the instant video conferencing. All of the above deeply illustrated our aim, "Contribute with profession, Link with Sichuan".

I have read a lot about the earthquake before Memorial Activity. I would like to greet those who have tried incredibly hard to get back their lives from the Death. Life is fragile but this also lets us see the strength of faith. Amid rubbles, people maintained lives by their willpower. Regardless of whether they could make miracle or not finally, they have tried very hard to fight for their lives. Their persistence would never fade away in our minds.

A Look Back at 5.12 Sichuan Earthquake

Meanwhile, I would like to greet those who gave out their love when their fates hanged in balance. The earthquake has caused destruction to the land but it could never stop love. We could see the greatness of love between couples, family members and friends in the earthquake. Some people chose to sacrifice their lives and gave the hope to other people when they were striving to stay alive. Let us remember the glory of their love.

Life is fragile but at the same time it could be strong. We should appreciate about the truth that we are still alive and we are living in Hong Kong, a place that has a very low chance of being hit by earthquake, and we do not have to worry about shelter and food. However, we should not take everything for granted. All the things we own may vanish someday.

What we should do is not to grasp everything but to treasure things and people around us. For those who are able, try to help others in need. For those who are facing challenges and difficulties, try to tackle with courage. In earthquake, people died before they were given opportunities to fight. Things are changing every moment and we could never predict what is going to happen to us tomorrow. Try to live in the present and that is what we should do for our life.





Dr. Wilton Fok and Dr. P.T. Ho led the memorial activity and shared their feelings with the students.





There was not an intact building after the earthquake in Hanwang. A clock stopped at 2:28 pm when Sichuan was hit by the ruthless earthquake. The Sichuan earthquake has killed more than 80,000 people and left 5 million people homeless. Local media said that more than 3000 people in Hanwang were killed in the earthquake.

Background information:

More than a year after the earthquake, Hanwang, the once busy city is now a city of ruins. The population of Hanwang is about 60,000 people. Hanwang is located at the point where the Longmen Mountains joints the northwest part of the Chengdu Plain, which is 20 km away from the epicenter of the earthquake.



A Look Back at 5.12 Sichuan Earthquake



4 Reconstruct a school in Sichuan by HKU students and teachers

4.1 Introduction

On May 12th, 2008, Sichuan experienced a magnitude 8.0 earthquake. The quake killed nearly 70,000 people and destroyed numerous of buildings and houses.

The most immediate concerns after such a disaster are human casualties, injuries, and property destruction. Earthquakes and other natural disasters cause different problems. Providing shelter to countless homeless people is a hard task. More than 100,000 people moved to other places such as temporary shelters. Numerous schools have been destroyed. School children have to study in temporary shelters or even in plastic tents with no ventilation system. Therefore, reconstructing school campus with good teaching and learning facilities is a high-priority mission for the restoration of education in Sichuan.

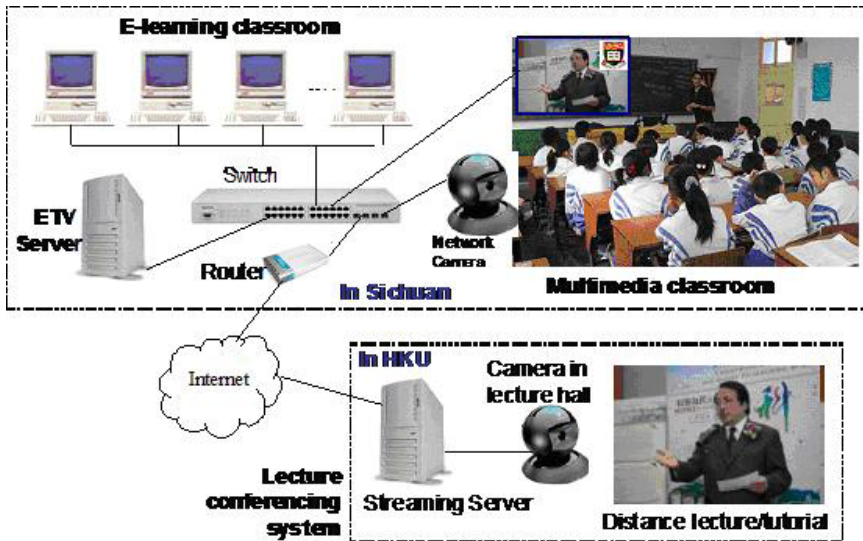
Soon after the earthquake, the 512 Young Engineer Alliance, the Association of Engineering Professions in Society and the University of Hong Kong have joined their hands in the redevelopment of schools in Sichuan. While the Association of Engineering Professions in Society and the 512 Young Engineer Alliance were responsible for the design and supervision of the building structure construction, the team of HKU students and teachers were responsible for the design and installation of a few state-of-the-arts systems for the school.

On 2nd - 6th August 2009, a team of HKU teachers and staff including Dr. Wilton Fok (EEE), Dr. Alfred Yu (EEE), Dr. Philip Pong (EEE), Dr. YC Wu (EEE), Dr. Sam Lam (EEE), Dr. Lisa Deng (Education Faculty), Dr. Elaine Chan (General Education Unit), Dr P.T. Ho (Computer Center), Mr. Rex Ng (Education Faculty) and Mr. Michael Yiu (CEDARS) led 43 HKU students to build a Solar-powered Multimedia Satellite E-learning System for a reconstructed school in Sichuan. These systems were installed by the 5 teams of students in only three days.

Reconstruct a School in Sichuan by HKU Students and Teachers



The team departed from the Hong Kong International Airport on 2 August 2009



The system installed by the reconstruction team

Reconstruct a School in Sichuan by HKU Students and Teachers

This school reconstruction project is one of the Sichuan reconstruction project supported by the HKSAR Government. The construction work started in early 2009 and the progress was very efficient. Within just a half year, the basic structure was completed. On 5th July 2009, Hon Henry Tang, the Chief Secretary of the HKSAR Government, visited the Yuanjia Primary School to inspect the progress of the project. However, the interior renovation of the classrooms and multimedia rooms had not been started yet. There was only one month left for the renovation work and installation of the entire system for the first Sichuan-Hong Kong on-line class held on 5 August 2009.



On 2 August 2009, the HKU reconstruction team marched into the construction site to start the installation work of the Solar-powered Multimedia Satellite E-learning System for the school.

Reconstruct a School in Sichuan by HKU Students and Teachers



2nd Aug 2009 5:00pm: When the team arrived, the Multimedia Computer is still empty



5th Aug 2009 2:00pm: The Multimedia Computer Laboratory is ready for the first Sichuan-HK on-line interactive class

4.2 The reconstruction process

On August 2, 2009, the HKU Sichuan reconstruction team gathered at as early as 9am at the Hong Kong International Airport. They were all excited and ready for a coming goal—to help Sichuan with their professional skills.

At 2pm, the team arrived at Chengdu, Sichuan and was brought to Deyang to settle down. Half of the team members went to the Yuanjia Primary School for an initial inspection. The school is located at the outskirts of Deyang at Yuanjia town. The newly constructed school building looks very modern in contrast to the mountains and field in the town. The team's plan was to visit the school again on the next day to start working. Therefore, the team stayed at the hotel to take a good rest and get ready for the mission in the following days.

The next morning, the whole team headed to the Yuanjia Primary School at 9am. Out of expectation, the school was still under construction and was not ready for the team's installation work. Since the installation schedule was very tight, the team immediately rescheduled the plan and switched the caring activity from the 3rd day to that morning.

The caring activity started with a lot of games jointly led by Hong Kong and Sichuan university students. The whole HKU reconstruction team brought fun and laughter to the local primary school students. After the joyful morning, the team had lunch with the students in the temporary school building. The team finally started the installation work after lunch. They started moving computers into the computer room and setting up servers. On the other side, the education team started teaching and sharing with the local teachers.

On the third day, the team continued the installation at computer room and the rooftop. At the same time, a sub-team installed ETC and games to the computers. These games are sponsored by CLP and the HKSAR Education Bureau to help Sichuan students learn about global warming and renewable energy.

The fourth day was the most important day of the reconstruction trip. The team had invited several honorable guests in both Hong Kong and Sichuan to witness the first Sichuan-Hong Kong interactive online class. However, on that morning, the internet at Yuanjia Primary school has not yet been connected. The team was very nervous and worried. With the team's hard work and collaboration, the internet was connected successfully as the guests arrived. They were able to conduct the first video conference which connected Yuanjia Primary School with HKU.

Therefore, the team has enhanced the first Sichuan-Hong Kong interactive online class successfully. The honorable guests from HKSAR government, HKU, and Sichuan officials all gave speeches and took joy in witnessing the great success. Later in the afternoon, students from Yuanjia Primary School and Hong Kong's Chun Tok School were able to play games and share through the video conference. In the end, students from both schools sang the song "Big China" together and concluded the event.

After the success of the online interactive class, the guests in Deyang proceeded to the rooftop of the Yuanjia Primary School to look at the installation of the solar energy panels. The guests were all very moved when they saw the hard work of the young HKU engineers under the big sun. The guests and the students from Sichuan brought the team water and shades. Through all these, deep bonding between Sichuan and Hong Kong was built.

On that night, the team held a celebration dinner; each member was presented with a certificate marking the accomplishment of the reconstruction.

On the fifth day, part of the team went back to the Yuanjia Primary school for final installation and wrap up. Later, the whole team enjoyed a lunch treated by Dong Fang Electric and visited their factory. In the evening, the team met up with a few other HKU Social work students and held a memorial event at Hanwang.

The last two days, the team was able to tour around Chengdu. There were also exchange activities between students from the University of Electronic Science and Technology of China and HKU. The trip then concluded successfully with smooth reconstruction and memorable bonding.

4.3 Learning from the caring activity

Author: Sharon Dai

A year ago, the magnitude 8.0 earthquake hit Sichuan with great shock. Not only did it bring terrible destruction around Sichuan, the quake shocked many children and destroyed their homes and schools. Therefore, the caring activity was planned for the trip in order to show our care and love from Hong Kong to the local children.

When I heard about there will be a caring activity with the Sichuan children at Yuanjia Primary school, I stepped up to be the organizing committee without doubts. When we were organizing the event, we planned and introduced a lot of mass games from Hong Kong to Sichuan children. At the same time, we took in consideration of their local culture so we learnt some of their local songs and games.

On the second day upon our arrival, the caring activity was suddenly rescheduled from later in that week to that morning. In that morning, all our team members, professors and local university students had joined the students from Yuanjia Primary school in playing the mass games. After some brief introduction, we started playing games like 'Guess who's the leader'. Since the students were rather shy in the beginning, they did not behave very actively. After a while, they started to warm up and they were happy to run around. They started to enjoy the games. We gave them some little gifts from Hong Kong after the games. They were very polite and they did not want to receive those gifts from us. After our sincere explanation, they finally took the gifts with joy. After that, they taught us some of their local songs and entertained us with singing and dancing.

We are really thankful that the caring activity went very smoothly. The smiling faces of each student still stay firmly in our mind.

Reconstruct a School in Sichuan by HKU Students and Teachers

I could not imagine how they could be so optimistic after the big strike of the earthquake. It indeed helped us, who are from the prosperous Hong Kong, to learn to be content. Even it was just some simple games, the joy and fun that came along was priceless. If we could spend more time on playing games with the children, we would not even want to go back to our reconstruction work!

Even I am now back to Hong Kong, I still miss the children in Yuanjia Primary school. I wish they can work hard in studies and devote themselves to the society. I also hope they can learn to help and support one another. We, brothers and sisters from Hong Kong, would always support for them!



Reconstruct a School in Sichuan by HKU Students and Teachers



From left to right: Dr. Philip Pong, Dr. Wilton Fok and Dr. YC Wu encouraged the students in the Yuanjia Primary School to play with us



4.4 Exchange with Social Workers in Temporary Housing Sites in Jiannan

Author: Kwok Po Yee (Social Work Year 2 Student)



As a social work student, my concern was not only about school rebuilding, but also psychological care for students in Sichuan. There was a chance for us to interact with HKU social work placement students and supervisor, when they joined us to attend a morning ceremony in Hanwang.

Five HKU social work students had started their placement in the temporary housing site since June, 2009 under the supervision of Mr. Hung, Shing Nam. Mr. Hung recalled that he was impressed by the scene of endlessness of temporary houses in the site. More than 50 thousand people had been lived in the site, and now there are still around 20 thousand victims.

Working in this site, social workers face many challenges, not only about the huge number of victims needed to be served, but also not popularization of social work practice in China. In order to increase their understanding and confidence in social workers, they use “a bee” to represent themselves. It simply visualizes the mission of social workers — “To be the companion of the residents in the site, to integrate resources in the community, to establish a mutual support network, to facilitate residents to rebuild the community in order to achieve a sustainable community development”. And it makes social workers approach and provide services to them easily.

Since the mobility of residents in the site is quite high, the nature of the

services provided is mainly short-term and transitional. Social workers try to build up emotional support among the orphans and widows, and prepare them to adapt changes during rehousing through different activities. Mr. Hung stressed that developing a good relationships with the residents would increase their chances to seek assistance from social workers in future. Therefore, social workers in the site pay great effort in recording their needs and where they move to; and it will be used for planning the social welfare service in the community.

On the other hand, the sharing of Mr. Hung and social work students brought out the issue of over-victimization. After the earthquake, numerous people in China and foreign countries rushed to Sichuan to be volunteers, or donate money as well as materials. However, surplus and mismatch of those resources may do harm to the victims and make them hard to start a new life. Thus, assistance is needed but it should be appropriate. During the process of psychological reconstruction, we should assure their abilities, and provide appropriate assistance, resources, and opportunities to them. Then, they will be able to develop their own potentials and create a bright future.

The same concept can be applied to Sichuan reconstruction. In this service trip, we not only brought the new technology to Deyang Primary School, but we also educated the teachers and students how to use the technology. Such skills, knowledge and learning platform may allow students to pursue knowledge in a new way.

It is believed that Sichuan people should be able to overcome all challenges and start a new life with the blessing and support from those benefactors.

4.5 The Team

On May 12th, 2008, Sichuan experienced a magnitude 8.0 earthquake. The quake killed nearly 70,000 people and destructed numerous of buildings and houses. Soon after the earthquake, the 512 Young Engineer Alliance, the Association of Engineering Professions in Society and the University of Hong Kong have joined their hands in the redevelopment of schools in Sichuan. They reconstructed the Yuanjia Primary School from Deyang. They also designed and installed an online multimedia e-learning system for the school.

On 2nd- 6th August 2009, a team of teachers and staff from the University of Hong Kong,

Dr. Wilton Fok (Department of Electrical and Electronic Engineering (EEE)), Dr. Alfred Yu (EEE), Dr. Philip Pong (EEE), Dr. YC Wu (EEE), Dr. Sam Lam (EEE), Dr. Lisa Deng (Faculty of Education), Dr. Elaine Chan (General Education Unit), Dr P.T. Ho (Computer Center), Mr. Rex Ng (Education Faculty) and Mr. Michael Yiu (CEDARS) led 43 students from the University of Hong Kong to build a Solar-powered Multimedia Satellite E-learning System for a reconstructed school in Sichuan. The system was installed by the 5 teams of students in only three days.

