

ACTIVITY REPORT
BRIDGING DEGREE IN
NATIONAL YUNLIN UNIVERSITY OF SCIENCE AND TECHNOLOGY
TAIWAN



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2013

PREFACE

Alhamdulillah robbil ‘alamin, Thank to Allah SWT, the Most Gracious, the Most Merciful who has given His-grace and guidance to us, so I abled completed this report of Degree Bridging Program in Taiwan. I will thanks to all of person who were supported me in this program.

1. Director of Subdit PK DIKTI who have designed and implemented this program and sending us to Taiwan.
2. International Office Staff NYUST who has supported and helped us when we in Taiwan especially in doing academic and non academic activities.
3. Rector of Yogyakarta State University, who has given a permitted to me to follow this program.
4. Dean of the Faculty of Engineering, Yogyakarta State University, who has supported me to follow this program.
5. Head of Department of Electrical Engineering Education, who has given permission to me to conducted this program.
6. All my friends in Yuntech who have given me supported and cooperated in each activity among conducting Bridging Degree in NYUST Taiwan
7. International Students Yuntech from Indonesia and Malaysia who helped us in non acedemic activity and daily life when we arrived in Taiwan.

Finally, I hope this report can be beneficial to all parties who read and use it. I hope some suggestions and constructive criticisms to increased quality of this report. If you have any question regarding his report, please do not hesitate to contact me.

Douliu, March 08th 2013

Authors,

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CHAPTER I INTRODUCTION

A. BACKGROUND

Bridging Degree Program is a program that designed from Directorate of High Education (DIKTI) to prepared lecturers in Indonesia to studied doctorate degree in Taiwan for three months from December 15th 2012 until March 11th 2013. I and others lecturers from different universities in Indonesia, especially from Vocational Universities were sent to several universities in Taiwan to increased our competences and got Ph.D Degree from one of the universities in Taiwan. There were 87 lecturers that followed this program to went to Taiwan and spreaded to 8 universities.

I and other lecturers from Electrical Engineering and Civil Engineering were placed in National Yunlin University of Science and Technology (NYUST) and it's known with Yuntech. Our groups consist of 7 lecturers from Electrical Engineering Department, 6 lecturers from Civil Engineering Department and 1 lecture from Mechanical Engineering Education Department. All lecturers in our groups had same goal that to known the sitation and condition about academic culture, laboratory facilitates, met professor and made research plan and discussed with professor and got LoA (Letter of Acceptance) from the University through some program and activity. We were cooperated to supported each others to fulfilled the requirements from university.

We have much activities that were planned and designed by the international office of Yunlin National University of Science and Technology, Faculty of Engineering Department of Electrical Engineering and Civil Engineering. The activities consisted of Mandarin Class room, English class room, English reading class room, site visit to laboratory, cultural visit, meeting with professors, self learning in library, and oters activities in campus.

B. YUNTECH PROFILE

Yuntech originally called “National Yunlin University of Science and Technology”, the university was founded in 1991, and Dr. Wen-hsiung Chang was appointed its first president. With the approbation from the Ministry of Education, the university changed its name to “National Yunlin University of Science and Technology (YunTech)” on August 1, 1997. Following the retirement of Dr. Chang in 2001, Dr. Tsong-ming Lin assumed the presidency of YunTech. In 2009, President Tsong-ming Lin was appointed Deputy Minister of the Ministry of Education in Taiwan. Dr. Yeong-bin Yang then took office as the third president.

