

Chapter 6 : Game Rule and Game Result - Episode. 1-3

6.1 Episode 1: Monkey Perspective and Sensitivity

6.2 Game Rule

Time

1. 13:30-15:30, DDD (Design, Development, Deployment) Exercise - Macaque Food Map
2. 13:30-14:00, Introduction (30 min)
3. 14:00-14:20, Design (10 min), Presentation and Review (10 min)
4. 14:20-14:55, Development (25 min), Presentation and Review (10 min)
5. 14:55-15:30, Deployment (35 min)
6. 15:30-16:30, Earth Day Output and Evaluation

Rule

1. Use your imagination to design a monkey avatar.
2. Act as that monkey. Think and sense from the monkey perspective.
3. We are new to this area. Each group is a family.
4. We are very curious about anything: people, inside and outside of the houses, moving objects, plants, animals, other monkeys.
5. Use your monkey instinct to explore: sense of image, sound, smell, touch, taste, movement.
6. We need food, water, shelter, storage, fun and rest.
7. We need a lot of friends. We want to have a lot of children.
8. We want our monkey community to sustain in here forever.
9. We are not afraid of height. We like to stay high to watch others for a whole day.
10. We don't know any thing about human civilization and technologies, including traffic, vehicles, architecture, water dam, electricity, ICT, chemicals or agriculture.
11. We never walk through human routes. We like climb high and jump between trees and roofs.
12. We know human beings are our predator.
13. Of course we cannot speak human languages.

6.3 Goal

For each group:

1. Draw a Macaque Food Map of this area to record your monkey avatar DDD process. In the map, there should be more than 30 point of interests.
2. Take photos to let us know what the monkey see, sense, think and feel.
3. Bring back at least 3 kinds of food that monkey love to eat.
4. Tell us what you ate for your lunch in the map from the monkey perspective.

6.4 Game Result

RE divided learners into 4 groups. The example of Group 2 is missing and Group 1 , 3 and 4 are shown as the following figures,



Illustration 50: The presentation of Group 1 in Episode 1.



Illustration 51: The presentation of Group 3 in Episode 1.



Illustration 52: The presentation of Group 4 in Episode 1.

6.5 Episode 2: Technology After the Nuclear Disaster

6.5.1 Game Scenario

A very serious nuclear power plant disaster happened in Taiwan caused by a major earthquake. You were visiting Mekarang just now. All the supplies from outside Mekarang are contaminated. You need to find sustainable food, water and shelter as soon as possible along the "School Road" in Mekarang.

You can use whatever technology you brought with you today to do the "School Road" Mapping.

Find out more POIs (points of interest) to get the highest score.

For food, don't even consider the domesticated plants in the farm. They will die out soon without seed source, pesticide / fertilizer supply and irrigation. We mean it!

You only have 1.5 hrs. Good luck!

6.5.2 Mission

School Road" Mapping

6.5.3 Goal

1. Draw a map with the following target POIs:
 1. "School Road": (1) path, (2) bridges
 2. Food: (3) wild bananas, (4) tree-ferns

3. Water: (5) natural streams
4. Shelter: (6) houses
5. Create a profile page for all the POIs. For each POI, you should include the following info:
 1. Geographical positioning coordinate
 2. Description through sensitivity: sense of sight, hearing, smell, taste, touch
 3. 3 photos of the same target from different angles

6.5.4 Score

Table 12: Episode 2 Score Rule

Category	Items	Points
POIs on the Map	"School Road" path	20
	Bridge	2
	Wild banana	5
	Tree-fern	5
	Natural stream	5
	House	3
Profile of each POI	Naming	3
	Geographical coordinate	8
	For each sensitivity description	3 points, at most 3 senses for each POI
	Photo	3 points, at most 3 photos for each POI

6.5.5 Game Result

RE divided learners into 3 groups and the game results are shown as the following figures.

Group 1 used steps to do the measure between POIs. For example, in the 184th step, they found a 竹筍 and in the 1201th step, they found a bridge and stream. The game result of Group 1 is shown as Illustration 53.