4.5.1 Team A: Solar Energy system

Dr. Alfred Yu and Dr. Sam Lam led 9 students to install a 2kW solar energy system for the reconstructed school in Sichuan. The system comprised of 18 units of solar energy panels, supporting frame, DC/AC inverter and power meter. They installed the panels on the rooftop and connected the electricity to the multimedia e-learning classroom in the building. The project was aimed to introduce the concept of renewable energy to the local students and promote the awareness of environmental protection. The solar panels were donated by Jiawei Solar China. Their technical advisor Dr. Sam Lam worked closely with the team at the worksite and led the installation process.

4.5.2 Team B: Satellite TV and Multimedia Classrooms

Dr. Philip Pong supervised a team of 12 students to install satellite TV system and multimedia facilities for a computer laboratory and twelve multimedia classrooms in the Yuanjia Primary School. With these systems installed, students in the school can watch the satellite educational TV broadcast by CCTV. They can also enjoy high quality teaching and learning facilities in their new classrooms in the reconstructed campus. Also, a smart board was also installed in the main computer laboratory. Students are able to draw messages on the board and which the message could be sent to their friends in Hong Kong.

4.5.3 Team C: e-learning system

Dr. Y.C. Wu supervised a team of 10 students to install a high-speed data network in the multimedia classroom in the school. The system consists of modem, router, gigabit switches, file server and 30 sets of client terminals. The first Sichuan-Hong Kong online interactive class had been successfully conducted through this system.

Besides, the team also installed an ETV server which stored over hundreds of high quality ETV programs provided by the HKSAR Education Bureau. An online game sponsored by CLP for the promotion of environmental awareness had also been installed. Students can learn the concept of environmental protection, global warming and energy saving through playing this educational games in the multimedia classroom.

4.5.4 Team D: Education Team

Another team was led by the staffs from the Faculty of Education, the University of Hong Kong, Dr. Lisa Deng and Mr. Rex Ng. They shared their teaching experience with the local teachers and taught them how to teach with the newly installed e-learning system. The team also taught the teachers in Yuanjia Primary School to produce course material for story telling by using digital cameras. They also taught the teachers to use the "Dragon" system developed by the Faculty of Education to learn Chinese.

4.5.5 Team E: Media Team

Besides the engineering and education teams, there was a team led by Dr. Elaine Chan from the General Education Unit, the University of Hong Kong, which the team was responsible for capturing the fine details of the entire activities. The Media Team produced a short video introduction to report what other teams had done during the installation and skill transfer period. The introduction video was broadcasted at the same time in Hong Kong and Sichuan during the first Sichuan-Hong Kong online interactive class on 5 Aug. They also helped in producing a short documentary clip and this book in both Chinese and English version for reporting of the project.

Reconstruct a School in Sichuan by HKU Students and Teachers



Dr. Alfred Yu (the third left in the front row), Dr. Sam Lam (the first right in the front row) and the students in their team, together with two student helpers from the University of Electronics Science and Technology of China.



Students from the University of Hong Kong and students from the University of Electronics Science and Technology of China worked together on the project

Reconstruct a School in Sichuan by HKU Students and Teachers



Students are moving the rack into the school.



Dr. Philip Pong and the students in team B.



Students from the University of Hong Kong and students from the University of Electronics Science and Technology of China

Reconstruct a School in Sichuan by HKU Students and Teachers



Students are installing the satellite



Primary school students are attending the online interactive class in Hong Kong.



Dr. Wu and students in his team.



team C students are setting up the server for the classroom.



The media team originally did not exist at the initial preparation stage of this reconstruction trip. Soon after, the organizers realized it would be a good idea to record the whole reconstruction process. Therefore, the six of us has formed a team to video record the trip. We were led by the General Education Unit and CEDARS from the University of Hong Kong. Few months before the trip, they provided some video shooting training and planned our shooting schedule with us. When we talk about the bitterness we went through during the trip,

it was more about being ready all the time and carrying the equipments around. We basically had to stand by at any time and ran around to shoot. We captured most moments during the trip including all preparation work, process, team members eating and even sleeping scenes!

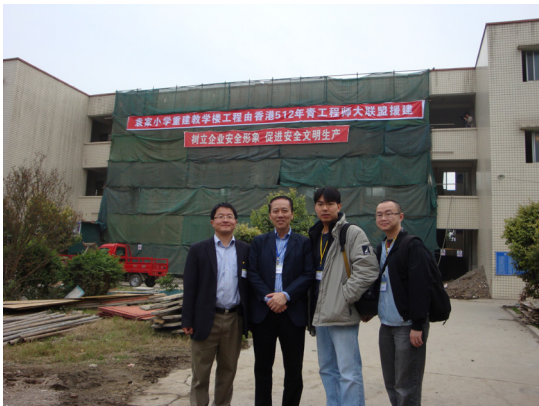
Our mission is to video record the reconstruction process and the environment in Sichuan, so people in Hong Kong who can't be there can learn more about the place. We were very honoured and pleased that we could witness the reconstruction process from scratch. The team started and worked patiently and devotedly along the way. At the end, we were able to capture the happy smile on their face when the solar energy panels finally worked! It is also very moving that many of the shot showed the deep bonding between students from Sichuan and Hong Kong.

4.6 Preparation Works

No project can succeed without well preparation. The project team can successfully complete the project in a few days is a result of the proactive hard-work and well organization and cooperation of the team members.

4.6.1 Pre-site visit and meetings with the Sichuan Deyang Education Bureau

A few site visits had been made before the mission. On 10 April 2009, Dr. Wilton Fok, Dr. YC Wu and Dr. Alfred Yu went to Sichuan and met with the Sichuan Deyang Education Bureau for the preparation of a primary school reconstruction in summer 2009. They met with the school principal, local government officials and the local engineering team. They followed up the construction progress and discussed the engineering arrangement for the reconstruction work for the renewable energy system, multimedia classrooms and a computer laboratory in that reconstructed school



4.6.2 Knowledge exchange on Sichuan reconstruction

Author: Ir. Mak Chai Kong

On 23 July 2009, just one week before our departure to Sichuan, we had an honour to invite our senior alumnus Ir. Mak Chai Kong through the Hong Kong University Graduates Association. Ir MAK is the Permanent Secretary for Development (Works) responsible for the Public Works Programme and Government's heritage conservation policy. After the 512 WenChuan earthquake, Ir Mak has been actively involved in the HKSAR post-quake reconstruction works in Sichuan.

In the seminar, Ir. Mak shared with us the latest situation in Sichuan after the 512 Wenchuan earthquake and showed us the extent of damages. He also introduced to us the scale of reconstruction and the HKSAR's pledged support and shared his experience in these reconstruction works with our team. At the end of the seminar, the project team was impressed and encouraged by Ir. Mak's passions and the team determined to followed his footstep and complete the mission for the peoples in Sichuan.

4.6.3 Knowledge exchange on solar energy

Author: Ir. C.C. Ngan

Ir. C.C. Ngan, an alumnus of the Department of Electrical and Electronic Engineering, represented CLP Power to share his expertise in solar energy system design and installation with the Sichuan reconstruction team members. Ir. Ngan introduced the principle of solar cell and photovoltaic renewable energy system. Some practical installation cases were introduced and Ir. Ngan also shared some tips on the design and installation of a good solar system with the team. Some of the knowledge can be referred to the chapter on renewable energy of this book. Team members had learnt a lot of practical design and engineering knowledge through these preparation seminars with experienced alumni.

The first Sichuan-Hong Kong Interactive Class



Ir. Ngai shared knowledge on solar energy with the students in the Sichuan reconstruction team.



From Left: Dr. Alfred Yu, Ir. C.C. Ngai, Ms. Peggy Chan, Dr. YC Wu, Dr. Elaine Chan and Dr. Wilton Fok

Chapter 5 :

The First Sichuan-Hong Kong Interactive Class

- 5.1 *Technical Preparation*
- 5.2 *The launching ceremony*
- 5.3 *The process of the first interactive class*

5.1 Technical Preparation

Author: Au Yeung Hoi Hang (Faculty of Engineering, Year 3)

On the 5th August 2009, which was a remarkable day for the primary students from Sichuan and Hong Kong – It was the first time for the primary students to participate in the online interactive class. Although this event only lasted for approximately 2 hours, the preparation work was not that simple. Since early July, the technical sub-group had already started working on testing the systems, and performed rehearsals, to make sure that the event can perform smoothly.

At first, the technical sub-group agreed that skype should be the official software for the event. This was due to two main reasons. Firstly, skype is well-known and it is a very popular software, as users can get familiar to it easily. Secondly, skype has some add-on widgets, which functions can fulfill our events. That's why we chose skype as the official software.

Meanwhile, Dr. Wilton Fok, our project director, and Dr. P.T. Ho, the Deputy Director of the Computer Centre, The University of Hong Kong, suggested us to use another software called Adobe Connect Pro for this event. They claimed that it has the basic online interactive functions of skype, and it is much more powerful. The major difference between skype and Adobe Connect Pro is that, Adobe Connect Pro is a web-based software, while skype is not. So, we concluded that Adobe Connect Pro is more suitable than skype in the event.

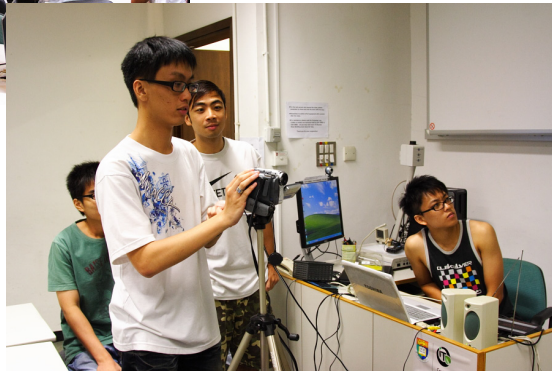
In mid-July 2009, with the help of Mr. Murphy C.K. Wong, a technician of the Information Technology Department, Faculty of Education, we successfully had an online rehearsal with the Deyang Yuanjia Primary School in Sichuan.



This was the first time for the staff in Sichuan and Hong Kong to meet online. Although there were some trivial problems, for instance, the teachers in Sichuan did not know how to use the software, but finally, we can still connect Sichuan and Hong Kong successfully.

The first Sichuan-Hong Kong Interactive Class

The venue of the event was planned in the new academic building of the Deyang Yuanjia Primary School. However, the network of the new academic building was scheduled to be finished in early-August; so, we could not test the network connectivity of Hong Kong and the new academic building in Sichuan. As a result, we only tested the connectivity between Hong Kong and the old academic building.



Except the rehearsal mentioned above, our sub-group also tried to perform a simulation on the event on late-July, that was a few days before the trip. The aim of this rehearsal was to test the connectivity of the devices such as the camera, microphone, speaker, etc. The Primary students in Hong Kong also prepared some materials for the event, and tried to show us in this final rehearsal.

On the 2nd August 2009, this was the first time for me to go to the Deyang Yuanjia Primary School. As I was the person-in-charge of the event, I felt so nervous. It was because the new academic building was still under-construction! The venue of the event was the multimedia classroom (which is located on the 3/F of the new academic building) was an empty room, even without the floor tiles. This kind of environment really made us worry.

For the next few days, the technical sub-group tried to connect to Hong Kong with both old and new academic buildings, but it was not successful.

The first Sichuan-Hong Kong Interactive Class

The connection was not stable that it disconnected quite often. The situation was not really optimistic.

On the 5th August 2009, with the assistance of our reconstruction group members, the multimedia classroom finally finished on time. Unfortunately, the connection problems could not be solved. Since we had successfully connected the old academic building and Hong Kong in the first rehearsal (which was on mid-July), the technical sub-group tried to extend the internet cable from the old building to the new building, we hope that it can solve the network connection problem. Unfortunately, the network in the new academic building was still not working properly. That was really desperate.

On the 12pm of the same day, this was 2 hours before the opening of the event, our group was still trying to solve the network problems. At that moment, our group suddenly remembered that we actually have a contingency plan! This was to use the software skype instead of using Adobe Connect Pro. This was because we thought that the reason of the network problem may due to the bandwidth of the network. To be more detail, the Deyang Yuanjia Primary School was still using the ADSL network, the bandwidth of the network may not be enough for the powerful software like the Adobe Connect Pro. So, we tried to use skype instead. Hurry! Our estimation was correct! We can connect our network to Hong Kong. Everybody was excited when they can see our staff in Hong Kong on the screen. Finally, the event was held on time at 2pm that day.

We must give credit to those who assisted us in the event, which included the Project Director Dr. Wilton Fok, Dr. P.T. Ho from the HKUCC, Mr. Murphy C.K. Wong from the Faculty of Education, and also the teachers and staffs from the Deyang Yuanjia Primary School. Without you guys, this activity could not be successful.



5.2 The launching ceremony

Within just three days after the arrival to Deyang, the HKU reconstruction team had successfully installed an on-line multimedia e-learning system for a reconstructed school, Yuanjia Primary School in Deyang. The system was successfully launched on 5 August 2009, immediately followed by the First Sichuan-Hong Kong interactive class launching ceremony in the afternoon. During the on-line interactive class, students from the earthquake hit Yuanjia Primary School at Sichuan had shared their experience with Hong Kong students via the system. They shared their learning experience and feelings about the earthquake and play interactive games using the newly installed system. The system has been designed aiming at linking students between Sichuan and Hong Kong in an easy and effective way in the future.

Mr Joshua Law, Permanent Secretary for Constitutional and Mainland Affairs; Ir Dr Hon Raymond HO Chung-tai, Member of the Legislative Council and Hong Kong delegate to the National People's Congress; Professor Chow, Shew-Ping, HKU Pro-Vice-Chancellor had addressed the participants in the launching ceremony. Mr. Li Ning, Deputy Secretary, Education, Science and Technology Department, Liaison Office of the Central People's Government in the HKSAR had also attended the ceremony. In Sichuan, Mr. Luchi Chew, Secretary of Education Bureau of the Deyang City and Dr. Wilton Fok, the Principal Investigator of the project also greeted the guests in Hong Kong via the on-line interactive e-learning system.

The reconstruction at Yuanjia Primary School is part of the "512 Sichuan School Rebuild Project", an initiative under HKU "512 Earthquake Roundtable", which joined hands with the 512 Young Engineer Alliance, the Association of Engineering Professions in Society and other organizations after the earthquake to relay the care of the community to the victims. Primary school students from the HKUGA Primary School shared and learned with students in Deyang in real-time through the on-line multimedia classroom system. They shared their school life with each other and sang songs together.

The first Sichuan-Hong Kong Interactive Class

In Sichuan side:



Guests from Sichuan, HKU teachers, staff and students, talked with staff and students in Hong Kong through the newly installed multimedia network



Left: Mr. Luchi Chew, Secretary of Education Bureau of the Deyang City
Right: Dr. Wilton Fok addressed the event



Dr. Wilton Fok presented a souvenir to the representative of the Deyang

The first Sichuan-Hong Kong Interactive Class

City government Ms. Yung Tsui
In Hong Kong side:



Guests and students were linked to the Deyang Yuanjia Primary School via the multimedia data link network.