At age 22, YunTech is a flagship technological university with four colleges. They are College of Engineering, College of Management, College of Design, and College of Humanities and Applied Sciences. These four colleges account for 20 undergraduate, 28 master and 12 doctoral programs. The student number is approximately 10,000 in total. 64 percent of them are undergraduates and 36 percent of them are post-graduates. Among the 349 distinguished faculty of the university, over 87 percent hold doctoral degrees and 95 percent have reached an associate professor’s position or above. Nearly 60 percent of the faculty received their doctoral degrees at globally famous universities and more than 80 percent of the faculty has extensive experience in industrial sectors. They offer regional services at the following affiliated centers:

1. Center for Regional Industry-Academia Collaboration: offers service to 19 partner universities in Central Taiwan,
2. Emergency Toxic Response Information Center in Central Taiwan: offers service to seven cities in Central Taiwan,
3. Teaching/Learning Resource Center for Vocational Education Institutes in Central Taiwan: offers service to 22 partner universities in Central Taiwan,
4. English Teaching/Learning Resource Center for Technological Universities and Colleges in Central Taiwan: offers service to 24 technological universities in Central Taiwan,
5. Coordinating Center for Student Affairs and Student Counseling for Universities in Central Taiwan: offers service to 32 universities in Central Taiwan, and

6. The Library: is in charge of purchasing online databases in all subject areas for 92 technological universities nationwide

According to the report of the Higher Education Evaluation & Accreditation Council in Taiwan, YunTech was ranked among the top 1% of universities worldwide in 2007 for its ESI recognized papers that had been cited. With respect to tech-transition and R&D areas, YunTech is one of the top universities nationwide. The rankings and recognition of YunTech over the past years are as follows:

1. For the “Subsidy Directions for Developing Technological University Paradigms,” YunTech received funding valued at NT\$75,000,000, the highest among all technological universities nationwide.
2. Ranked 12th in the nation among all the universities by Webometrics Ranking of World Universities released in January 2012.
3. Assessed as an “Outstanding University in Industry-Academia Cooperation” by Chinese Institute of Engineers for the 9th consecutive year.
4. Ranked 51st among the top 100 universities across the Taiwan Strait according to the survey released by Shanghai Jiao Tong University in 2011
5. Ranked among the top 10 most competitive universities nationwide, public and private, according to the “2011 University Evaluation” released by the Global Views and 104 Job Bank
6. For the 2011-2012 MOE Teaching Excellence Project, YunTech received funding valued at NT\$170,000,000, the highest among all technological universities nationwide.
7. Ranked 1st for the 6th consecutive year among all technological universities nationwide at the award-winning contest “It’s Show Time” in 2011
8. Selected as the outstanding school in the 2nd consecutive year at the category of the Student Labor and Outstanding Service, and Friendly School by MOE.
9. Ranked as the 32nd among worldwide universities and the top 50 university in design areas by the 2011 iF-International Forum Design
10. Authorized by the MOE as one of the universities to have its own council of faculty promotion.

11. Ranked the top with the “Outstanding Performance of Industry-Academia Collaboration” and evaluated as the top university in the “efficiency of intellectual property licensing and the profits it produced” category for its 5th consecutive year from 2006-2010 by MOE.
12. Assessed as an outstanding university for the eighth consecutive year in the industry-academia collaboration category by the Chinese Institute of Engineers in 2010

C. PLANNING

This program have a purposed to increased our competence in Electrical Engineering and got Letter of Acceptance from the University, so we must planned our activities inorder to reached it. I make a planning that consist of:

1. Introduction and Socialization

I known and realized that I as a new comer in Taiwan, especially in Yunlin National University of Science and Technology must prepared everything. The first time, I must introduced myself to international office staffs, contacts person in Engineering Faculty and Electrical Engineering Department. I tried to explained why I came to Taiwan and NYUST to everyone and made a socialization.

2. Made a schedule Activities

After recognized to international office staffs, we discussed about the activities that will be conducted as long as we in NYUST campus. We received information of the activities from the international office staffs and Engineering Faculty. After I got the fix information about the activities, I made a schedule to ensure the implemented will be done correctly.

3. Searching information

Information was very usefull in Taiwan because

D. IMPLEMENTING

Implementation all of activities about this program can be explained detailly with this explaining

1. Introduction and Socialization

When the first time we arrived in Yuntech, we were picked up by Yuntech's international students from Indonesia and Malaysia. We introduced ourselves to them and we plained about the goal of our program followed bridging degree program in Taiwan. Alhamdulillah, Yuntech have several students from Indonesia, so they could helped us to communicated with Taiwanese peoples, because a lot of Taiwan People couldnot spoke English and we could not spoke Chinese or Taiwanese. They not only helped us in communicated, but prepare our need as long as life in Taiwan.

