Introduction for Global PBL

Shibaura Institute of Technology (SIT)
King Mongkut's University of Technology, Thonburi (KMUTT)

14. Feb. 2014

Aim of Global PBL

Global Project Based Learning enables:

- To acquire the synthetic problem solving capability to be internationally attractive
- To acquire concepts and technologies on "Systems thinking", "Systems Method (Engineering Method)", and "Systems Management (Project Management)"
- To acquire a capability of work as a member of an international and/or interdisciplinary team

through the problem solving experience

Time, Venue & Members

Time:

Thu, February 13, 2014 – Sun, February 23, 2014

Venue:

KMUTT in Thailand

Team members*:

33 Students from SIT, 30 Students from KMUTT

English Communication (More is better):

Students have to communicate in English, even if they use freely various devices and services, such as electronic dictionaries, smartphones and the Internet.

*Both sides should be composed of 1st year students of Graduate School, Year 4 and Year 3 of undergraduate students.

Role of TA & Professor

Role of Teaching Assistants (TA):

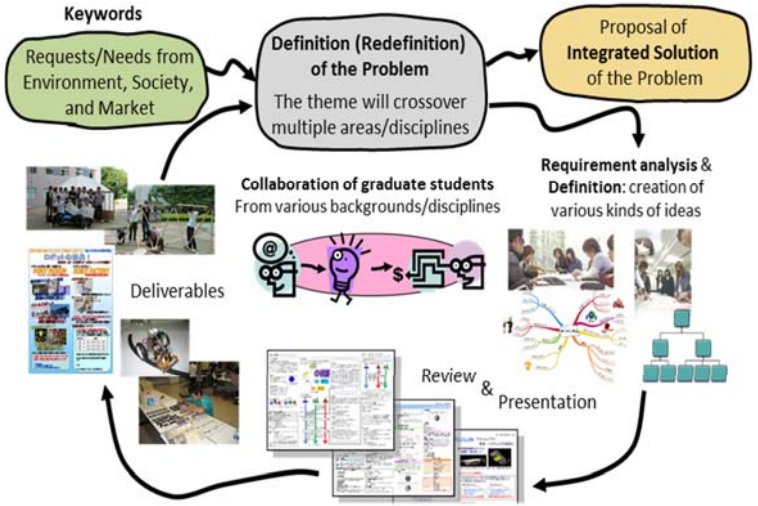
4 master students of 2nd from SIT & 3 students from KMUTT.
TAs advise the teams to coordinate with the local staff, to support the management of teams.

Role of Professors:

Professors act as an assumed investor to project.
They make various kinds of comments and suggestions in the Design Review (DR).

Comments from various points of view among lecturers are allowed.
Basic stance is to pay respect to students' ideas and opinions;
The lecturers should not force the students to follow their comments.

Practical Process for Global PBL



The solution would be formed by correlating various science and technology each other, which has been obtained through environment and social activities

Global PBL Schedule

(Feb 13)		Arrival and Check in KMUTT dormitory
Day 1 (Feb 14)	10:00 – 17:00	Icebreaking and forming up a team Confirmation of the theme, and Requirement analysis
Day 2 (Feb 15)	10:00 – 17:00	Requirement analysis and Goal setting Assessment planning, Budget planning and Schedule planning for activities
Day 3 (Feb 16)	10:00 – 17:00	Field Work for DR Preparation of design review (DR) materials
Day 4 (Feb 17)	08:00 – 17:00	Industrial Tour (Honda Motor Co.) Ayutthaya
Day 5 (Feb 18)	10:00 – 17:00 17:00 – 19:00	Design review Activities (Research/Survey/Production) in accordance with the planned schedule (International cultural exchange)
Day 6 (Feb 19)	10:00 – 17:00	Activities in accordance with the planned schedule
Day 7 (Feb 20)	10:00 – 17:00	Trip to Suburban of Bangkok Preparation of the final presentation materials Outcomes Assessment (PROG test, Rubric)
Day 8 (Feb 21)	10:00 –17:00	Return to Bangkok, Final presentation,
Day 9 (Feb 22)		Check out dormitory, Sightseeing tour, Departure to Japan
(Feb 23)		Arrival in Japan