Ir Dr Hon Raymond HO Chung-tai, Member of the Legislative Council and Hong Kong delegate to the National People's Congress, , addressed the event.



Mr Joshua Law, Permanent Secretary for Constitutional and Mainland

The first Sichuan-Hong Kong Interactive Class

Affairs HKSAR, addressed the event



Professor Chow, Shew-Ping, HKU Pro-Vice-Chancellor addressed the event.



Hong Kong and Sichuan students talked and shared their summer time experience together through the network.

5.3 The process of the first interactive class

Author: Ho Man Chun Dennis (Faculty of Engineering, Year 3)

At 2:00 pm, August 5th, everyone in the computer room of Sichuan Yuan Jia Primary School was holding the breath while waiting for the picture of lecture room in the University of Hong Kong to appear on the screen. Five minutes later, the connection succeeded, which marked the beginning of the Sichuan-Hong Kong Connection Activity.

The event was first addressed by teachers and honored guests from both sides in front of the camera, followed by souvenir exchange. But it was until the start of Knowledge Contest did the primary students get excited. The atmosphere heated up in the questions and answers.

After the interesting contest came the free communication section. A student from Yuan Jia Primary School asked: "Hey friends in Hong Kong, what do you do after school?" One of the students on Hong Kong side answered: "We usually go through what has been taught today, go to extra tutorial or learn some music instruments." "Wow, we just do some revision and play ball games as we can't afford extracurricular tutorials!" he responded.

Not only vocal communication was possible through the connection. A student from Chun Tok School in Hong Kong invited his friends in Sichuan to play a game called "Tic-Tac-three-level", which needs pen and paper for both players to draw circles and crosses in a grid. They actually made it through a Clever Board System developed by the Reconstruction Team from HKU, which enabled the students to see what their friends had drawn in the other end. "That's awesome! And I can't believe that I won the game!" said the player from Yuan Jia Primary School.

At the end of the interactive class, students in Sichuan presented sang a song The Great China to their friends in Hong Kong and were rewarded with enthusiastic applaud. Though the online class had ended, the heart-stirring melody and enjoyable experience would maintain in the minds of the children.



Chapter 6 :

Architecture of the reconstructed school

6.1 *Technology of Magnitude 8 Earthquake-Resistant Buildings*


6.1 Technology of Magnitude 8 Earthquake-Resistant Buildings

Author: Sze Ying Ying Fanny (Faculty of Architecture, Year 2)


Principles of Earthquake-Resistant Building Designs

The principles of earthquake-resistant building designs in mainland China are to keep the buildings intact under small magnitude of earthquake, keep them repairable under medium magnitude of earthquake, and keep them standing under large magnitude of earthquake. In other words, when the earthquake magnitude is lower than the district's seismic fortification intensity, buildings should be undamaged and inhabitable without repair. When the two numbers are close, buildings may be damaged but can function after general repair. When the earthquake magnitude is higher than the district's seismic fortification intensity, buildings should not collapse or cause life-threatening damages.

Requirement of Magnitude 8 Earthquake-Resistance



After Wenchuan Earthquake, central government revised the seismic fortification intensity of Deyang, where Yuan Jia Primary School locates, from magnitude 6 to 7; seismic peak ground acceleration from 0.05g to 0.10g, characteristic period of the seismic response spectrum from 0.35s to 0.40s; and the seismic fortification category from Group I to Group II. (National Design Guideline for Earthquake-assisted Structure GB50011-2001 published on August 4, 2008), (Earthquake Parameter in China GB18306-2001, approve for implementation on June 11, 2008).



The new three-storey teaching complex in Yuan Jia Primary School is a low-rise teaching building. According to the government standards on seismic fortification (Classification Standard of Earthquake-resisted Construction Engineering GB50223-2004, Article 6.0.8), Yuan Jia Primary school is categorized as Major Seismic Fortified Building (Category B). The importance of Category B buildings is that their function cannot be stopped and should be recovered shortly after earthquake. Besides, their large capacity could lead to heavy casualties. Since Category B buildings should raise the seismic fortification intensity one magnitude higher than the requirement in district level (Classification Standard of Earthquake-resisted Construction Engineering GB50223-2008, Article 3.1.3), Yuan Jia Primary School should resist earthquakes up to magnitude 8.

Seismic Isolation Technology

Seismic isolation is a relatively mature technology to resist earthquake. It can effectively isolate the energy of earthquake and stop the energy transfer to upper structures. In general, seismic acceleration of upper structures can be reduced 8 percent to 25 percent. In China, there are over 600 seismic isolated buildings, situated in various administrative regions like Beijing, Guangdong and Xinjiang. Applying seismic isolation technology in the teaching complex of Yuan Jia Primary School can ensure the structural stability of the building and interior facilities. In this way, the complex can serve as an emergency relief centre when there is earthquake.

Rubber bearing isolators were placed at the base of teaching complex, forming an earthquake resistant layer, to extend the natural frequency of the whole structure and reduce the upward transfer of earthquake energy. The earthquake resistant layer was placed above primary beams, raising the floor level of the first storey by about 1m. This separates the upper structure from the ground completely.



The teaching complex is a low-rise building with large stiffness. Therefore the application of seismic isolation technology is suitable. Guangzhou University estimates that seismic isolation can reduce the impact of earthquake by about 70%. This can remarkably enhance the earthquake resistant ability of the building and the security of interior equipment.

The rubber bearing isolators are designed, experimented, and on-site examined by Earthquake Engineering Research and Test Centre,

Guangzhou University. The Centre is a major laboratory in Guangdong Province and is applying to be a major laboratory of the nation. Professor Zhou Fulin, the head of the Centre, is a renowned scholar on seismic isolation and energy dissipation technology for earthquake resistance.

Quality Control

To ensure the new teaching complex meets the new requirements on earthquake resistance, Association of Engineering Professionals in Society Limited and Young Engineers for 512 constantly send engineers as volunteers to field-visit and provide supervision. Moreover, local Educational Bureau and various units governing design, construction and supervision invested in ample resources and monitored every procedure to ensure the quality of the building.



Chapter 7 :

Linking Sichuan with Hong Kong through ICT Technologies

- 7.1 *The installation work of the Multi-media Class room*
- 7.2 *Development and programming of educational TV server software*
- 7.3 *Installation of satellite educational television*
- 7.4 *Using Satellite to broadcast e-learning contents*
- 7.5 *Satellite TV in China*

7.1 The installation work of the Multi-media Classroom

Author: Yau Kai Ming (Faculty of Engineering, Year 3)

The major responsibility for Group B is to install a multi-media classroom for the Deyang Yuanjia Primary School in Sichuan. After installation, we hope that the teaching staffs can make use of the multi-media technology to enhance the teaching quality, as well as to increase the learning interests of the students.

The installation works can be divided into three parts. The first part is to install to the computer; the second part is to solder the (Video Graphics Array) VGA cable; the third part is to install the media projector.

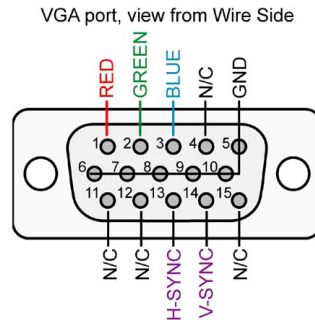


The installation work for the computers is just a-piece-of-cake. What we need to do is to take the components, like the LCD monitors, keyboard, mouse, etc, out form the box, and connect them to the computer by various types of cable. To connect those devices to the computer, we use different types of adaptor. For instance, the keyboard and mouse were connected to the computer via the (Universal Serial Bus) USB/ (Personal System 2) PS2 port; the speakers were connected to the computer via the 3.5mm audio adaptor, etc.

To connect a monitor to the computer, there are usually two types of interface we can use. The first one is to use VGA cable, while the other type is called the (Digital Visual Interface) DVI. This time, we choose the former one.

Next, I will talk about the second part of our work, which is VGA soldering. This part is relatively complicated when compared to computer installation. As the channel of the VGA cable is quite narrow, the VGA socket needs to

be soldered after the VGA is installed correctly.



There are 15 pins in the VGA socket; they are used for transmitting 5 signals: Red, Green, Blue, HSYN and VSYN.

The first step for soldering VGA cables is to remove the outer most insulating material. After that, the metal mask was rolled, and then the insulating material of the wires inside the VGA cable is also removed. The reason of doing these actions is to expose the conducting part of the VGA cable. Next, we can connect the signal cables to the 15 pins respectively. The order of soldering the signal cables also need to be considered. We should first solder the signal cables to pin 6 to pin 10, such that the other pins will not block its path. After we finish soldering of the pins, we need to solder the metal mask to the VGA socket, after that, the plastic coat of the VGA socket is installed. A VGA cable is now finished.

The third part of our job duties is to install a media projector to the multi-media classroom, such that the multi-media teaching content can be displayed to the screen. The installation procedure is not that difficult. What we need to do is to install the device to the metal framework, which is on the ceiling. After that, we just connect the VGA cables and the power cord to the media projector. Of course, we also need to calibrate the size and the clearness of the projected image by adjusting the focus of the media projector.

Finally, we can finish the installation work of the multi-media classroom. We should thank Dr. W.T. Pong, the supervisor from Group B. Without his help, our group cannot finish the duties smoothly. Also, I would like to say 'thank you' to my follow groupmates, they are really helpful and considerate.



7.2 Development and programming of educational TV server software

Author: Chiu Ho Ming (Faculty of Engineering, Year 3)

Hong Kong Education Bureau is in the provision of educational television(ETV) to students as a learning resource.Students could learn a lot easily by simply watching interesting ETV programmes. In view of this, we decided to develop a set of ETV server for the Sichuan Yuan Deyang primary school teachers and students. With the help of Hong Kong Education Bureau, we were offered a lot of Mandarin and English language educational television programmes which can be used to be the content of the server and Sichuan teachers and students can access the server through the school's computers. This server can be a teaching tool for teachers, and also can be a good tool for students to use for self-study.

We used two different programming languages, including Javascript and HTML to programme the ETV server. In addition, we also made reference to the practices of a number of video-sharing site, using Adobe Flash coding techniques. To put it simply, the technology is the use of Flash Player to deliver video over the Internet in FLV file format. With the number of video-sharing site increases, this format is also becoming increasingly popular. There were also some free media player that we downloaded and plugged into websites to play FLV videos.

Through search engines, we found JW FLV Media Player. This player can play FLV format video, and also provides some basic functions, for example, play pause button, volume control and full-screen playback. In addition, the site also provides a method to make playlists. The playlist format is Extensible Markup Language (XML), which includes information on a video title, time, location and a brief introduction and so on. After that, our next task is to transform the original movie format (MPEG) into Flash Video (FLV), and then lay a good playlist. The video classification was based on grade. Moreover, the information and focus of each piece of the ETV videos in the site could be changed with the broadcast of each video. The programming language related to this function is Javascript. However, the ETV system team members were all beginners on Javascript. Therefore, during the programming process, we had to refer to some tutor sites and keep trying and eventually be able to write the server.

The final work is the design of server platforms. In the process, team members gave a lot of suggestions to work to make the interface looks

Linking Sichuan with Hong Kong through ICT Technologies

more attractive in the hope that Sichuan students will not feel boring to watch. In addition, the simple design of the platform makes it easy to use for primary school students.

Before departure, the entire ETV server software has been completed. After arriving in Sichuan school, our main job was to build a web server, so that students can connect to the main server to use the system to watch ETV programmes through the computers there. The free software we used to do this job called Apache.

After setting up the server, a full set of ETV server software is installed on the main server's hard disk drive. We finally success in achieving our ultimate goal, so that the Sichuan students can self-study through Hong Kong's ETV programmes.



7.3 Installation of satellite educational television

Arthur: Yeung Man Ho
Faculty of Engineering, Year 3

In the Sichuan trip, I belonged to the third team which was responsible for installing multi-media classrooms, and satellite educational television. The satellite educational television is very important to the primary school students there because of its unique advantages over other modern educational media in today's society.

These advantages are: wide scope of information transmission, authenticity and reliability of information, relative small local government investment is required, have better results and bear fruit faster than other traditional methods. As a result, the satellite TV system installed in remote poverty-stricken areas for education and economic development will play an important role. Therefore, we decided to install the satellite educational television for the Sichuan Deyang primary school.

One of important tasks of the reconstruction process was to re-install a satellite signal receiver for the school, and then connect it to the digital receiver, re-adjust the antenna orientation. This three-step process looks simple. However, it contains a lot of knowledge and skills on electronic communication. It was indeed difficult for us to start working without any past experiences.

In the first step, we wanted to find a suitable primary antenna, and installed the dual polarity LNB for the antenna. Mounting the bracket is a manual work, however, we still completed it successfully by the cooperation of all team members. Moreover, the adjustment of the LNB was done by our team leader.

In the second step, we simply connected the dual polarity LNB with the digital receiver. As the cable has a limited length, so the distance between the receiver's antenna and the digital receiver had to be calculated. The final solution was to connect the cable through the solar energy system's network, it shortened the original distance so that the LNB can be connected to the digital receiver.

The final step was also the most difficult step, which is adjustment. It seemed to be a easy job, however, it was actually the most difficult step. Because it requires a precise orientation to receive the satellite television signals conveyed by the satellite. Even if a degree of deviation may also

affect the signal strength, or even a total lost of signal. Therefore, accurate instruments and data was necessary. In the absence of instruments and data, we could only make a rough adjustment and it was also only allow the signal strength remained at approximately 60%. So, unfortunately, we were not able to provide local students with a better quality satellite educational television signals at this stage. However, we hope that the quality of satellite educational television signals will be continuously improved in long-term to provide students a better learning condition.



7.4 Using Satellite to broadcast e-learning contents

On September 2003, the State Council held a national conference on rural education, that “the implementation of modern distance education project in primary and middle schools to promote the urban and rural areas to share high-quality educational resources to improve education quality. In the year of 2003, experimental work continued on the basis of strive to about five years time, the basic with the rural junior high school computer lab, rural primary schools with satellite teaching of basic income perspective, the rural primary schools with teaching points, teaching CD-ROM. “

China’s education has many difficulties in rural areas, especially the primary and secondary schools in the central and western regions. Now, there are 530,000 primary and secondary school under the current district towns, accounting for 88% of the total number of primary and secondary schools, 162 students in million, accounting for 81% of the total number of primary and secondary students. Project planning with five years , around 110,000 rural primary schools with teaching points, teaching CD-ROM , the teaching points to these villages is about 5.1 million primary school teaching resources to provide high quality education to address the quality of teachers.

In 2008, the Sichuan earthquake destroyed a number of schools in rural and mountainous areas, these schools need an effective and broad system covering the provision of quality educational resources to share, so the Hong Kong reconstruction team also installed a set of satellite reception system for the Yuen Jia Primary School.

Yuen Jia Primary school was equipped with a antenna to watch the teaching resources. Only a few people can be allowed to watch the video for a normal satellite teaching system but we made use of advanced digital network technology, through the expansion of satellite receiving equipment so that resources can be shared everywhere in the school. We are here to facilitate the realization of school visits a large number of parallel access to the terminal, teaching resources to reach every corner of the campus, resources can be fully applied in an effective manner.