After we take a rested, in Monday December 17th 2012 we introduce to international office of National University of Science and Technology staffs and explained about our purpose came to NYUT Taiwan. Alhamdulillah, they welcome to us and given supported to conducted the activity, althought they just few days for preparing everything.

We made a Facebook group to kept communicate with the all of participant of Bridging degree from Indonesia, international staffs from NYUST and students from Indonesia that studied in NYUST. This group was very effective, because we cought communicate all of acitivities via this group. We shared and kept communicate with international staffs of NYUST to known about activities. I tried to active in this group by respon of posting, gived comments and enjoyed to communicate with others people in this group.

2. Schedule of Activities

No.	Day	Our	Activity
1.	Monday	09.00 – 12.00	Go to Library
		13.00 – 14.00	Lunch and Shalat Dhuhur
		14.00 – 16.00	Technology English reading Class room
		Night	Discussion With others Bridging Program Participants
2.	Tuesday	09.00 – 12.00	Go to Library
		13.00 – 14.00	Lunch and Shalat Dhuhur
		13.00 – 15.00	Mandarin Class room
		16.00 – 18.00	English Class room
		Night	Discussion With others Bridging Program Participants
3.	Wednesday	09.00 – 12.00	Met and discussion with Professor in Laboratory
		13.00 – 14.00	Lunch and Shalat Dhuhur
		13.00 – 15.00	Mandarin Class room
		16.00 – 18.00	English Class room
		Night	Discussion With others Bridging Program Participants
4.	Thursday	09.00 – 12.00	Met and discussion with Professor in Laboratory
		13.00 – 14.00	Mandarin Class room
		14.00 – 16.00	Technology English reading Class room
		Night	Discussion With others Bridging Program Participants
5.	Friday	09.00 – 12.00	Praying Shalat Ju'mat in Taichung City
		13.00 – 15.00	Praying Shalat Ju'mat in Taichung City
		16.00 – 18.00	Technology English reading Class room
		Night	Discussion With others Bridging Program Participants

6.	Saturday	08.00 – 12.00	Cultural Visit
		13.00 – 14.00	Cultural Visit
		14.00 – 16.00	Cultural Visit
		Night	Cultural Visit
7.	Sunday	09.00 – 12.00	Playing Sport (Badminton)
		13.00 – 16.00	Go around City

3. Searching Information

Information is very crucial in Taiwan, especially in NYUST because everything must be known if we will make activity. We use the internet connection that was serviced by NYUST in Dormitory, Library, Laboratory and others place in Yuntech campus area. We use internet cable connection when we accessed internet from dormitory and used wifi internet connection in others place.

We search all of information about weather, temperature, food court, university, curriculum, program study, list of professor, laboratory facilitate and other information through Yuntech website and others website.

4. Discussion With Advisor Candidate

We search all of information about weather, temperature, food court, university, curriculum, program study, list of professor, laboratory facilitate and other information through Yuntech website and others website.

CHAPTER II

CASE STUDY

A. PROBLEM

Alhamdulillah, after we arrived in Taiwan I could adapted with the situation and condition. Actually I have many problems when we in Taiwan. There were several things that must be solved when we went to new country, they were:

1. Food

Food was the big problem for us in Taiwan, because Taiwanese have many differencies taste in food with Indonesian. I must be adapted with new taste of Taiwan food, or I must look for another food with same taste with Indonesian. Alhamdulillah in Douliu City, near the Douliu Station there was Indonesian Restaurant “Sweniang Indo Restaurant”. This restaurant was very helped us to serve Indonesian taste, althought I must rided bycycle to went the restaurant because of the distance was so far.

The second problem about food was Halal foof. As a Moslem, I have many problems concern with food especially Halal Food. The most of Taiwan food contain “Pork” neither meat or oil, so I must be carefull to choiced eat Taiwan food.