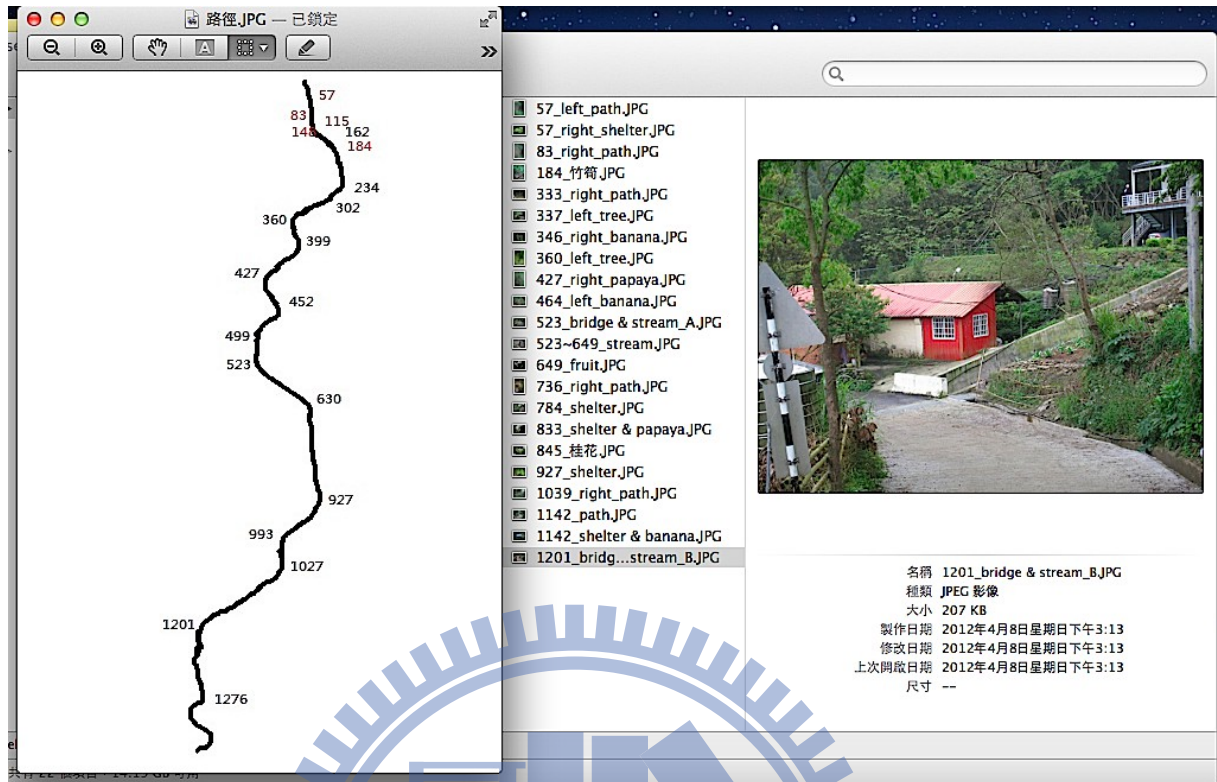
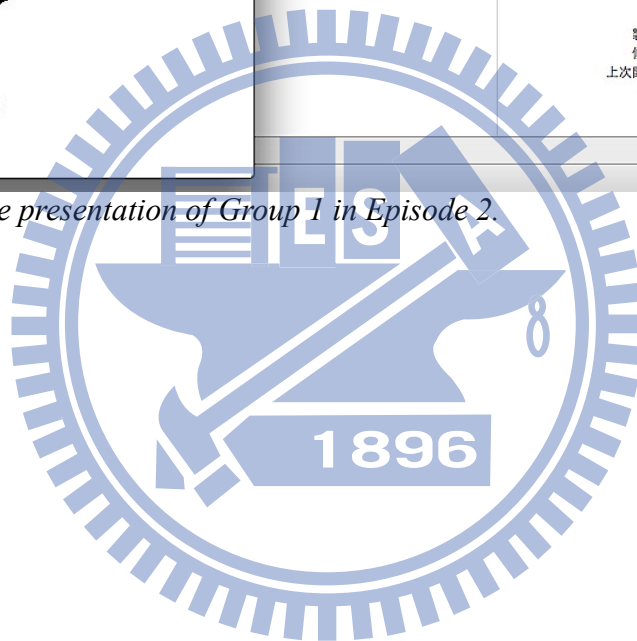


Illustration 53: The presentation of Group 1 in Episode 2.



Group 2 also used steps to do the measure between POIs.