There are mainly two type of Satellite reception equipment to receive the far-education resources: One is the use of satellite receivers, television sets to receive the “radio and television educational programs,” including “CETV-1” “CETV-2” “CETV-air classroom” three programs; The second one is the use of satellite receiver card, computer, IP to receive the

software to receive “IP resources,” according to two types of resources for receiving and handling characteristics, the school choose their own way for the terminal expansion.

Our Reconstruction Team has installed the satellite signal receive and resources servers in Yuan Jia Primary School, they are respectively responsible for receiving signal and resource access, as shown in Figure, in this receiving mode, receiving and serving mission by the two computers were used to lighten the load of the receiving computer, it can protect the integrity of IP information received, and the access speed, memory capacity. As a result, it has high reliability. We will of satellite receiving systems to receive IP data directory network path to support the “receiving file directory” to “resource server” directory, so you can receive will receive the resources of a computer directly to save the resources of the server to ensure that resources COSCO teaching resources, real-time server updates. In addition, satellite-TV systems are generally IP Education WEB, far from teaching resources, browser, Internet Neighborhood, FTP four kinds of shared access mode. Because the whole system are published as a web page, so we design and far-teaching resources WEB browser access.

After the Installation of the system, teachers and students in Yuen Jia Primary School can receive the latest education information and teaching materials in every multi-media classrooms, computer room or even in a computer on every platform. It provides a good learning environment for Yuen Jia Primary School.



7.5 Satellite TV in China

Author: Lam Kwan Yu (Faculty of Engineering, Year 3)

In the mission, we have also installed a Multimedia Satellite Real-time Interactive e-Learning System, which allowing students to receive national broadcast for educational television. The following is the introduction of satellite television system.

Zhongxing 6 B, the SinoSat 1st, Sinosat 3rd ... may be, we are not familiar with these words nowadays. In fact, those words were created by China in recent years, the satellite can be used as live television, so that it can benefit the public.

Sinosat 3rd is Sino-Satellite Communications Company's exclusive broadcast television satellites, mainly developed by the China Academy of Space Technology which is belonging to "relay satellite," a kind of relay stations used as cable television signal, broadcast radio. Television Users then can receive programs from cable television. Moreover, Sinosat 3rd floor has anti-malicious interference function of the uplink signals to ensure the stability of the transmission of television programs. The coverage of the satellites is over China and surrounding areas. (Right picture Sinosat III satellite launches)

In addition, 6B, the star is also one of China's satellite TV system is an important part. It is by the French Thrse A. Alenia Space developed the company out with a sensitive receiving ability. Coverage has reached Australia and New Zealand region. The above two satellites for more than 200 programs to provide transmission services.

In addition to the Star 6 B, the SinoSat, Sinosat on the 3rd and so on major television satellite, there is the follow-up of satellite resources (SinoSat on the 4th, Sinosat on the 5th, Zhongwei II).

Of course, the operation of the satellite TV system also have to take the lead co-ordination of ground facilities. Dongbeiwang Satellite Control Center and Shahe live satellite earth station are playing play an important role. The former is China's largest civilian satellite ground control center, it used to monitor and control task for Zhongwei 1stand the Star 6 B.

The job of the center are manage and analysis the satellite orbits, satellite fuel and life-cycle, data analysis, etc. Moreover, the job for Shahe live satellite earth station are in-orbit testing, communication, monitoring,

satellite TV image monitoring, etc.

These advanced satellite TV systems have used different television broadcast transmission services, such as the 2008 Beijing Olympic passing on the ceremonial fire (chu yi) and the Sichuan earthquake disaster live.

So what exactly is the satellite mode of operation? There are three kinds, the first way is through regular communication satellites to transmit analog or digital TV signals to the station, the receiving station and then send the signal to the user's television. The second one is to use analog technology, from high-power direct broadcast satellite television broadcasting television signals to families, this is one of the most direct transfer method, but each satellite are only a few live shows, this is because the signals are not transmitted After several digital compression. The third way is Digital Video Broadcasting forward error coding (DVB-S), which means that the use of Ku-band compression of digital video broadcast satellite television. Each satellite transmitter may apply to the family about seven programs in live, and a satellite can have more than 100 television signals in live.



Chapter 8 :

Using Renewable Energy to renew Sichuan

- 8.1 *Introduction*
- 8.2 *How is Renewable Energy related to Climate Change?*
- 8.3 *Renewable energy in the University of Hong Kong*
 - 8.3.1 *Solar power*
 - 8.3.2 *Wind power*
- 8.4 *Smart grid integral the power of the renewable energy power and application*
- 8.5 *Deployment of renewable energy in the reconstructed school in Deyang*
 - 8.5.1 *Operations of the Photovoltaic Solar Energy Cell*
 - 8.5.2 *Operations of the Solar Photovoltaic System*
 - 8.5.3 *Operations of the Protection devices*
- 8.6 *References*

8.1 Introduction

Climate change is a serious global problem and using renewable energy is one of the means to solve this problem, or at least reduce the impact. In our reconstruction project, we introduced renewable energy to the reconstructed school. We have a belief and passion to “Renew Sichuan by Renewable Energy”.



8.2 How is Renewable Energy related to Climate Change?

According to the Intergovernmental Panel on Climate Change (IPCC) Climate Change refers to any change in climate over time, whether due to natural variability or as a result of human activity. The definition according to IPCC is different from that of the United Nations Framework Convention on Climate Change (UNFCCC), where climate change refers to a change of climate that is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and that is in addition to natural climate variability observed over comparable time periods. During our planet's history, the Earth's climate has changed many times, with events ranging from ice ages to long periods of warmth. Global environment problems have becomes more But the Global demand for energy is

constantly increasing. The International Energy Agency (IEA) forecasts that electricity demand worldwide will double by 2030. Alternative energy sources such as renewable energy are therefore of increasing importance in supplementing conventional fossil fuel-based energy sources while mitigating the effect of energy production on the environment.

Climate change affects lots of aspect like people, plants, and animals. Scientists are working hard to have a better understanding of future climate change and how the effects will vary by region and over time. Obviously, some changes are already occurring including sea level rise, shrinking glaciers, changes in the range and distribution of plants and animals, trees blooming earlier, ice on rivers and lakes freezing later and breaking up earlier, and thawing of permafrost. Equally important is how societies and the government will adapt to or cope with climate change. Now we all got a message-“New technologies to save the planet”- Renewable Energy is based on the use of natural resources such as hydro power, wind power, biomass, geothermal, ocean and solar energy which, unlike fossil fuels, are naturally replenished. Renewable energy thus increases diversity of energy supplies and reduces the dependency on diminishing fossil fuel resources over the long run. It use in place of fossil fuels can substantially reduce greenhouse gases and other pollutants.

8.3 Renewable energy in the University of Hong Kong

From the past to now, many renewable energy sources and technologies are adopted to deal with climate change. Here are some technologies to save our environment shown as following:



8.3.1 Solar Power

Solar energy is provided by the sun that is powerful and provides more than enough energy to power the world if we make use of it. Normally, solar energy is used into two ways. One is heating water and other is use PV panel to generate electricity directly. To come up with an effective way of capturing this energy is our main concern. Current solar panels are relatively inefficient, but increasing investment in solar cells is producing better models which capture more energy and cost less to produce.

Newer standard PV panel model include casting wafers instead of sawing, thin film (CdTe, CIGS, amorphous Si, microcrystalline Si), concentrator modules, 'Sliver' cells, and continuous printing processes.

8.3.2 Wind power

Wind power, despite a reputation for being unreliable, it is perhaps the most advanced of the "new" renewable energy technologies as it has the potential to provide more than 30% of the world's electricity. Of course, there is still much work to be done. Since the wind does not blow constantly, so developing better ways of storing the energy that we generate with it is a necessary job. And rather than being used purely locally, wind energy will have to be distributed between different states and countries.



8.4 Smart grid integral the power of the renewable energy power and application

A Smart Grid, which is a more intelligent control and operation system of the electricity grid, will employ real-time, two-way digital information and communication, and networking technologies in the operation of the nation's electricity grid to deliver electricity more efficiently, reliably and securely. The system, not only allow consumers to better manage and control their energy use and costs but also reduce our dependence on fossil fuel and create clean-energy jobs. To do that is like to use an analogy from the construction world, is more complex structure than before and complicated to operate. The reliability, security and efficiency of the electric system: from large generation, through the delivery systems to electricity consumers and a growing number of distributed-generation and storage resources will be totally improved by developing a framework for interoperability of Smart Grid technologies. It is a good beginning but full of challenge.

Developing renewable and clear energy that take advantage of the nature is important to reduce greenhouse gasses, slow the climate change and help stimulate the world economy. "Green industry" will be tomorrow's dominate industry.

8.5 Deployment of renewable energy in the reconstructed school in Deyang

The renewable energy is not only used to generate electricity clearly, but also power up their life. To decide which type of renewable energy should be used in the reconstruction school, there are many factors have to consider. The installation, operation and maintenance of the device should be well planed.

Accelerating the development of solar technologies as energy sources for the nation and world is the goal of the Department of Energy. They organize and manage a Solar Energy Technology Program, with the Office of Energy Efficiency and Renewable Energy. Its solar program also educates the public about the value of solar as a secure, reliable and clean energy choice as their goal. Therefore developing technologies that take advantage of the clean abundant energy of the sun is important to reducing greenhouse gasses and helps stimulate the economy which meets our goal. Photovoltaic cells convert sunlight directly into electricity and are made of semiconductors such as crystalline silicon or various

thin-film materials.

After out weighting the pros and cons among different renewable energies, solar energy is our final decision. The system mainly provides energy to Sichuan and educates the public about the value of renewable energy and the environmental problem. Solar energy is limitless and it is also renewable and sustainable. So the solar energy could be used by us forever. Besides these advantages, it is also clean, efficient and will never run out. It is the most abundant reserves of renewable energy. Among the renewable resources, only in solar power do we find the potential for an energy source capable of supplying more energy than is used. As it can be directly converted to electricity. Most of our tools or machines are designed to be driven by electricity, so if we can create electricity through solar power, we can run almost anything with solar power.

Second, it is very safe for us. While the burning of fossil fuels introduces many harmful pollutants into the atmosphere and contributes to environmental problems like global warming and acid rain, solar energy is completely non-polluting. Indeed, if a solar energy systems were incorporated into every business and dwelling, no land would have to be destroyed in the name of energy.

Third, the location of the school in Deyang is a remote area, where power-lines were destroyed by earthquake so solar energy can be the solution. After finishing the installation the solar PV system, we could use the electricity immediately. To last out the system for future, we use smart grid system. The electricity could be used directly or resell to the power company when supply more than demand.



All members of the reconstruction team at the roof with the solar panels

8.5.1 Operations of the Photovoltaic Solar Energy Cell

A solar photovoltaic (PV) panel is a current source device that uses light energy from the sun and converts it into useful forms of energy--electricity. Solar panels utilize solar cells. The photovoltaic panel consists of many interconnected solar photovoltaic cells that are contained by silicon which has the property to convert solar energy into the forms of electricity. When these solar cells are packaged together either through wiring or fastened installation, they become one solid panel shown in the figure. For protection, the panel may be covered with fiberglass, plastic, or even metal.

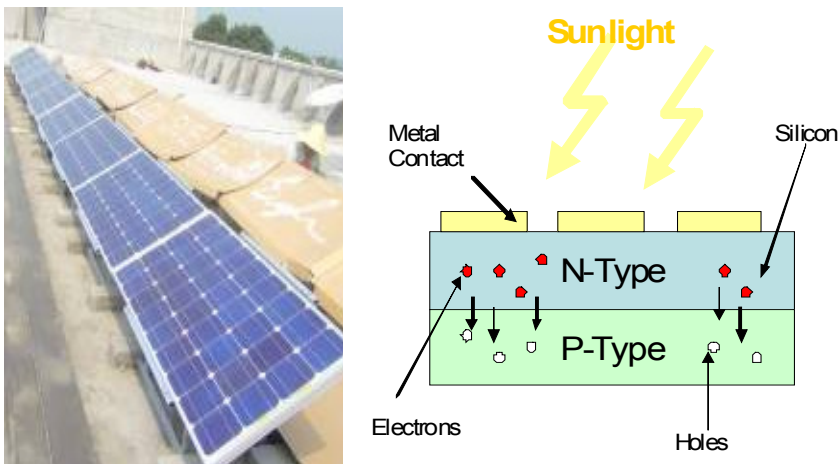


Figure2. Showing the construction of a cell

Light absorption and energy conversion simplified principle why the solar PV panels could function to generate electricity. Solar cells are light-absorbing materials and they have high capabilities to carry out the energy conversion. The silicon contained in the solar cells is in charge of the light absorption. The sun's rays emit photons absorbing by the silicon atoms. When absorbed photon energy is large enough, an electron from the outer electron shell will be freed. Then some holes are created which the region is lack of an electron in P- layer. The excess electron in crystal structure will rapidly fill the hole without any barrier. The buildup of electrons in N-layer and deficiency of electrons in P-layer are connected together through electrical circuit, current will flow inside. This current is then passed on to the installed electrical wiring within the solar panel right down to the power generating device connected thereto.

To sum up, solar panels act as connector and energy transformer between the sun and electricity. The sun gives off its photons through its rays, and the solar panel absorbs these through its solar cells. The light absorbed is then converted into electricity within the solar panel device and it is passed on through a power generating device.

8.5.2 Operations of the Solar Photovoltaic System

The solar PV system normally is divided into on-grid and off-grid system. The main difference is that off-grid system consists of the energy storage. Since solar electricity systems can only generate power during hours of daylight. For off-grid system, some form of energy storage or backup device is required if a solar system is to be able to provide power continuously and sufficiently. For smaller applications, the simplest form of storage is a bank of rechargeable batteries. A flywheel energy storage system and diesel fuel backup generator could also be used in larger application situation if the system size warrants it. Both can serve the secondary purpose of providing a non-interruptible power supply.

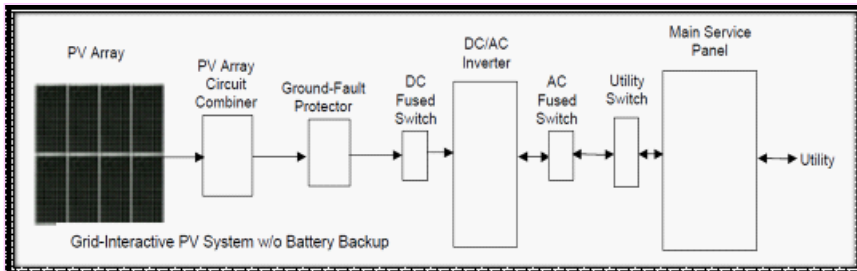


Figure.4. showing the construction of solar PV system

Our system is an on grid system feeding 11kv cable form the power supply company in to the system. It mainly consists of PV array, inverter, protection devices, switches and different function meters. The common solar PV system is shown in Figure.4. But it is slightly different from our system as our system is without battery or generator.