2. Culture

Taiwan culture different with Indonesian culture, for example for riding bycycle we must use right sight, so we must be carefull to riding bycycle in Taiwan. Sometime I got a trouble because my feeling still left sight. The other culture, when we used toilet. Taiwanese people have different culture in using toilet. There was no water in Taiwan toilet, especially in public place. So we must prepared water when we went to toilet. Actually there were many differencies between Indonesian and Taiwan culture, so must be adapted quickly.

3. Weathers

When we arrived in Taiwan, the weather was so cold and temperature below 15⁰ celcius and sometime the temperature drop until 9⁰ Celcius. I think this was a big problem for us that usually in hot temperature in Indonesia with 30⁰ Celcius. We must used jacket and tick clothe to kept warm our body and made activies in this situation and condition. We must to monitor the weather from the Taiwan Aclimate and weather every day to anticipate bad situation in our activities dayly.

4. Communication With Professor

Most of Taiwan people couldn't spoke English, especially in Yunlin County, so we must communicate in Chinese. Unfortunaely I couldn't spoke Chinese and read Chinese character, so sometime I communicated with body language.

Fortunaely, Most of Professor in NYUST have good English so I could email, communicating, talking and discussing research topic with him.

I met with several Proffessor from Electrical Engineering Department, Faculty of Engineering National Yunlin University of Science and Technology. They were

- Prof. Yie-Tone Chen, Ph.D
- Prof. Bor-Ren Lin, Ph.D
- Prof. Wei-Lung Mao, Ph.D
- Prof. Chung-Wen Hung, Ph.D
- Prof. Hsuan-Tin Chang, Ph.D
- Prof. Chung-I G Hsu, Ph.D

I must made an appointment via email if we want to met with one of professor in NYUST because they have many activities both in Campus and outside of campus. We must know the email of professor and we could get from NYUST website.

B. DISCUSSION

After I met and discussed with several professor from Electrical Engineering Department, I decide to take Power Electronic in my research study. So I focused to met and discussed with 2 Profesor, they were Prof. Bor-Ren Lin and Prof. Yie-Ton Chen from Electrical Engineering Department. They were very kind and gave me many advice how to pass Doctorate Degree from NYUST.

They said that, I must studied and worked hard if I want to passed doctorate degree in 3 years. Usually, doctorate student in Taiwan passed in doctorate degree in 4 – 7 years, but if we could fulfilled the requirements, we could pass in three years. The big problem when we studied doctorate program was we must published 2 journal with SCI index like IEEE Journal. Profesor Bor-Ren Lin and Profesor Yie-Tone Chen said we must have a qualified research to publish in famous journal like IEEE journal because IEEE journal was preticious journal in Electrical Engineering Fields. Sometime we must waited for along time, several months to published our research article.

I discussed about the studied in NYUST and the research study in Laboratory. Professor in NYUST show me how did their laboratory and how to prepared our research, designing, implementing, testing and publishing in paper journal. They give me their journal that was published in IEEE journal and others journal. They give me proceeding paper that were published in international conference in the world.

Some topic that can be as my research proposal are

- Zero voltage switching Converter
- Zero current switching Converter
- Comprising Phase-Locked Loop
- Interleaves Converter with series Transfromers
- Interleaves Converter with paralel Transfromers
- Zero voltage Transition Photovoltaic Energy Conversion
- DC-DC Buck Converer With PWM
- Others topic in Power Electronics

In this report, I will explain my research proposal to study in Taiwan. This is the research topic that I want to do research if I study in National Yunlin University of Science and Technology Taiwan. The Title of research “**Analysis and Design of a Zero-Voltage-Switching and Zero-Current-Switching Interleaved Boost Converter with Series Connected Transformers**”. Advisor was Prof. Chen Yie-Tone, Ph.D from Department of Electrical Engineering, Faculty of Engineering NYUST.