Day 1: Icebreaking & Team-Forming

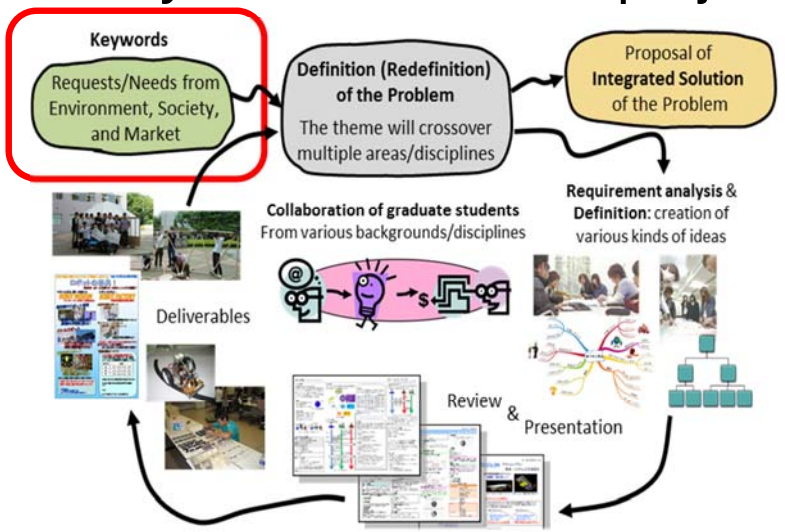
Icebreaking:

Self introductions and team-forming through simple game for communication and questionnaire

Team Formulation:

Total of 10 teams of 6 or 7 students.
Each team is made up of 3 or 4 students from SIT 3 or 4 students from KMUTT.

Day 1: Theme of the project



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Day 1: Theme of the project

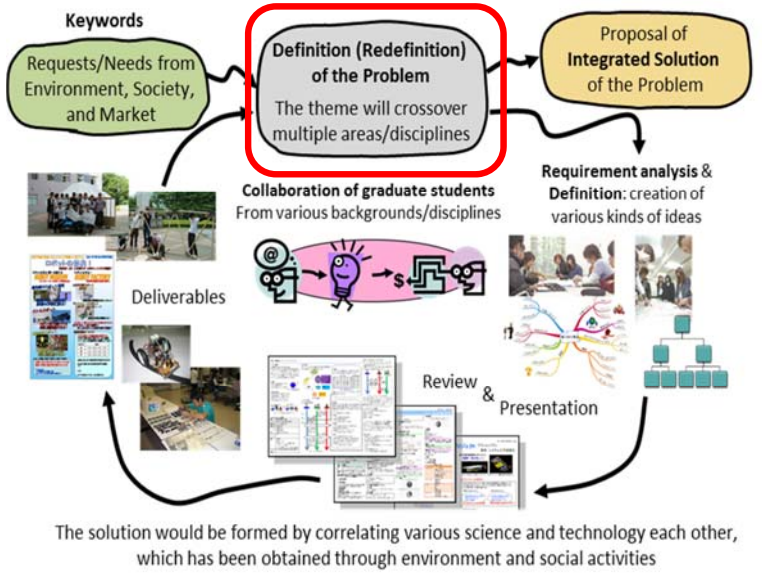
Some keywords should be referred for setting the theme.

All through the project, students are expected not only to make a plan but also make a design, implementation and a fieldwork.

Keyword:

Ecology, Energy, Eco-tourism, Community development, Service, Mobility, Welfare and medical system, Disaster prevention, Multi-language communication, User experience, Innovation, Education system, Global leadership, Others (student's idea)