Photovoltaic Array

For PV array, it is an interconnected system of PV modules that acts as a single electricity-producing unit. It could separate into two connection methods that are series and parallel. For series connection, the PV array will increase the PV voltage level. For Parallel connection, the current rating

will be enlarged. The modules are assembled as a discrete structure, with common support or mounting. In smaller systems, an array can consist of a single module. Our system is using series and parallel connection for modules which is shown in figure.5.in order to provide a suitable current and voltage for the application standard and fulfill the space limitation. The output from a solar panel will be direct current.



Figure5. Showing the PV array



Figure.6. Showing the backup battery



Figure.7. Showing the inverter

For the common application, the output current feeds in the inverter to convert into alternating current before it delivers into the grid. Increasingly, however, solar systems are designed so that they can feed surplus electricity back into the grid. For this, a more sophisticated inverter and grid interface will be required.

8.5.3 Operations of the Protection devices

In the system, the protection device is diode, fuse MCCB and switch. The bypass diode is connected in parallel with the PV Panel to provide an additional path for the current when the PV cell is broken down. As PV panel is a current source device when exposure to the sunlight. Bypass diode is functioned to protect the PV panel by regulating the current flow and ensure the continuous and efficiency of the power generation. Fuse and MCCB are used as the fault protection device. They trips when the fault current occurs to protect the people and devices.

The system is smart grid system as it uses the meter and controller to check and monitor the system, with the help of the switch and controller to control the system. The system measures the current from time to time and checks the current rating and power output. The system is using the solar energy first. When the current supply is sufficient, then the system will not use the electricity from the power company. In case, the system output current does not have enough, the 11kv feeding provide energy into the system.

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A photograph of a classroom where students and teachers are engaged in a learning activity. Some students are sitting at desks with laptops, while others are standing and looking at a projector screen. The room is well-lit and has a modern feel.

Chapter 9: ICT Education and E-learning in Sichuan Rural Area

- 9.1 What is ICT in education?
- 9.2 Why ICT in Rural Education?
- 9.3 Brief History of ICT Education in China
- 9.4 Characteristics of the research case

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9.1 What is ICT in education?



ICT has been increasingly integrated into every aspect of our social society today, e-commerce, e-learning, e-health, and e-learning are all the new industries associated with ICT. The popularization of e-learning calls for a wide implementation of ICT in education. About the definition, some describe the ICT in education can be broadly categorized in the following ways: ICT as a subject and ICT as a tool to support traditional subjects (i.e., computer-based learning, presentation, research). (Wiki, 2009). Richmond Ron (Tinio, 2002) believes that there are three general approaches to use computers and the internet in education, namely, “

- 1) Learning about computers and the internet, in which technological literacy is the end goal;
- 2) Learning with computers and the internet, in which the technology facilitates learning across the curriculum; and
- 3) Learning through computers and the internet, integrating technological skills development with curriculum applications.”

One similarity can be found from above, that is, in order to use ICT in education for enhancing our learning, we should at first learn how to use the technology. In which meaning, to popularize the technology literacy should be the first goal we should achieve in terms of ICT in education.

9.2 Why ICT in Rural Education?



World population in 2015 is expected to be 7.1 billion with 95% increase in developing world(Farrell , 2001) Integrating ICT in education has been considered as one of the essential components to pace up the education development and reform. The Chinese government has launched the policy about ICT in education about 15 years, but according to the IDI (ICT Development Index) statistic report published by the International Telecommunication Union 2009, China ranks 73th in 2007 while Hong Kong SAR, Macao SAR and Taiwan China respectively ranks 11th, 21st and 25th. The E-readiness of China is ranking NO.57 in 2008, which means compare with other countries in the world, the average number for the connectivity and infrastructures, business environment and social culture environment, legal environment and government policy & vision and consumer & business adoption , China is still a “powerful information poor” country. ICT4D projects shows significant impacts on the development of China, (Zhao, 2008) as a essential component, Education plays as a core catalyst role of its implementation. “The Internet has been used to enhance teaching quality and learning capabilities at rural schools and to ICT4D: internet adoption and usage among rural users in China increase the level of technological readiness among adults.”(Zhao,2008) The Millennium Development Goals (MDGs) The MDGs, agreed at the United Nations Millennium Summit in 2000, aim to reduce world poverty and improve lives by 2015. ICT has been highlighted as the key tool which

can help developing, countries to achieve this common goal.

It is widely accepted that the information dynamism enables the ICT work as the promising tool to reduce the poverty and speed up the development in LDCs and rural area where are experiencing the less-benefits in this information age.

9.3 Brief History of ICT Education in China

“The popularization of knowledge of computers should begin from children”, said in 1984 the former leader Deng Xiaoping, General designer of China’s reform and opening policy.

Different from most of other countries, in China the implication o technology in education is called electrified education. And it has been almost 30 years since the first technology was used in education, this process can be generally divided 2 periods: visual & audio education and education Informationization.

9.3.1 Visual & audio education period (late 1970s to early 1990s)

China started its economic reform in 1970s, with the booming of most social industries; education also took the great opportunity to get revitalized. Started with the beginning, from organize relevant institutions and workshops; set up new facilities and empirical test to publish related books and journals on this new topic and open new courses and major at schools, every aspects has all got advanced developed. China has got remarkable result on building up three main items for electrified education, including hardware, software and “underware”: 1. Hardware, eight rooms, one station and three systems, namely, normal electrified classroom, multimedia electrified classroom, language lab, computer classroom, minisize electrified classroom, visual& audio reading room and database for electrified education. “One station” is the ground earth station, and three system references to broadcast system, closed circuit television system and internet system. (1)Software: develop the slides and audio tapes for key and difficulties content for individual subjects, in that way enriches teaching materials from single paper textbooks to multimedia resources. (2) The “underware” refers to the basic theories, structures and guidelines for technology implementing in education and it is aiming at establish the suitable electrified education paradigm and modern education model system in the information age for which is based

on the uniqueness of China. After 20 years work, China has solved out its own paradigm and system model which is based on seven basic theories, and several certain pedagogies. (3) Therefore, projection, tape record and TV program are the most popular technologies which have been used within this visual & audio education period. And the leading theory for the electrified education that time is The “Cone of Experience” developed by Edgar Dale, and the behaviorist learning theory.

9.3.2 Education informationized period (middle 1990s till now)



The ICT technology has been widely used during this time, with the development of online education in the middle of 1990s, the electrified education in China has stepped forward into a new stage. The “three items” has also be upgraded with new requirements, campus network and online classroom have been the working focus on the hardware aspect, online course and digital teaching materials become the main education resources need to work on and how to adjust the paradigm and education model in a cyber space has been the new challenge for Chinese education system. During this period, multimedia and information communication technologies are the technologies been used mostly, while the behaviorist learning theory has been taken place by constructivism as the dominating stage.

9.3.3 China's policy on ICT in education

For what we can see from the series national education strategy plans from 1980s, especially 1990s so far, as one member who is experiencing the information age, the Chinese government has always been paying attention to its inevitable effects to students, teachers and the whole education industry. The "Government's decisions on education system reform" launched in May, 1985 indicated "the Education should face to the modernization, whole world and future." "The outline for Chinese education reform and development" 1993 Feb, and "The Education Law" in 1995 have also pointed out the development problems for education technology and TV education.

The government has set up several certain requirements for applying Modern Educational Technology, such as Multimedia technology in a project called "The 21th Century Education Revitalization Project" in 1998 Dec. In addition, ICT in education has been promoted to be a new stage in "The Government's Decision on deepen the entire education reform to step forwarding education for all-around development" 1999 June. Moreover, the Ministry of Education organized a meeting namely "National Congress about ICT in K-12 education" in which the government decided to generalize ICT in elementary and secondary education including the vocational education. During this meeting, four issues have been listed out for detail discussed, ICT education in K-12 curriculums, a national project called "connect all schools", ICT teachers' professional training, and generalize ICT in K-12 education efficiently. It has clarify the national goal and different millstones for informationizing the K-12 education in China and this four aspects also be considered as working forces for the following decade. In "National Education Plan for Next 15 years" April 2001, drafted by the Chinese Ministry of Education, "establish the lifelong learning system, modernize the medium of electrified education and integrate ICT in education to face the challenges in the new information age" was one of the fourth strategies which has been emphasized. The 11st principle of "The Guidlines for K-12 Curriculums Reform" 2001 June is "advance the generalize ICT used in education, promote ICT intergrading in the curriculums design, reform the pedagogy, learning style, teaching style and the interaction between teachers and students. Facilitate students with more interesting education environment and efficient learning tools with the help of ICT.

In 2003 Sep, Chinese State of Department organized a national congress about rural area education. The State of Department, Ministry of Education, The Committee of National Development and Innovation, and the National

Ministry of Finance decided to address a national project which is about implementing distance learning in rural elementary and high schools. As discussed above, the Chinese government has made four strategically actions following the principles in the “National Congress about ICT in K-12 education in order to speed up the national implementation of ICT in education, especially K-12 education. They are: generalize ICT in K-12 education, put “connect all schools” project into practice, start distance learning project in rural elementary and high schools, and start the national ICT training for teachers in elementary and high schools.

The Chinese government has gradually developed and detailed its national policy on ICT in education from early 1980s to early period of 21st century. Especially during the beginning 5 years, Chinese government has addressed a series of law and policy about ICT in education. Learnt from the experiences of other countries, promote ICT in education to the national agenda, and government also keeps on adjusting the relevant policies to keep pace with the times is one of the essential aspects to ensure the implantation of ICT in education national wide.

9.3.4 Development of ICT in China K-12 education



From early 1980s till now, the development of ICT in China K-12 education has mainly gone through three stages, namely “ICT course, curriculums

integration and online learning.” Most of the schools also informationized themselves by three steps: first buy PCs for office administration and documents saving; second set up computer classroom for computer class, then upgraded to multimedia classroom opens to classes of all subjects. The third step is set up its own campus network, thus intranet and internet can both be used to share the resource and information.

The IT education originated in 1982, The Ministry of Education opened the first computer class as a selective class in five University-affiliated high schools (Tsinghua University, Peking University and Beijing Normal University etc.) and “BASIC” language is content of the class. in 1981, China has invented the first computer-assisted education and education administration system. Deng Xiaoping as the 3rd First vice Premier of the People’s Republic of China, addressed one speech on a school opening ceremony in 1983, he pointed out “Education should face to Modernization, international, and coming future.”

He also made a meaningful suggestion in 1984 when he was in Shanghai: “The popularization of computer should start with children.” Then in 1986, certain government organizations, higher education institutions and companies started their own research on “China Educational computer” and relevant software. With the increasing popularization of PC in 1990s, the ICT in education is mainly about multimedia software.

The Chinese Ministry of Education declared in end of 1999 that from Sep of 2000, the ICT class will be gradually added into the curriculum of all K-12 schools in China, and also published “the guide outlines for K-12 school ICT class”. Moreover, in order to advance the basic education with the help of modern information and technology. In Oct of 2000, the Chinese Ministry of Education made the decision to popularize the ICT class in K-12 schools (including the middle level vocational schools) within 5 to 10 years after 2001.

Hence, the former definition as” K-12 computer education” has been replaced by “K-12 ICT education” and since China has turned to a new page of ICT in education. Looking back almost 20 years’ development of ICT in education, it can be mainly divided into 3 stages according to the focus, goal, slogan and implantation. (See Append 1)

It is clear that, these 3 stages are developing in a non-linear way. During the implementing ICT in K-12 education process, IT class, curriculum integration and online education these three major are collaborating together, which enables more interactions, integrations and bindings that

can keep abreast with other aspects in order to develop in a smooth and sustainable path. China has achieved a lot on setting up infrastructures, developing education resources, and informationized the basic education. In recently 6 years, the numbers of schools using ICT in education and students who are having ICT class are growing multiples in China. For example, the numbers of computers, computer classrooms, campus networks and other ICT infrastructures are increasing rapidly, at the same time, the campus network has worked on more than just build up the main body of network(including information center and school network), but was also responsible for other request projects such as digital reading room for students, computer classroom, video player, courseware, multifunctional classroom, computer office for lesson planning, school website ,school intranet, digital library and basic internet service.



It is clear that with implementation of the project “Connect all schools” started by the Chinese Ministry of Education in 2000 Oct, ICT in education has been paid attentions not only by education institutions, but also from all sectors of society. The huge ICT demand from education market and the positive support from series government policy has enabled its booming picture in China. According to the report conducted by CNET Research, the size of market reaches to 2.85 billion RMB, which has increased 22.3% and become one of the powerful application fields in IT industry of China in 2003. In addition, after experienced the serious situation of SARS in 2003, more and more people has noticed the importance of

distance learning. In the same year, the Ministry of Education in China and Li Ka-shing Foundation worked together to build up 10 thousand distance learning test field for K-12 schools in 240 rural and poverty areas. So thanks to the government policies, from 2004, the popularization of ICT in education was gradually able to cover rural areas and broad western area in China, and Chinese government was going to allocate 10 billion RMB to implement distance learning K-12 schools in rural areas, the money would be spent on setting up the education video playing centers in 110 thousand education institutions, building up education centers which can receive satellite signal for education programs for 370 thousand primary schools in rural areas, and building up computer classrooms for 37 thousand remote junior high school.(He Kekang, 2001) The statistic report from CCW Research indicates that in 2005, Chinese government has invested 27.26 billion RMB into the ICT education industry, got 8.7% increase, in 2006 it reached 29 billion RMB and increased 9.8% compared with 2005, and the total amount government has allocated has got sustainable growth and was more than 100 billion RMB in last 10 years. (Qin Weiwei, 2007) About the development of database for education resources, The Ministry of Education decided to grant 18 million RMB from “ The proposal for 21st century Education Revitalization Project” (Modernize distance learning project)for inventing digital education resource for K-12 schools, it was the first large national database for education resource which manages the coding in accordance with metadata criterion.

China is experiencing the thriving development of informationizing and digitalizing education industry. Facing to the increasing evolution of Information Technology in the information age, the challenge to fulfill not only lifelong learning, equal rights and education reform, but also to build up learning environment for the learning society, China will have to popularize its ICT implementation in education in a more standardized scientific direction.

Stage/ Time	Slogan/Goal	Implantation
1st Stage: late 1970s ~ early 1980s	<ul style="list-style-type: none"> • Computer courses • students should have basic understanding of IT and computer skills • "computer programming is the second culture" 	<ul style="list-style-type: none"> • From primary to high school, promote the computer class from selective course to core course; • Content program design, application software ; • Change the course name as IT class instead of computer class
2nd Stage: late 1980s ~ mid 1990s	<ul style="list-style-type: none"> • ICT be used not only in teaching and learning, but also the school administration • develop software and courseware for teaching and school management, which means consider computer as a useful tool • integrating Computer into basic education 	<ul style="list-style-type: none"> • Education software development in the new direction, such like groupware and Integrableware; • Education platform is getting more source and application originated and become more sophisticated. • ICT is suggested to be integrated to curriculums which is more focus on the students' subjectivities; • Teachers are not only to be suggested to develop their own courseware, but also to fully utilize all the resource materials. • Constructivism has become the theory basis for curriculums integration.
3rd Stage: mid 1990s till now	<ul style="list-style-type: none"> • Online education • Skills and methods for online education • online database • "set up the network, database and team" 	<ul style="list-style-type: none"> • Set up the multimedia classroom and campus network. Start a project called "Connect all Schools" • Open certain online class for students • Online database for education resources • Start empirical researches and on teaching module for online and distance learning.