This research will design and analyze an interleaved boost converter with zero-voltage switching (ZVS) and zero-current switching (ZCS) Boost converter with series with transformer. By using the interleaved approach, this topology not only decreases the current stress of the main circuit device but also reduces the ripple of the input current and output voltage. Moreover, by establishing the common soft-switching module, the soft-switching interleaved converter can greatly reduce the size and cost. The main switches can achieve the characteristics of ZVS and ZCS simultaneously to reduce the switching loss and improve the efficiency with a wide range of load. This topology has two operational conditions depending on the situation of the duty cycle. A driving circuit is designed for the proposed topology to determine the two conditions automatically. The operational principle, theoretical analysis, and design method of the proposed converter are presented. Finally, simulations and experimental results are used to verify the feasibility and exactness of the proposed converter.

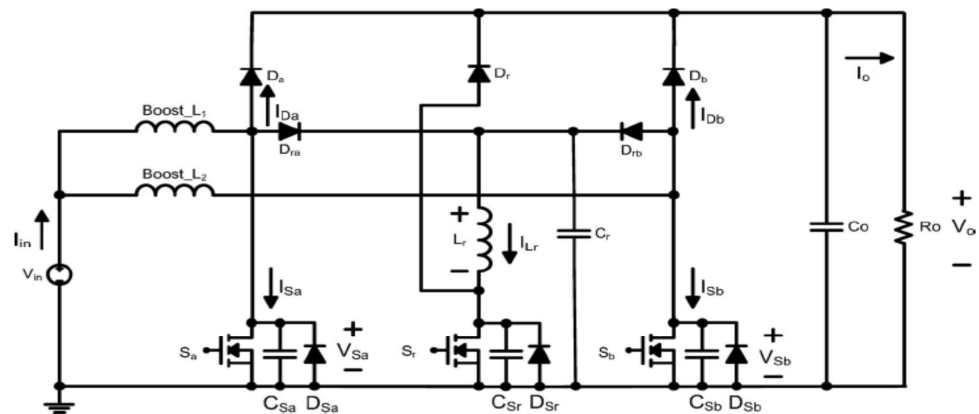


Fig. 1. Interleaved boost converter with ZVS and ZCS

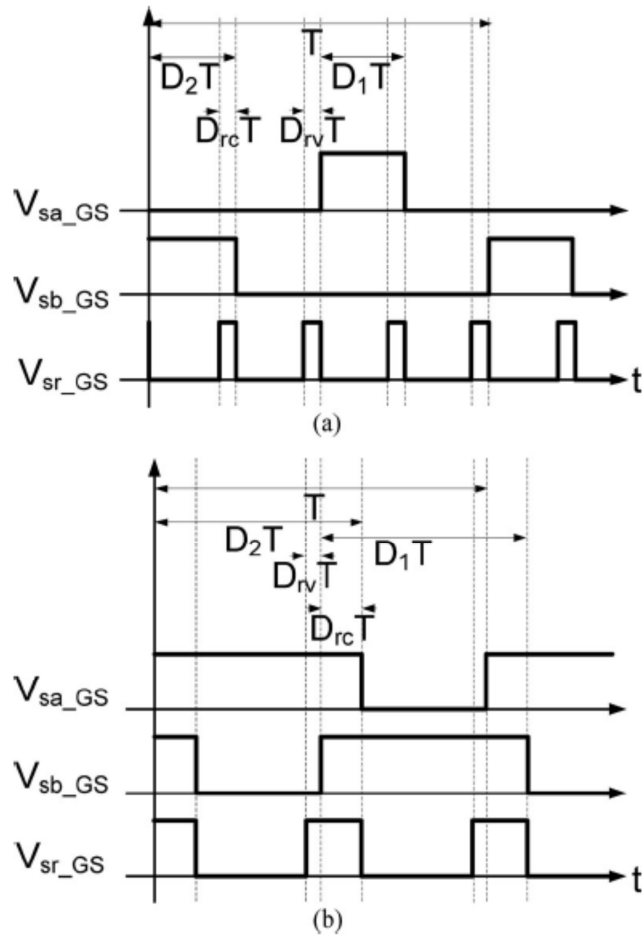


Fig. 2. Switching waveform of the circuit

C. CONCLUSION

1. Bridging Degree is very brilliant program to increase competence the lecturers and prepare study in Taiwan both in Master or Doctorate degree.
2. I can communicate, met, discussed and make a research study under advised by Profesor in NYUST.
3. This Program must be continued in the future to increased English skills, communication skill especially with foreign professors.