Day 1: Definition of Project



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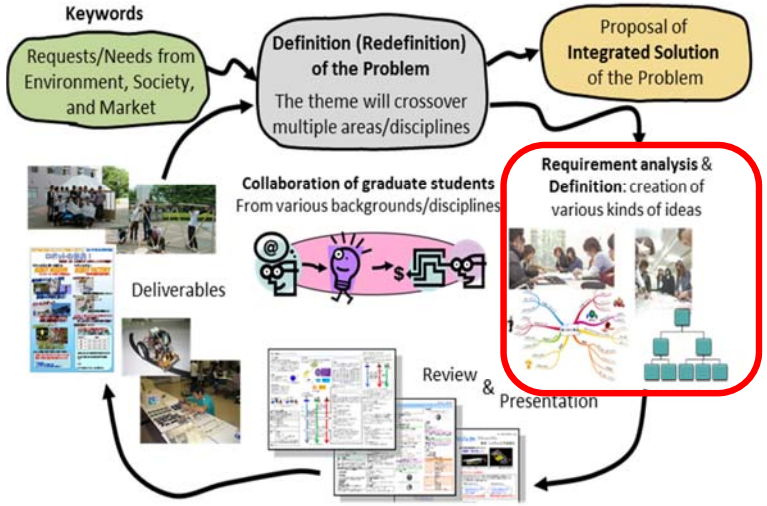
Day 1 : Definition of the Problem

Using learned methods and thinking process in Systems Engineering courses as a systematic communication tools, such as BrainStorming, KJ method, Mind map etc.

Using sticky notes during discussions open to any challenge

Day 2 & 3: Requirement Analysis and Definition



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Day 2 & 3:
Requirement Analysis and Definition

- ✓ Requirement analysis
- ✓ Goal setting
- ✓ Assessment planning
- ✓ Budget planning
- ✓ Schedule planning for activities

- ✓ Preparation of design review (DR) materials

Using learned methods and thinking process in Systems Engineering courses as a systematic communication tools, such as 5W1H, Logical tree, Matrix method, Quality Function Deployment etc.

Day 3: Standard of Evaluation for DR

In DR, evaluation is made with scale from 1 to 5, by using the standards (1) through (6) shown below.

The actual evaluation will be conducted in 2 levels consecutively; (a) Evaluation by students among groups, (b) Evaluation by the professors and TAs.

(1) What are the requirements for the theme?
- Are Background and Objective stated clearly?
- Are Present Status and Needs analyzed well?

(2) What is the goal to meet the requirements?
- Are any ideas and proposals clearly described to reach the goal?

(3) Was the relationship between Requirements and Goal an appropriate one?

(4) Was the Evaluation Method planned properly?

(5) Was the Budget Plan planned properly?

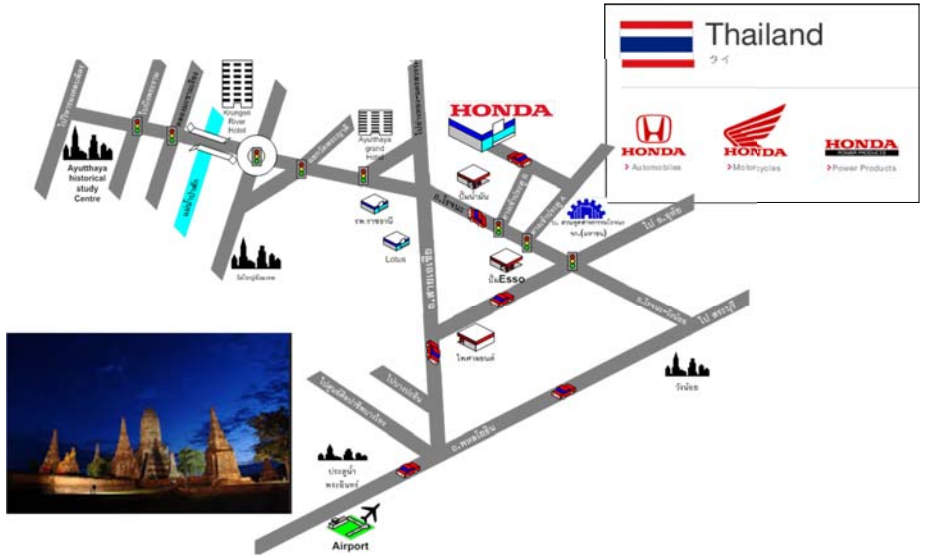
(6) Did the resource and the oral presentation help your understanding?