9.3.4 The Rural Education in China

The former Vice Premier Li lanqing pointed out the several hindrances in the basic education in rural area of China.



School dropout ratio is another existing problem which rural education is facing to, Li Lanqing believes basically it is caused by two reasons, first is economic condition; even it is free for compulsory education students still need spend money on buying textbooks and stationeries. Quite a lot of kids from poorer families can't even afford that. One popular idea "school is useless" stops the popularization of education there directly. (Li Lanqing,2005) There has been a stereotype that if a student cannot do any farm work with his parents, or doesn't even know how to raise a pig, what is the use for him to go to school and finish the study? He also explains because majority of the parents in rural area are farmers, very few of them would be able to receive any basic education when they were young, who could still lead their life easily. The misunderstanding of the education importance is reasonable. Besides that, the education content and methods in rural area also results into this kind of hackneyed idea, "If we teach rural children only common knowledge that has little to do with practical science and technology or farming skills, it would be hard to stimulate their enthusiasm." (Li Lanqing,2005). Same as the grassroots leaders in the rural area, all of them could not notice the benefits of education in economic development.

Unfavorable location is one of the key issues for rural education. The disparity between urban and rural area in terms of education slows down the development of rural area and Education in western rural area of China.

Some argues that there are nine essential impediments in front of the rural education development. Foremost is the “debt” problem left by reaching the standard required by the government and policy. In order to popularize the compulsory education in rural area, lots of schools chose to “build up the facilities first and pay back the debt later”, approved by the township government, raise funds or borrow education loans from bank to build up or improve the environmental condition for schools. Unfortunately, the debtor is always the school itself, after the tax reform the township or grassroots government just promised to share the debt orally. Thus after fulfill the requested “two standards” (fundamentally popularize the nine-year compulsory education and wipe out the teenage illiteracies in rural area) a lot of primary and high schools have to carry the heavy debts. Statistically shows the total amount is around 50billion. Especially in western region, it is quite common that schools in Yunnan, Guizhou, Sichuan “be a debtor” to popularize the compulsory education and a big amount of money has been spent on reconstructing the unsafe buildings. Until 2000, the debt for popularize compulsory education is almost 3.9billion, Anyue and Bazhong province are more than 0.1billion. Chongqing province has allocated 0.44billion on solving the unsafe school building with 1.5billion education debt which results in 2.38billion for reach the “two standards”, and local financial is facing big challenge for rural education.

The poor education environment cannot meet the needs of education development is the second issue. Unsafe school buildings hinder the rural education development for a long time, the basic quality of rural school buildings is comparatively low, and not to mention the schools in inland area or the region where nature disasters will always happen. Western region is again the typical area on this issue, one sample survey contacted by the Research Center for National Education Development indicates that, 37.8% of the sample primary schools don't even have the desks or chairs in the classroom while the classrooms and school offices are also unsafe in 22.3% sample schools, 32.5% of the sample schools cannot even afford to buy the ink, chalks, and other stationeries. Average speaking, most primary school buildings from 8 province in western area cannot meet the basic national safety level. In addition, for schools in remote area also need to solve the problem about insufficient dormitories for student and teachers who come from far distance, at the same time the education funds for improving the poor situations are not sufficient enough which

force schools to carry more debts from outside. And in fact the schooling ratio is getting higher recently, several small size schools have to extend the classrooms and campus for more students, it will certainly give more financial pressures to rural schools. (China Statistic Annual Report for Education Funds 2006). Looking as a whole, the school condition for majority of western rural schools cannot cope with the rapid education development required by the central government. Big amount of schools do not have modern education facilities, their teaching tools and methods are still at the level of 1990s, very few of them are equipped by audio and computer classrooms even according to the government policy which promise to popularize computer class at end of 2005.

It is a serious problem that in western rural schools lacking of qualified teachers with unfavorable quality of current teachers and most of them are even subsidize teachers. The unequal distributions on urban and rural schools results into the execrably school environmental condition and basic teacher is pitiful, most of the outstanding teachers choose to move to urban schools which would pay them better. The poor working environment and salary, substitute teachers who are also farmers at the same time have the fundamentally elements.

Informationized the education has played an essential role in the development of western rural education, and in the “Proposal for 2004-2010 Education development in western area”, government has announced to “advanced the education Informationization and promotion of modern distance-learning”, implement the project called “Informationization the education in western region”. But in current stage, there is a disparity in terms of the education spending, eastern and western region.

9.3.5 The Rural Education problems related to ICT

Dr. Xingfu Ding did a presentation about the Digital Divide and ICT Education in China on the first Seminar of the seventh programming cycle of APEID activities "the promotion of ICT Education to narrow the Digital Divide" 2002 ,Tokyo Japan. He suggested two strategies and policies that the use of distance education and ICT education to narrow the digital divide. The first one is to speed up the National information infrastructure, especially in West China, the second one is to promote ICT-based teacher training. Because he believed that the curriculum and teachers are not ready for the ICT-based instruction. The insufficient understanding and experiences for e-learning is another obstacle to close the digital divide.

The major challenge is the “teachers are not ready”, the unfavorable policies from government and institutions in rewarding and promoting improper, at the same time, teachers’ own inertia and resistance align with the lack of imperfect structure of knowledge and skills,(Xingfu Ding, 2002) all of these degrade the capacity of “change agent” during implementing ICT in education innovatively. Insufficient supports(financial, technical, human resources) from institutions, culture and pedagogical conflicts and need for training of ID (instructional design) and ISD (instructional system design) for ICT-based instruction & learning.

In her report, she(Zhang,2006) concludes the current situation about ICT in rural area education nowadays into “four not”, namely, “not equipped, not allowed, not trained and not common used”. Because the following two reasons, more than half of the schools in her survey have not been technology facilitated. School principals’ insufficient understanding about the technology and its inevitable influence on Educational reform comes to be a normal case. Quite a few school principals in the survey answered that “Multimedia is very helpful and useful about school teaching, but the price is too high, we have quite tight budget on school administration, lack of qualified teachers, so it is not a big deal if we put it aside temporary, then wait for the improvement on other issues to bring along the technology in our school.” The facility condition determined by local economic situation, rural school is easily located at a remote area where is hard to get to, the backward local financial limited the school funds and investment. Additionally, these infrastructures will also in a high price, most of the school leaders cannot even solve the serious problem about shabby schoolhouses, while facing to the high-tech which is high-cost, they cannot afford but just let it go.

The second phenomenon she has found is even certain schools have been equipped the facilities, but teachers and students are not allowed to use. Partial of the schools, they value all these infrastructures they tried all their best to get as the treasure of school, so they reluctant to put them into practical use, or suggest teachers try to use them. Instead of that, they prefer to put these “treasure” into a special classroom with air-condition, and computer teachers are asked to clean it regularly and only open the classroom when official evaluation by supervisor from higher-levels.

On terms of “Not trained” phenomenon, Zhang Aiwu put school teachers as the problem object. There are a group of schools where are well equipped, and the school principals are also supportive to technology use in education, but the untrained teachers become problematic towards ICT implementation. During her survey, most of teachers share the common

idea that “ I am not a computer teacher, the multimedia class should be conducted by the computer teachers, my professional knowledge is not about that, so I don't think it is not necessary and important if I learn how to use it or not. I can easily ask computer teacher to help me if I really need it for the public class or research class.”

The last situation can be described as “not common use”. Zhang Aiwu realizes a strange phenomena which is whenever you see a teacher is giving a public class, he/she would use computer associated into class teaching. But when it comes to the daily class, almost no multimedia can be found. The reasons can be explained as two: technology is not enough, normally, rural schools only have one, at most two computer classrooms, which is mainly used for public and research class, and will not open usually. In the regular classroom, teachers are still having class with “one mouth, one textbook, one chalk and one blackboard”. Moreover, lack of suitable courseware for various subjects plus difficulties for rural teachers to create it by themselves, so it becomes very time-consuming for teachers who are already heavy work loaded to explore the subject-oriented courseware.

9.4 Characteristics of the research case

9.4.1 School background



The school under study located in Western region of China, a remote village within Huang Xu town, Sichuan. The school has been damaged by the serious earthquake in 2008, before the earthquake, there are 13 classes, and the number of teachers and students is 600 total. It is not a primary school since it also has junior high class. It is also a boarding school which accommodates about 1/3 of students who lived afar or who are left-behind Child, (whose parents left to urban area for job and is living with his/her grandparents.)

9.4.2 Computer facilities before the earthquake

According to the national distant learning plan 2003, Yuanjia School had been equipped 3 modules (the mode based on CATV, the mode based on satellites television and the mode based on internet).

Before the earthquake, the school has one multi-media classroom with about 20 computers which is opposed to the normal classrooms without computers. Teachers are able to give their class with the help of multimedia, as one English teachers mentioned “ I will use multi-media class

especially when the course is about scenario conversation, because it will be more eyes-catching for students and students will have more directly experience about what they should perform and say when they come into that scenario, which will be more helpful to them and leaning outcome will definitely better than just read the textbook in front of them and ask them to do some role play conversation." The former multi-media classroom would be also used when the teacher is asked to have an open class in front of other teachers for experience sharing and school evaluation. Teachers also noticed the future of using IT for teaching, the English teacher I have interviewed, she said "Since the computer education is the big trend of the way for education, one of the important criteria for Distinction Class Evaluation," "every time the teacher who is asked to give an open class, he/she will spend lots of time in the multimedia classroom with preparing Power Point for the class. He/she will try to make the class as interesting and vivid as they can, eye-catching pictures, informative audio and videos and strategic class rundown. All of these are the parts will be assessed by the panel teachers." Teachers of all subjects could book a schedule to use the computer lab when multimedia elements would be used in the class. Therefore, this computer lab was supposed to has a rather full schedule to accommodate the needs of teachers from all subjects and all levels.

There is only one computer staff that is responsible for all issues related to computers, which include hardware and software problems, computer maintenance and give computer class to students, train teachers about the IT abilities, and prepare courseware for them.

Students are required to have computer class from their primary 3 grade, which will last one hour per week. The class content is mainly about basic application and software, such as word and image processing, surfing online and use mainstream searching engine.

9.4.3 Computer facilities after the earthquake

After the reconstruction, every classroom will be equipped with one project and computer, in which means all normal classroom will be turned into multi-media classroom. And the former multi-media classroom will be facilitated more than 20 computers with web-cameras, where will be more like a computer lab where students are able to use their own computer and go access to internet at school. One smart board in the front of the computer lab, with its help, teachers' teaching will be easier than before and also able for students to interact with teachers in class in a more user-friendly way.

ICT Education and E-learning in Sichuan Rural Area

An e-learning system for Yuanjia School, moreover, an online lecture conference system will be installed in this project. HKU teachers and students can continue our concerns and services to the local students Sichuan. Special on-line lectures or sharing sessions could be arranged on special days, e.g. National Day, 512 memorial anniversary...etc. so that teachers and students in HKU can easily communicate with the Sichuan students and provide a sustainable care to them. In addition, this system can shorten the distance of the teachers and students in between Sichuan and HKU. One Education TV server, which can receive satellite signals for education program or national TV channels for news program and other education and information purpose, and local students, can go access to the ETV program produced by HongKong Education City through their local server. The contents will include both English and Mandarin education TV program for Primary 1 to Primary 6.



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Ch. 11 Experiential learning for Engineering Education

11.1 Experiential learning for Engineering Education: A school reconstruction project in Sichuan after the 5.12 Earthquake

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Abstract

This paper presents elements of the experiential learning in engineering education through a real-life project case. The project included a team of university students from Hong Kong traveling to Sichuan, China and implementing various engineering systems from solar energy to e-learning systems for a reconstructed school in Sichuan, which was destroyed by the 5.12 Sichuan earthquake in 2008. Some successful factors for the process of experiential learning are also described. The cycles of experiential learning proposed by Kolb was introduced and fitted into different teams in this project. Students applied their knowledge to design the prototypes, acted and built the system, observed and evaluated their performance and conceptualized their experience into knowledge. Besides the successful factors, the weaknesses of experiential learning and how the project team minimized the impacts of the weaknesses were also described.

Keywords: Experiential learning; Engineering education; Sichuan reconstruction; Learning-by-doing



Introduction to Experiential Learning

Experiential learning is a teaching and learning methodology that is becoming more recognized in university education. It is the process of knowledge generation from direct experience [1]. According to Aristotle, the infamous Greek philosopher, "For the things we have to learn before

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we can do, we learn by doing.”[2]. Another famous Chinese philosopher – Confucius, who also known as “The Forever Teacher” quoted, “I hear and I forget. I see and I remember. I do and I understand.” [3]. Thus, the importance of direct involvement in the process of experiential teaching and learning had been well-realized for more than two thousand years ago.

In this Sichuan reconstruction project, we introduced the element of experiential learning in the project. We provided opportunities for teams of students to directly involve in the project through organizing, planning, implementing and evaluating.. We focused on the learning process of the individual student, by providing actual opportunities for students to make discoveries and allow them to experience firsthand in Sichuan. Learning was done through real-life practice, observation and interaction with the local students, instead of hearing or reading about others’ experiences in books or in class.



Getting our hands dirty is an important element in experiential learning

Elements in Experiential Learning

Though the fundamental concept of experiential learning is to learn knowledge through individual’s direct experience and no formal teaching is need, there are still some essential elements in order to create a serious and effective learning experience.

Knowledge is continuously gained through both personal and environmental experiences [4]. According to David A. Kolb, in order to gain genuine knowledge from an experience, certain abilities are required [5]. First, the learner must be willing to be actively involved in the experience. Then the learner must be able to reflect on the experience. The learner must also possess and use analytical skills to conceptualize the experience. Finally, the learner must possess decision making and problem solving skills in order to use the new ideas gained from the experience. Kolb’s Experiential Learning Theory defines experiential learning as “the process

whereby knowledge is created through the transformation of experience. Knowledge results from the combination of grasping and transforming experience.”[6].

Kolb's Experiential Learning Theory

The Kolb's Experiential Learning Theory [5] presents a cycle of four elements, namely Concrete Experience, Reflective Observation, Abstract Conceptualization and Active Experimentation.

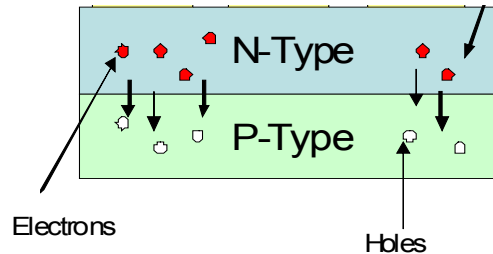


Figure.1. Kolb's Cycle of Experiential Learning

After gaining concrete experience, students should be encouraged to reflect on that experience. Through this reflective observation process, students could conceptualize and draw conclusion on their experience. It could then lead to different future actions in which the students can experiment with different scenarios. This learning cycle involves both concrete components and conceptual components which require a variety of cognitive and affective behaviors [7].