CHAPTER III

SUMMARY

I made this report to fulfilled the requirement of the Bridging Degree Program from DIKTI. I hope this report can be used for increasing the quality of implementation this program in the future. I known that this report did not perfect, may be there were some mistake especially in structured, because my native language was Indonesian not English. So I hope there were informed and criticed to me to improved this report.

I will say thank you for everyone who were helped me in implemented this program, so I could made this report.

REFERENCES

1. Website of National Yunlin University of Science and Technology access on March 02th 2013 at <http://yuntech.edu.tw>.
2. Yie-Tone Chen, Liang Ryu Sien, 2012, “Analysis and Design of a Zero-Voltage-Switching and Zero-Current-Switching Interleaved Boost Converter, IEEE on Power Electronics Vol 27. No 1. January 2012.
3. Bor-Ren Lin, Chia-Hung Chao and Po-Li Chen, 2012, “Analysis, Design and Implementation of ZVS Converter with Series Connected Transformers, IEEE Journal.
4. Bor-Ren Lin and Chia-Hung Chao, 2012, “Interleaved ZVS DC/DC Converter with High Input Voltage”, IEEE Journal

APPENDIX

LETTER OF ACCEPTANCE

TO WHOM IT MAY CONCERN,

I am writing to you in supporting Mr. Muhamad Ali's wishes for submission on a doctorate degree program in the Department of Electrical Engineering. Though many students ask me to make this request on their behalf, I only recommend to whom I feel are well-suited for the program of their choice. Mr. Muhamad Ali is one of those candidates who have a high motivation and qualification and therefore, I highly recommend that he will be given the opportunity to attend our university.

I know Mr Muhamad Ali from his curriculum vitae and discussion in my laboratory. We met him during he conducted the Indonesian Degree Bridging Program from December 2012 to March 2013. I have made an evaluation based on educational background, teaching experiences, publications, national and international conference experiences, training and high interest in the field of Power Electronics, in which he performed exceptionally well.

This letter is intended as a proof of acceptance of him in my laboratory and can be used to complete the requirements of the Indonesian government scholarship to study in Taiwan. If you have any question regarding his application, please do not hesitate to contact me.

Douliu, 20th February 2013

Sincerely,



Chen, Yie-Tone, Ph.D
Professor

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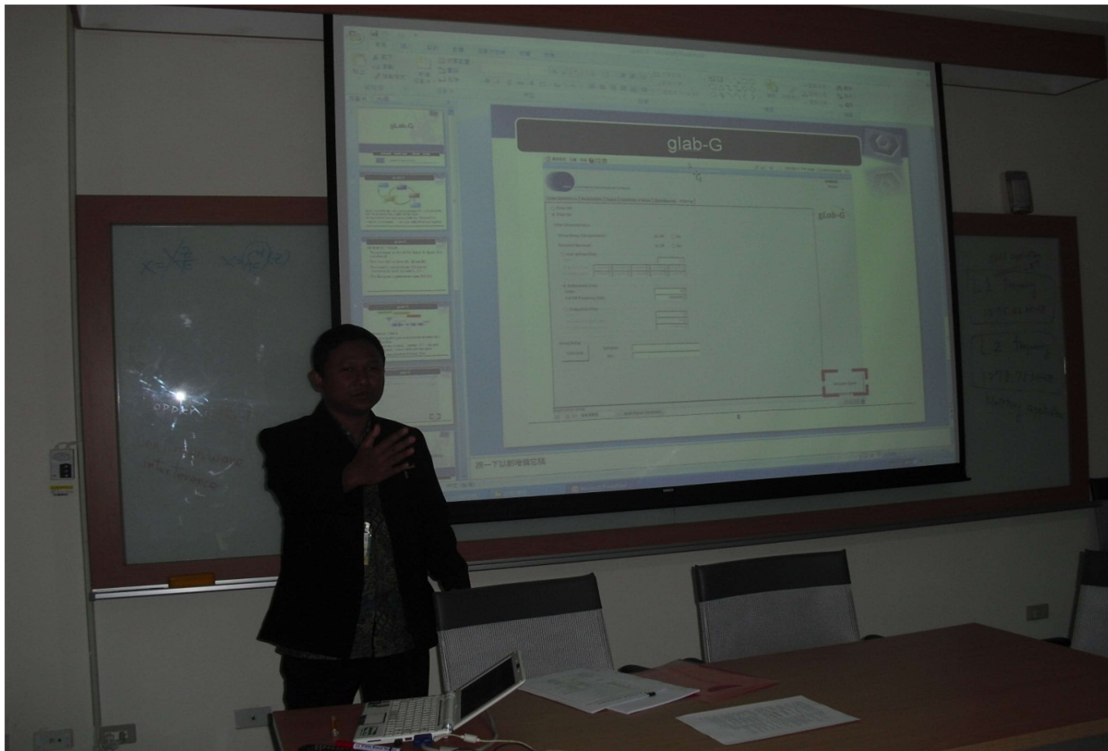
Appendix 1. In International Office of NYUST