Day 3: A3 Material for DR

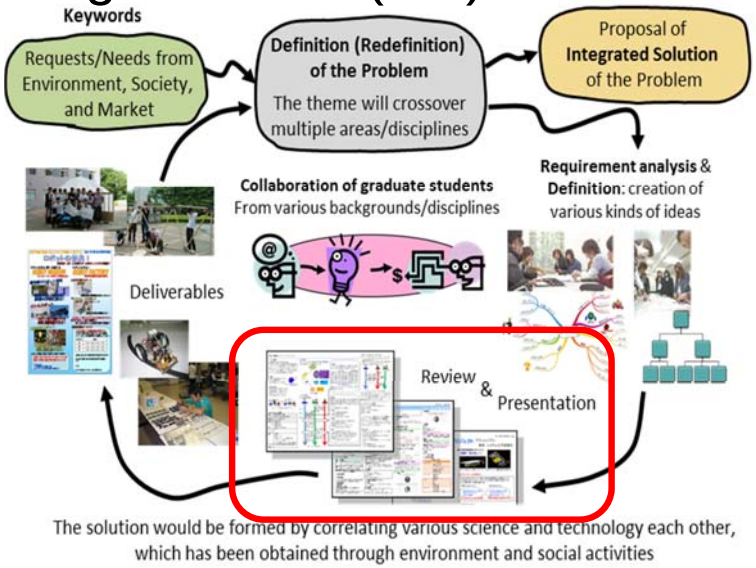
Title	Group ID, Date	Member List
1. Background and Objective 2. Present Status and Requirements 3. Strategy and Goal	5. Implementation Plan 6. Evaluation 7. Conclusion Figure (Image)	
4. Summary and Scope 4.1 Requirements 4.2 Evaluation Methods	8. Implementation Schedule - Milestone	

A3 Material is used for DR at many Japanese companies, such as automotive or electric-appliance companies, Mitsubishi, Toyota…

Day 4:
Industrial Tour (Honda Motor Co.)



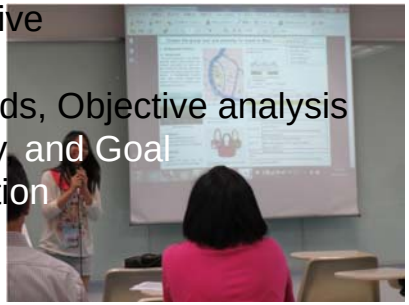
Day 5, AM: Design Review (DR)



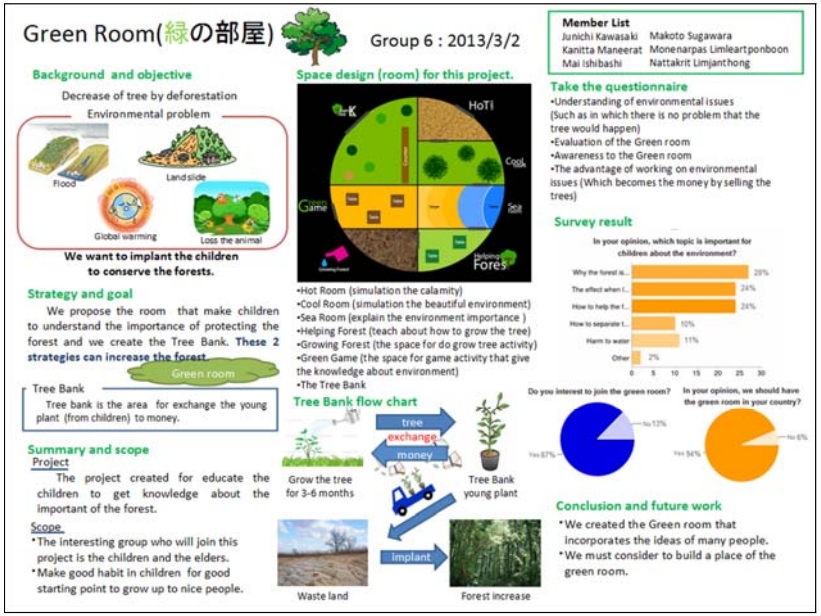
Day 5, AM: Design Review (DR)

The A3 material and budget planning document are used for DR.
The A3 material should include the following points.