Experiential Learning in the HKU Sichuan Reconstruction Project Objectives

A whole-person professional development is one of the educational aims of the University of Hong Kong. Engineering can no longer be taught mainly in classrooms, workshops and laboratories alone. Societal technical observation and community commitment are necessary to shape up this discipline and the young engineers today. In the summer of 2009, over forty undergraduate students were recruited to form a Sichuan reconstruction team. Two-third of the team members were engineering students and the rest were students from other different faculties. The objectives of the team were to design, implement and build various engineering systems for a reconstructed school in Sichuan that was affected by the Sichuan earthquake. The systems include solar energy panels, multimedia classrooms, satellite educational television, e-learning System and a computer laboratory.

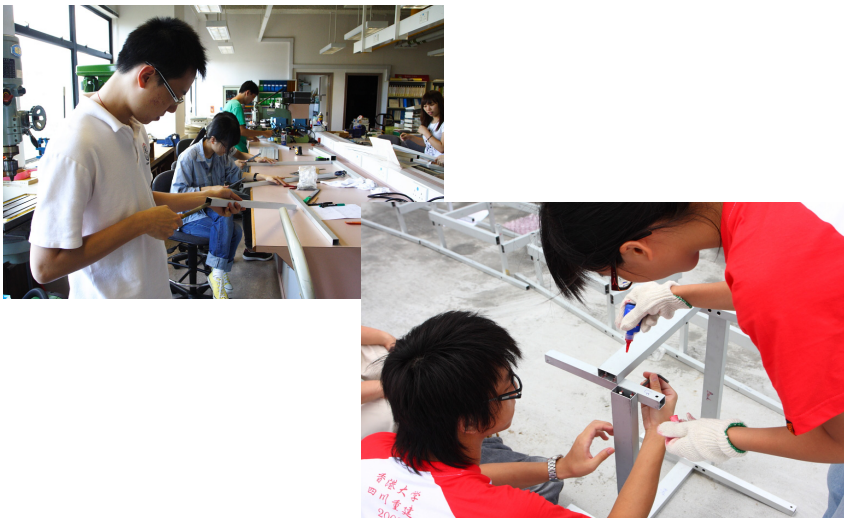
Experiential Learning through Sichuan Reconstruction

Students were grouped in to five different groups and each group was responsible for different systems and tasks including: designed and built the solar energy system; installed the multimedia classroom and satellite TV; implemented an e-learning system; taught the local teachers and skill transfers, and interviewed with the local teachers and officers of the Education Bureau.

In order to achieve an effective experiential learning, the whole experiential learning cycle: from goal setting, to experimenting and observing, to reviewing, and finally action planning, was experienced first hand by each individual student in the project.

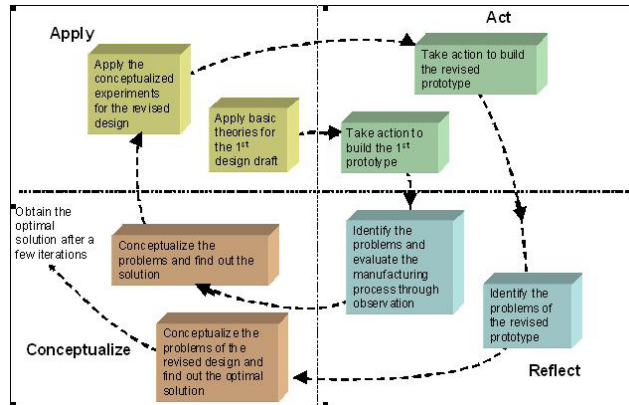
Solar Energy Team

In the Solar Energy Team, the team members set a goal to design a 2kW solar energy system for the reconstructed school. They designed a prototype of the supporting frame and took actions to build the prototype by themselves. As they did not have enough practical experience, their design was over specification and it was hard to manufacture it. They realized the problem by themselves through experimenting and observing the manufacturing process. Then they reviewed the design and tried again. After many attempts of trials and errors of designing the prototypes, the team figured out the optimal solution and finally planned the actions for the site implementation work.



Team members applied their knowledge to designed a prototype in the workshop (left), then built it (right), evaluate the performance and conceptualize for an optimal design

Experiential Learning through Sichuan Reconstruction



The experiential learning cycle of the Solar Energy Team

e-Learning Development Team

In the e-Learning Development Team, the team members set a goal to develop a user-friendly and effective e-learning system for the local Sichuan students. Before arriving Sichuan, the team members did not have any idea on the exact demands and needs of the local students. They applied their limited prior knowledge and prepared a few e-learning sample systems for Sichuan. These sample systems included an educational TV server, a digital story telling editor, an environmental awareness e-learning game and a Chinese hand-writing training software. The team believed that these applications should be useful for the local students.

The team acted and implemented these applications in the computer laboratory of the reconstructed school. They also transferred the skills to the local teachers and students. Through this experience, the team observed that some applications popular in Hong Kong, such as the hand-writing training software, might not be well perceived by the local students. During that reflective observation, they became aware of the cultural and educational background differences. This experience is something that cannot be received from a lecture or a textbook or even the internet. A direct experiential involvement is the most effective and impressive way for international awareness and global citizenship education.

Learnt from the experience in the aforementioned two teams, such iterative experiential learning process allowed the team members to encourage new engineering design, learn new skills and even new ways of thinking. It is vital that the individual is encouraged to directly involve themselves in the experience. From that they gain a better understanding of the new knowledge and retain the information for a longer time [8].



Figure 4: Through observing the responses of the local students, the team identified the right e-learning solution for the Sichuan local students

The Successful Factors of the Experiential Learning project

This reconstruction project was a successful experiential learning project because many essential components of experiential learning were met. According to Andresen, Boud and Choen [9], the following attributes are essential for a project to be truly experiential.

Attribute 1: Meaningful Experience

First, the goal of experience-based learning should involve something personally significant or meaningful to the students. The Sichuan earthquake had created a great impact to China. Over seventy-thousands lives were killed and school campuses were destroyed. When we recruit student helpers to join the reconstruction team and asked for the reasons of joining, most of them indicated that they wanted to do something meaningful for the peoples in Sichuan.

Attribute 2: Engagement

The second attribute is that students should be personally engaged in the project. For most of the summer in 2009, students were deeply engaged in the project. They spent an one week trip in Sichuan where actual implementation took place, Prior to the trip, students were involved in the preparation and design of the systems at the university workshop. They attended meetings to discuss about the design, operation and logistics for the project. They prepared the delivery of parts and materials for the installation. After the trip, they also shared the experience with

other students by means of publishing book and producing a video documentary program. This deep engagement gave students a strong sense of ownership to the project and their level of understanding and commitment were much higher than just acquiring knowledge in a lecture.

Attribute 3: Self-Reflection and Peer Evaluation

Third, after gaining the experience, there should be an ongoing self-reflecting and opportunities for students to write or discuss their experiences. In this project, students drafted their proposed installation designs and passed to one another for peer evaluations. Through this exercise, students could learn from one another and improve their designs in a collaborative way. Supervisors also gave comments and feedbacks to ensure that their experiential learning process was on the right track. After the project, students also wrote their feelings and self-reflections which later they published that in a book to share their reflection and knowledge with others. This ongoing self-reflecting process and documentation of their experience were one of the important factors for the success of experiential learning.

Attribute 4: Whole Person involvement

Fourth, in order to reinforce the experience for the students, the whole person should be involved. In other words, we should involve not only students' intellect but also their senses, their feelings and their personalities. In this project, there were components such as the caring activities and memorial events being organized before and after the reconstruction works respectively. An environment for students to rethink on the reasons and objectives for the reconstruction project was created. Their memories on these remarkable experience could help them to retain the lessons for a longer period.



Attribute 5: Supervision

Last but not the least, teachers need to establish a sense of trust, respect, openness, and concern for the well-being of the students. In this reconstruction project, direct supervisions and interventions from teachers were minimal. Most members in the reconstruction team had their own different roles and responsibilities such as team leaders, general secretary, logistics secretary, designer, programmers and application developers. They were encouraged, trusted and respected by teachers to explore their best way of implementation. Students understood their own roles and importance in the project and all of them contributed their best for the team. These autonomous and self-motivation were important factors for the success of the project.



The Way Forward: Experiential Learning for Engineering Education in Hong Kong

Hong Kong being a knowledge-based economy, it is important to prepare our students to ensure international competitiveness in the global economy and bring in international dimensions. Experiential learning is one of elements to achieve this and bring our university students to produce well-rounded and whole person global citizens. Complexity of new engineering systems demands a more both in-depth and practical education for engineering undergraduates. Experiential learning could address this demand and equip engineering graduates with both theoretical knowledge and practice skills for paving the way to be a professional engineer.



Experiential Learning through Sichuan Reconstruction

As a matter of fact, the philosophy of experiential learning had been well deployed in professional engineering bodies. Elements of experiential learning had been included in well-structured engineering professional trainings in Hong Kong as early as 1990's. The Training Scheme "A" of the Hong Kong Institution of Engineers (HKIE) is intended to be 'Learning-by-Experience' and is based on the belief that this period is a natural progression in a trainee's education, with respect to putting theory into practice, and thus enhancing previous academic studies in terms of their 'real-life' application. The underlying HKIE philosophy is that the training experiences should be relevant and of the right level. It is considered that there is no better way to learn than by the trainees being practically and personally involved, in a 'hands-on' way, on their prescribed training activities. In this context it is expected that the training experiences will, wherever possible, be of an everyday kind normally arising within a project or a company [10]. This philosophy of experiential learning had in fact already been embedded in the engineering professional training in Hong Kong.

Looking forward, it is expected that experiential learning will play an important role in engineering education, not only for the university education but also for continuous education in professional bodies.

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12.1 I will never forget this exciting trip!

Luk Chuen Kit (Faculty of Engineering, Computer Engineering Year 3)



As a volunteer of this Sichuan reconstruction project, I learned a lot of valuable experience and knowledge. To talk about the most impressive part in the whole project, it must be the Caring party. The activity is to play and to have some exchanges with the local Sichuan students. When we were playing games with them, I could see that they are very energetic. When we ask them what they usually do in leisure time, they said they learn dancing and play basketball.

I was really impressed by them, they had experienced such a great disaster and they could still recover so quickly from it. Even if they were mentally hurt, their hope for future is also optimistic.

They never give up their lives and are really tough towards any challenges which I think is lacked in most of the Hong Kong students who only know how to play online computer games. I believe that the student representatives of Hong Kong could also feel their strengths, optimism and the spirit of "never give up".

In terms of being a leader, I have also found that I have a lot of rooms for improvement. Therefore, this trip gives me a very valuable training on leadership management. Among the teammates, it is easy to understand that everyone has a different characteristics and the method of problem solving. It is a very hard and challenging job to distribute the work to teammates with a good balancing point, but it is an essential element of a good leader.

Finally, I would like to thank the University of Hong Kong and Dr. Wilton Fok for organizing this meaningful project. I believe that I will never forget this exciting trip!

12.2 It is always better to give than to receive

Alison Hui (Faculty of Social Science, Journalism Year 2)



I could still recall how heartbroken I was when the Sichuan Earthquake happened last year. Knowing that my Chinese fellows were going through such terrible times brought by the brutal disaster, I was not able to do anything to help. Half a year had gone and I heard about this reconstruction trip, so I signed up without any hesitation. But as a Journalism student, what can I do to help this place? I did not know the answer until I got there—I had to video record all the beautiful things there and let more people know how wonderful Sichuan is.

It is not just about how beautiful the scenery of Sichuan is, but it is about the people we met. Everyone that we came across had a beautiful and genuine smile on their faces. It is almost impossible to tell that they had experienced the trauma from the earthquake not long ago. I was honored to be able to interview some of the local teachers there. They were all very genuine in sharing their own past experience. This genuineness is beautiful but rarely seen in prosperous and busy city like Hong Kong. These Sichuan people have high hopes in life and are easily content with simple things around them. It helps me reflect how good a life I am living in Hong Kong but I still always worry for little things. “It is always better to give than to receive.” It is an old saying but I truly experience that in this trip. It looks like we were helping the one helping the Sichuan people. Indeed, we were able to learn how to help people with our professional skills. Also, we were privileged to be able to learn about toughness and joy in life from them.

12.3 Be with You All the Time No Matter How hard the Future Is

Kwok Po Yee
(Faculty of Social Science,
Social Work Year 2)



On the afternoon of May 12, 2008, when all people were celebrating Olympics torch relay in China, an earthquake hit Sichuan Province, and people around the world were shocked. After that day, all news reports focused on the rescue works in Sichuan. I was touched by every scene, and felt how helpless they were when waiting for the news from the rescue teams. And I wished I could hug all victims, the survivors, and rescuers in order to give them support and comfort.

Although I wanted to go to Sichuan to help them, I knew that it was not the right moment because I did not have any experience and knowledge in rescue works. After entering University, I was appealed by this reconstruction programme which provides opportunities to build up an e-learning system and organize caring activities to students. Thus, I joined this without hesitation.

Since the reconstruction was still in process and not yet ready for installing the multi-media system, our team picked up new tasks. It included installing the satellite, organizing caring activities for the students, and transferring materials like television, screen, computers, and so on. Although transferring those materials repeatedly was demanding, our team members tried our best to finish the task regardless of the gender.

Furthermore, the most unforgettable memory was playing with the students. At the beginning, we worried that we may not be able to get them involved, because the students were very quiet and they were in a broad age range. Unexpectedly, we could play together happily after few warm up games. Two little boys and one little girl even actively performed dancing and playing guitar for us. And some of them invited us to have a basketball match with them.

Surprisingly, we could develop a close and deep relationship with them within a short period. One of the students wrote a letter to me, he expressed

that he would remember our love and care, and they would pass it to others, and he promised to study hard and live happily. The time we stayed with them was really short, but it could create such a positive influence on the student. It was really amazing. As I recalled the lyrics of the song sang by the little girl, Yu Jian (Encounter)--“ The most wonderful thing is that we can meet each others.”. I believe this encounter has planted a seed of love in their hearts, and it will grow into a shining flower and spread this love to others in the future. And we have made a “Promise” to them, “be with you all the time no matter how hard the future is”--lyrics from a song “Cheng Nuo” (Promise). We give our blessing to them and hope that they can get back to the normal life, and achieve their dreams in the future.



12.4 Food for Thought

Zou Chi (Faculty of Business and Economics, Year 2)

The journey to Sichuan , the epicenter of the devastating earthquake in 2008, is like aged wine, the aroma of which lingers and becomes stronger as time passes. I feel so rewarding to have participated in such a meaningful project and am honored to be given this opportunity to bring my help to the children in the epicenter and ease their sufferings.