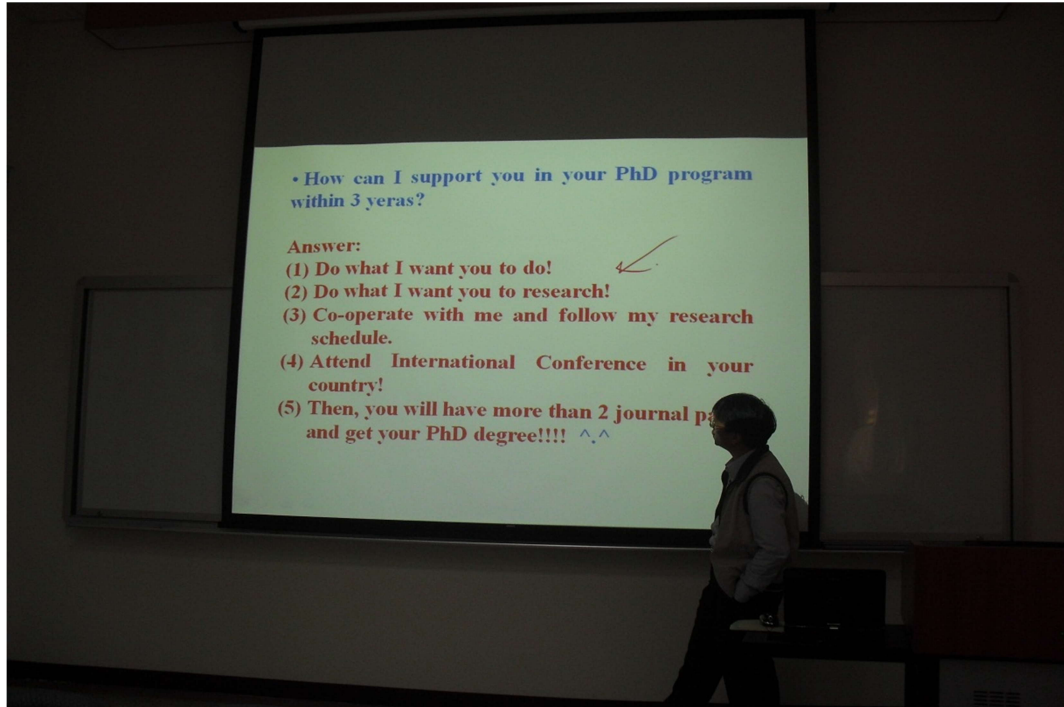
Appendix 2. Ride a Bicycle for daily transportation in NYUST



Appendix 3. Mandarin Class room



Appendix 3. Class room presentation



Appendix 5. Research topic discussion with Prof. Bor-Ren Lin



Appendix 6. Activity in Library



Appendix 7. Gathering with International Students



Appendix 8. Interviewed By NTDTV Taiwan TV