1. Background and objective
2. Requirement analysis
2.1. Present status and needs, Objective analysis
2.2. Requirements, Strategy, and Goal
2.3. Criteria plan for evaluation
3. Scheduled Actions

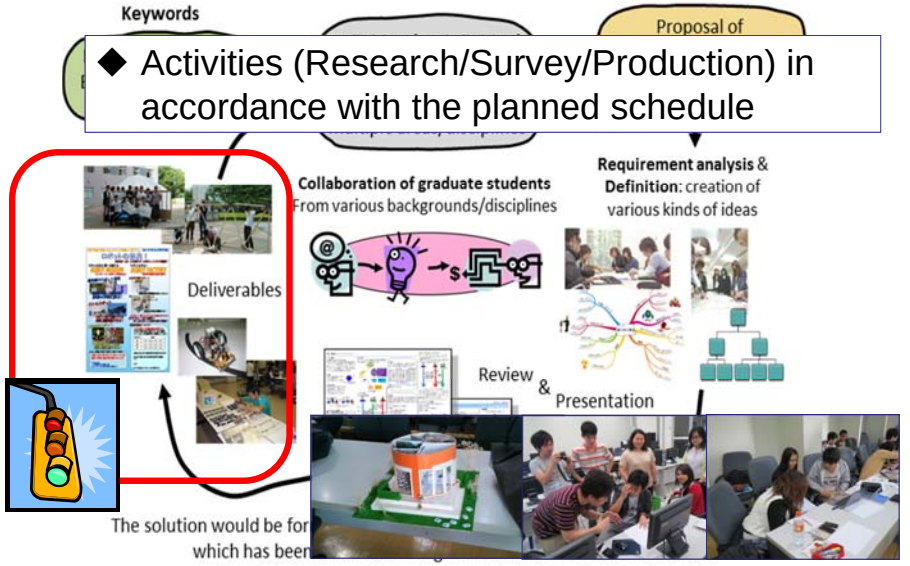


A3 Material



Day 5, PM & 6: Scheduled Actions

◆ Activities (Research/Survey/Production) in accordance with the planned schedule

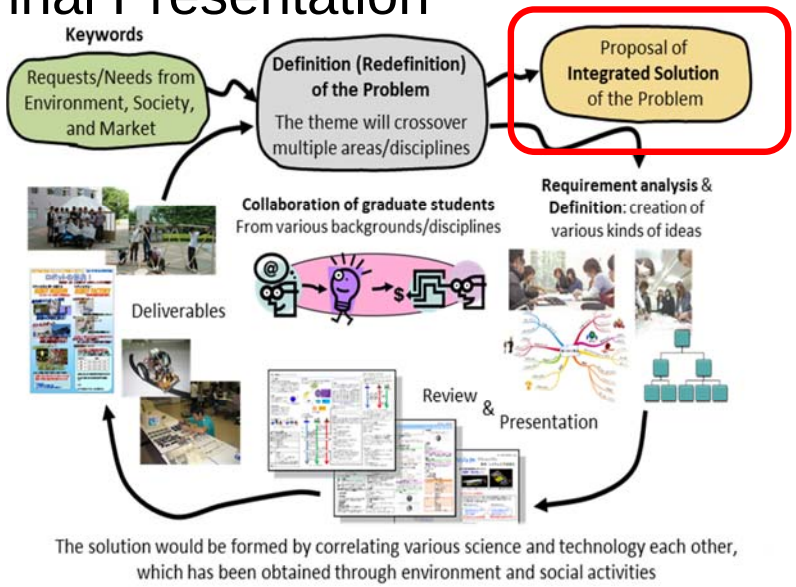


Day 5, NIGHT:
International cultural exchange

◆ International cultural exchange activities

Cultural Performance Required!

Day 7 & 8:
Final Presentation



Day 7:
Final Presentation material

The A3 Material should include following points for the final presentation.