I still remember the first time I went to Yuan Jia Primary School . I saw a brand new building which was yet to be finished standing still in the construction site. It was the very place we needed to install computers and solar panels in the following days. Walking through those narrow paths and across a temporarily constructed slab bridge, we saw a bulk of one –storey barn-like buildings which were built after the earthquake to temporarily accommodate children for their study and living. These were the places where we team D would conduct our mission and carry our knowledge and care to the children and teachers in the stricken area.

In the barn-like building, we taught the teachers and students of Yuan Jia Primary School various methods to use multimedia devices. We were amazed at how quick it is for them to master these skills. Though most children have almost no experience with the computers before, they were able to absorb the skills efficiently enough, They demonstrated their high

intelligence and eager willingness to learn knowledge. It was in the mid of August, dominated by the boiling summer weather. Unfortunately, there were only few fans functioning in each room. We were soon soaked in our sweat, which raised our concern about children's wellbeing studying in such bad environment. During the class breaks, we toured around their school, encountering some small and dim barn-like buildings without even electricity! In fact, these were homes to the children and teachers for almost a year. Due to technical problem, the electricity would go off for the whole school if they turned on the light and thus would affect their daily study and living. As a result, the only thing "You usually have classes in these buildings? Is it incredibly hot in the summer and cold in the winter?" I cannot help ask. But the answer I got quite surprised me. "It is endurable. The new building will soon be finished and everything will work out then", said the girl smiling, with hope and optimism flashing in her eyes.

During the class breaks, we toured around their school, encountering some small and dim barn-like buildings without even electricity! In fact, these were homes to the children and teachers for almost a year. Due to technical problem, the electricity would go off for the whole school if they turned on the light and thus would affect their daily study and living. As a result, the only thing they could do to avoid that kind of situation was to compromise on living in these dim buildings without electricity. I was shocked and speechless when I learned this, grieving deeply the enormous impact the earthquake had on these children's daily life. After all, I felt a bit relieved in that I had tried what I can to help ease their misfortune. But I thought I learned even more from them than what I had provided. I came back with plenty of food for thought and I am so willing to share them with every one of you.

Finally, I sincerely hope that people in the stricken area will soon be able to get rid of the shadow casted by the earthquake and lead happy and sound life again.



12.5 Contribute our best effort in rebuilding Sichuan

Law Kam Yuen (Faculty of Engineering, Electronic Communication and Engineering Year 3)



Whenever I recall that our group of individuals from different departments in a total of about 50 teachers and students went to Sichuan to participate in the reconstruction of Sichuan Deyang primary school, it is still fresh in my memory. We did sweat for the new campus of Sichuan Deyang primary school.

When we first arrived, we were very worried after inspecting the reconstructing campus due to the condition, which was more pessimistic as we imagined. However, we have successfully completed a multi-media classroom in the primary schools, the installation of solar panels and other equipments in a few days by the teacher-student cooperation and efforts of all parties.

By seeing the child's smile, I was more convinced that all the tasks were doing were of great significance. This was my first time as a volunteer working in the field. Therefore, this time was rather impressive compared to the previous volunteer experience. With the assistance of Dr.Fok and Elaine, my team members and I learned a lot of valuable knowledge in the trip. Once again, I thank them for their help.



12.6 An Unforgettable and Meaningful Experience

Chau Yu Cheung Eugene (Faculty of Business and Economics BBA (Accounting & Finance) Year 3)



I am Eugene Chau, a Business student majoring in Accounting and Finance, and I was the team member of Team A – Renewable Energy System Team. This reconstruction project really gave me a spectacular experience during this summer. I am so proud of being the member of this voluntary team of The University of Hong Kong.

Since I am not an engineering student, I did not know much about the technical work of the solar panel system before this project. Through a series of trainings and seminars, I learnt a lot on how solar panels work and how they generate renewable energy under the sun. The trainings of our team were always under an ideal situation and the environment was comfortable for us to work. However, after our arrival at the Deyang Primary School, the real situation was far from expectations. What impressed me most was that some of our team members were so professional and they really like chartered engineers. They could give professional advices and contingency plans whenever we came cross problems. The project was a good platform for us to experience what problems those engineers face every day. It was a wonderful experience for me. I, to be honest, am a patriotic person. Therefore, I would like to contribute something for the development of my nation after my graduation. After the Sichuan Earthquake, I tried to find ways to do something for the people there in Sichuan.

This kind of reconstruction project really fits me, apart from visiting the people there; we could do solid works for them. That is a long-term commitment and they can benefit more for the technologies and equipment, which we had installed, for many years. This kind of projects adds more value to the region and should be encouraged.

Finally, I would like to thank my teammates and professors for giving me this wonderful and unforgettable experience. As we, as a team together, make this summer more valuable and fruitful.



12.7 I have learnt a lot of things which won't be taught in school

Yau Kai Ming (Faculty of Engineering, Information Engineering Year 3)

After 5 months working in the HKU Sichuan Reconstruction Team, I have learnt a lot of things which won't be taught in school. Being a leader of Team B of the HKU Sichuan Reconstruction Team, I know how to be a good leader, I know how to organize a project efficiently and I know how to co-operate with others. Besides, I have also gained the experience of working at a construction site and handling unexpected event during the project.

On the other hand, being a member of the HKU Sichuan Reconstruction Team can help me to express my feelings on the Great Sichuan Earthquake to the people in Sichuan. Although I had only offered a little help to the reconstruction of Sichuan, I have tried my best in installing the system, and I hope that they could be recovered from the pain that they suffered in the great earthquake soon.

Finally, I would like to take this opportunity to thanks the Project Director of the trip for giving me a chance to participate in such a meaningful trip.

12.8 We have to cherish everything we have now

Lam Kwan Yu (Faculty of Engineering, Electronic Communication and Engineering Year 3)



Adequate communications is the key towards building up relations. I worked with several non-EEE major students in this re-construction project and before the pre-trip trainings, meetings, I have not ever met any one of them. At first I was not familiar with them and I had concerns on whether there would be any problems with them since they don't have engineering background after all. To avoid any misunderstanding or problems with them, the willingness of communication is vitally important. On the whole I could develop a bonding with all my teammates, not just for the non-EEE ones, but also for the EEEians whom I have already met before.

Definitely it was a pretty special experience for me to take part in this Sichuan Re-construction project and I did have a memorable time in Deyang and Chengdu. It's absolutely a chance for me to make contribution to the victims in 512 Earthquake instead of just donating money and I did an exposure on the whole scenario. I could really feel the atmosphere in there which is different from the situation watched on TV and read on newspapers, especially when I arrived Hang Wang, the place where I could see those demolished buildings, infrastructure, I was empathetic with that.

We all have a stable and pleasant life in Hong Kong, but we should not take it for granted. We have to cherish everything we have now, ranging from the safe place we live when comparing with those regions, the education we're received, the friends the relatives we have.

At last I would express my gratitude to all the organizers for the Sichuan trip and I would like to express my sympathy for all the sufferers in the tragedy.

12.9 Feelings & thoughts from the Sichuan Reconstruction Project

Ng Wing Yin, Catherine (Faculty of Business and Economics BBA
(Accounting & Finance) Year 3)

Assisting Sichuan in its reconstruction work is what I have been eager to do after the occurrence of the catastrophic Sichuan earthquake. Realizing HKU was recruiting members for the Sichuan Reconstruction Project, I applied for it without procrastination.

Joining the project, I had the valuable chance to visit Sichuan, to take part in some engineering work and to collaborate with students from different faculties for eight days. Despite the fact that my team members are from different faculties including Electrical and Electronic Engineering, Architecture, Law, Nursing and Social Work, we worked in harmony and unity and built up long-lasting friendships. In my opinion, the perfect cooperation in the team was attributed to our common aim and belief - to offer assistance to Sichuan with concerted efforts.



Visiting Hanwang where suffered great damages in the earthquake for a memorial ceremony, I witnessed the destruction caused by the earthquake. With most of the citizens moved out, the city was left with desolation and devastation which was not something easy to imagine.

We also organized activities for students in a primary school. Seeing them living with hope and smiling sweetly, I witnessed how strong and tough lives can be. I was totally surprised and impressed when I knew that the children prepared performance for us. After the project, I ascertained my goal - to help children in need continually.

The Sichuan Reconstruction Project was completed but the reconstruction work in Sichuan has just started. I sincerely hope that all the people can continually offer hope, concern and support to Sichuan.

12.10 The Realization of a Dream

Wu Maomao (Faculty of Education, Master of Information Technology Education (Year 2))

May 12, 2008, Sichuan was hit by a 8 level earthquake, the number of casualties as much as the large area of damage is unprecedented. I can still remember that afternoon when I was surfing on line, there was a friend who suddenly asked me if I felt the earthquake, my first thought was that he has made a joke, but soon the news exposed online very soon, there was in a powerful earthquake in Sichuan, parts of the whole country were aftershocked. The next few hours , on the Internet TV, and other media quickly reported out of this horrendous news. As a member of the Party, what I thought at the first was what I can do to help the people in disaster areas. Not only at schools but also communities where I live, I have been actively organizing and participating in a series of post-disaster social activities, In fact, I really wanted to go to the disaster area and help the local people , even if what i could do is just limited. However, due to the time the majority of the affected areas have been blocked, non-governmental voluntary organizations are not allowed to be entered. Thanks to the University of Hong Kong, Dr. Allan Yuen in the Faculty of Education, Dr. Wilton Fok from the Faculty of Engineering, who give me this unique opportunity to use my knowledge and expertise to contribute a little bit to the reconstruction.



Although I have read and watched lots of touching stories about this huge disaster through different mass media, when it comes to what I experienced when I am part of the revitalization project post-disaster, and go to work in the disaster area, I also benefited a lot. Besides the exciting, I have been always touched by what is happening there post-disaster. Remember there is one day, I was having lunch with the local teachers in school canteen, after talking, I noticed there always is a story about the earthquake behind every teacher. In fact, among these current teachers, several of them were not the teachers in Yuanjia School, they come here to help the reconstruction as volunteers. One of them, his wife has been doing the same thing as him, she is working in another primary school in Yingxiu (another worst-hit area), they have not met each other for a really long time. A senior teacher, recalled that, "I remember the day when the earthquake happened, the school was having class as usual, when feeling that earth-shattering moment, I decisively realize that was an earthquake, immediately arranged to evacuate students from the teaching building to go out to the playground and open space. The stairs are shaking, and the circumstance is in a chaos, I even went back several times into the school buildings where would imminent collapse to evacuate the students in batches, until I ensure that all of the the safety of the students have been evacuated.



A few teachers shared similar touching stories as well. There is also a teacher said that the first thing he did the students had been evacuated came out was to send text messages and call the parents and tell them that their children were safe, by doing this, he completely forgot to contact his own family, there has been a couple of few weeks after the communication has been restored once again. Believe that such a touching stories abound of natural disasters is really heartless, Love is in everywhere.

Our team is responsible for the ICT education to the local students and teacher training. The physical environment was quite tough, but we still have fully utilized the resources which are available to complete the mission of this trip in the cubicle classrooms. Our job is to teach students and teachers how to use digital cameras and simple computer software, creating their own digital stories, it would not only enable the children to use the digital camera to express their thoughts and feelings, but also build up the teamwork which is a good way to broaden their field of vision.

During the whole process, all the students and teachers were all performed as very interested, they worked together very well, and the classroom has been filled with favour laughter when the final stage of sharing. This



project has given us many opportunities to come into contact with the local students, everyone comes together to play games, singing, dancing, and sharing the happiness. Before we leave, one student gave us a lovely gift made by themselves on which they have expressed and written their thanks and blessing to us.

There is another day, I have been invited by a local students to visit her house, her parents held my hands warmly, and said: "Thank you very much for your concern and help to us. Although we are farmers, understand nothing much, but I will ask our daughters to study hard in the future and repay what you have done. Moreover, learn to be a useful person to the society just like you."

This program has not only trained me but also educated me a lot. I deeply understand what is the meaning of the sentence "assistance will come from, everywhere when the trouble happens, ". Although Hong Kong and Sichuan have been separated by thousands of miles, but the long and arduous journey can not stop the Hong Kong compatriots from helping the people in affected areas in Sichuan. Our students do not have a lot of money to help the reconstruction, but we use our own knowledge and expertise to contribute the reconstruction of a disaster-stricken areas. My feelings are complex while experiencing these, as a student from the Mainland, I have to pay tribute and thank to the Hong Kong compatriots who have donated money for the event. As a student in the University of Hong Kong, I am glad that the university to give me the opportunity to participate in this meaningful event, and contribute my limited efforts to the whole reconstruction process. If possible I really want to do more for them!





Team List

14.1 Editorial Board Members

Editorial Director: Wilton W.T. Fok

Chief Editor: Zoe Yiu

Vice Editor: Law Kam Yuen

Editors: Au Yeung Hoi Hang, Ho Man Chun, Hui Ka Yan, Wu Mao Mao,
Chai Yi

Cover Designs by Law Kam Yuen

Layout Designs by Au Yeung Hoi Hang

14.2 Team A: Solar Power



Supervisor: Dr. Alfred Yu

Technical advisor: Dr. Sam Lam

Team leader: Mui See Long (EE3)

Team members: Chau Yu Cheung (BBA2), Cheng Tsz Kwai (EE2),
Hau Chi Hang (EE2), Ho Ho Lam (MedE3), Koo Wai Kin (CivE2),
Kwok Lo Yan (EE3), Leung Fu Heng (EE2), Wang Yi (BBA2).

14.3 Team B: Multimedia classroom and Satellite Education System



Supervisor: Dr. Philip Pong

Team leader: Yau Kai Ming (InfoE3)

Team members: Kwok Po Yee (Soc.Work2), Lam Kwan Yu (EComE3), Leui Lap Fai (EComE3), Leung Chi Sing (EComE3), Liu Guan Nan (EComE2), Ng Wing Yin (BBA2), Fanny Sze (Arch2), Tai Hiu Tung (EcomE3), Cecily Tse (Nursing2), Stella Wai (LLB3), Yeung Man Ho (EComE3).

14.4 Team C: Electronic Education System



Supervisor: Dr. Y.C. Wu

Team Leader: Luk Chuen Kit (CE3)

Team members: Chan Yu Shing (EComE3), Cheng Yan Ming (EComE3), Chiu Ho Ming (EComE3), Jacqueline Ho (EComE3), Kam Ning (EE3), Pun Ching Yip (CE3), Wong Sze Shing (CE3), Wong Yiu Lun (CE3), Yeung Hiu Fan (EComE3)

14.5 Team D: Education team - teaching local teachers



Supervisor: Dr. Lisa Deng

Co- Supervisor: Mr. Rex Ng

Team leader: Wu Mao Mao (M.Ed2)

Team members: Ding Kai (BBA2), Lee Ho Tin (EE4), Li Jing (Bed3),
Zhou Puchan (BBA3), Zou Chi (BBA2).

14.6 Team E: The Media Team



Supervisor: Dr. Elaine Chan

Team leader: Hui Ka Yan (Journalism2)

Team members: Michael Yiu (CEDARS), Eric Au Yeung (EComE3), Jade
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Zoe Yiu (Journalism2).

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 Faculty of Education
 Centre of Development and Resources for Students (CEDARS)
 General Education Unit
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 Engineering Society, HKUSU
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