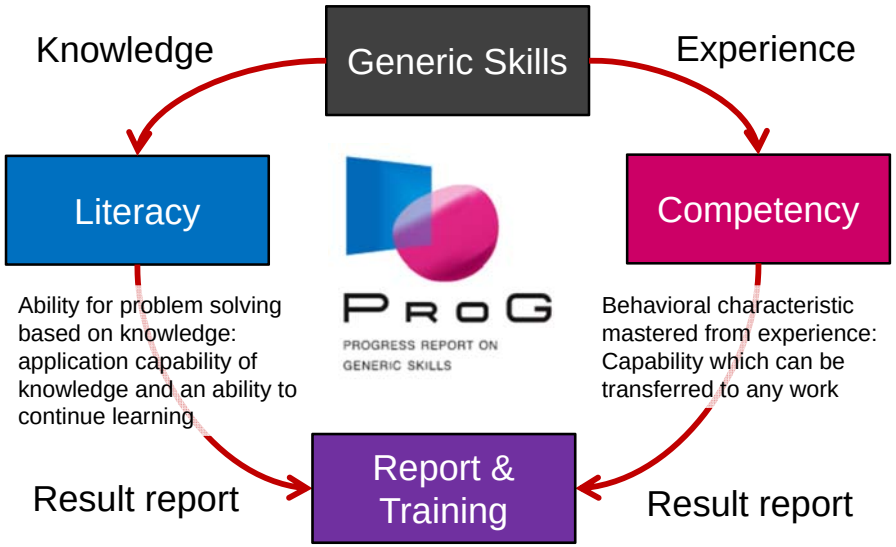
- Background and Objective
- Requirement Analysis
  - Present Status and Needs, Objective Analysis
  - Requirements, Strategy, and Goal
  - Criteria plan for evaluation
- Implementation
  - Summary and Scope
  - Implementation Plan
- Evaluation
  - Evaluation Method
  - Evaluation Result
- Conclusion

Day 7: Standard of Evaluation for Final Presentation

The final presentation are evaluated with scale from 1 to 5, based on the following evaluation standards.
The actual evaluation will be conducted in 2 levels consecutively; (a) Evaluation by students among groups, (b) Evaluation by the professors and TAs.

(1) Creativity: Did the group obtain creative results?
(2) Usefulness: Did the group obtain results that hit the point of the theme, which is useful in general or global problem solving?
(3) Completion: Did the group obtain results with higher degree of completion through analysis, plan, and evaluation?
(4) Feasibility: Did the group set a goal with an adequate level of feasibility?
(5) Achievement to the Goal: Did the group achieve the goal that was set at the beginning?

Day 7:
Progress report on generic skills



Day 8:
Final Presentation

Evaluation criteria for Project Deliverables:

- Creativity
- Usefulness
- Completion
- Goal-appropriate
- Goal Achievement

Day 8: Outcomes Assessment

gPBL Outcomes Assessment Sheet YYYYMMDD:
(for student)

Bachelor/Master Grade: Number: Name:

Personal Outcomes Self and Peer Assessment (High:5,4,3,2,1:Low)

	Learning Outcomes	Competency	Self Assessment	Peer #1 Name	Peer #2 Name	Peer #3 Name	Peer #4 Name	Peer #5 Name	Peer #6 Name	Average of Peer
Personal Outcomes	Work in multi-culture and interdisciplinary team	Communicate and teamwork in multi-culture and interdisciplinary team								
	Engineering Design	Design system, service and process which satisfies needs and constrains								
	"System Thinking" – Solve interdisciplinary problem by understanding engineering process	1.Understand engineering process and apply it to solve interdisciplinary problem. 2. Recognize and analyze problem, and design and evaluate solution.								
	"Engineering Methodology" – Apply engineering methodologies to solve interdisciplinary problem.	1.Understand engineering methodologies and apply them to model, and determine system.								

Evaluation on Learning Outcomes is made after the Global PBL was completed.

Team Outcomes Self Assesment (High:5,4,3,2,1:Low)

	Project Outcomes		Self Assessment
Team Outcomes	Originality	Propose original system and service	
	Usefulness	Propose useful system and service	
	Accuracy	Based on scientific analysis and engineering design	
	Feasibility	Technically, socially and economically feasible	
	Goal	Set appropriate goal	
	Achievement	Achieve goal	
	Written and Oral Presentation	Written presentation	
		Oral presentation	

The actual evaluation will be conducted in three levels consecutively;
(a) Evaluation by students within the same group,
(b) Evaluation by students among groups,
(c) Evaluation by the professors and TAs.

Day 9:
Sightseeing tour

Let's exercise on Global PBL at KMUTT in Thailand.

Departure to Japan

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