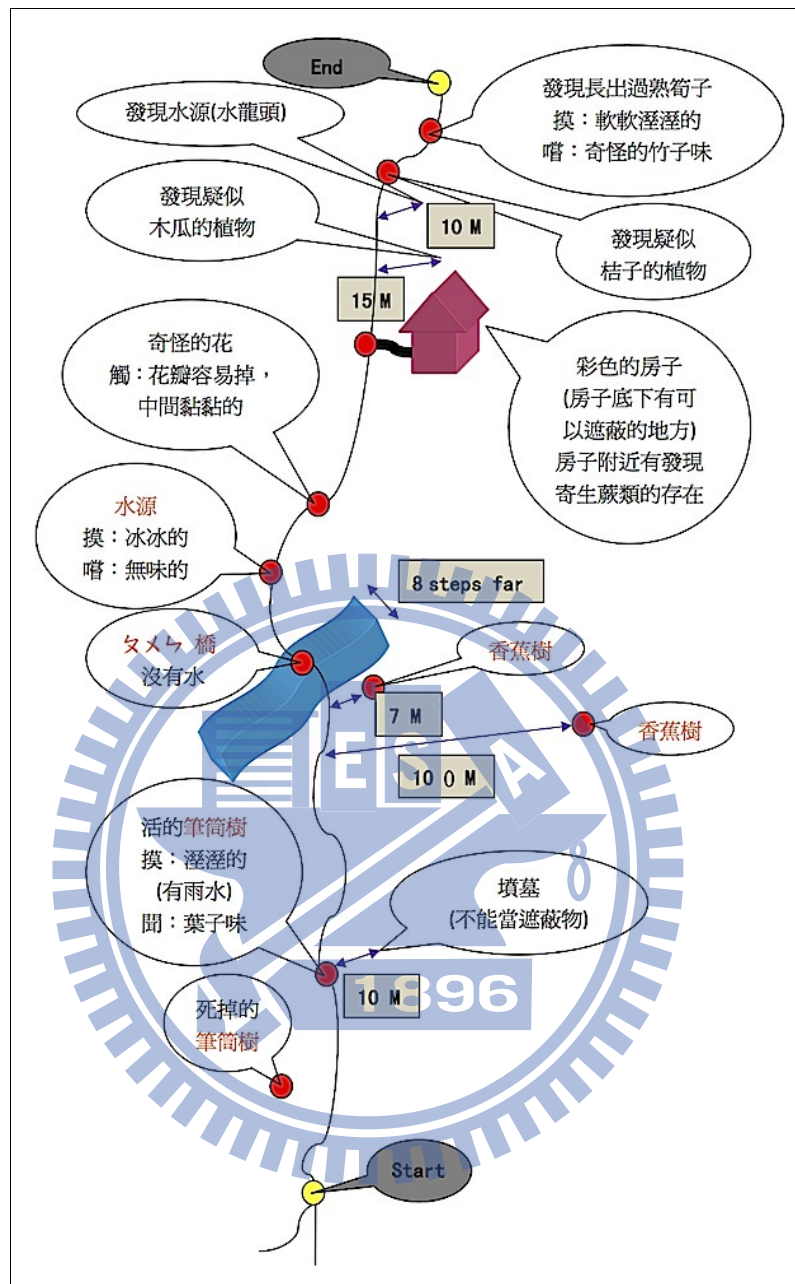


Illustration 54: The presentation of Group 2 in Episode 2.

Group 3 used the motorcycle meter to do the measure.

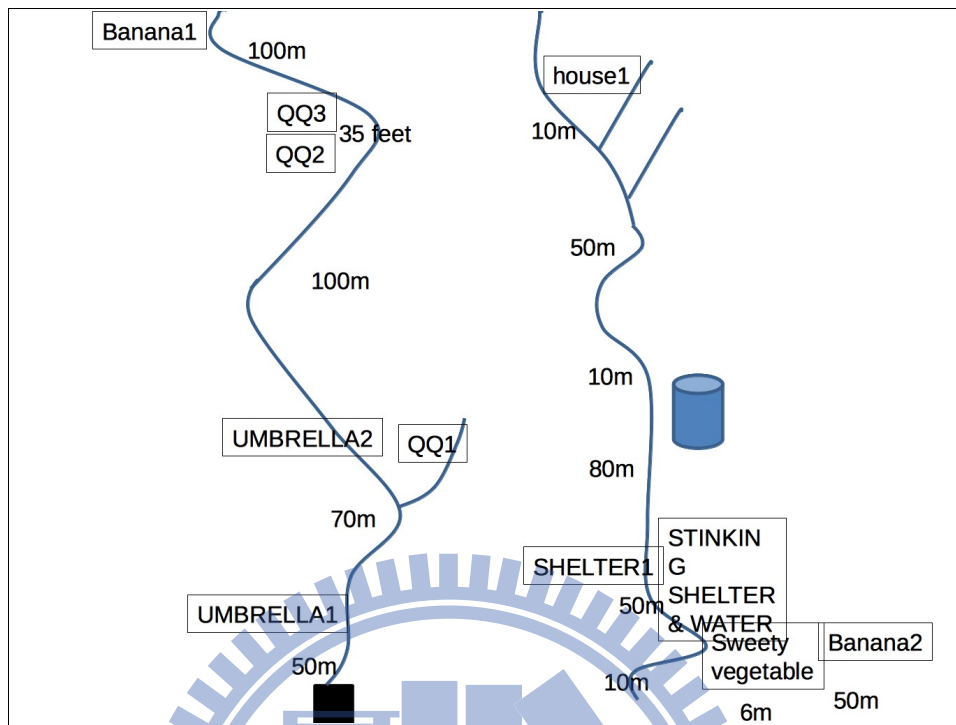


Illustration 55: The presentation of Group 3 in Episode 2 (Part 1).

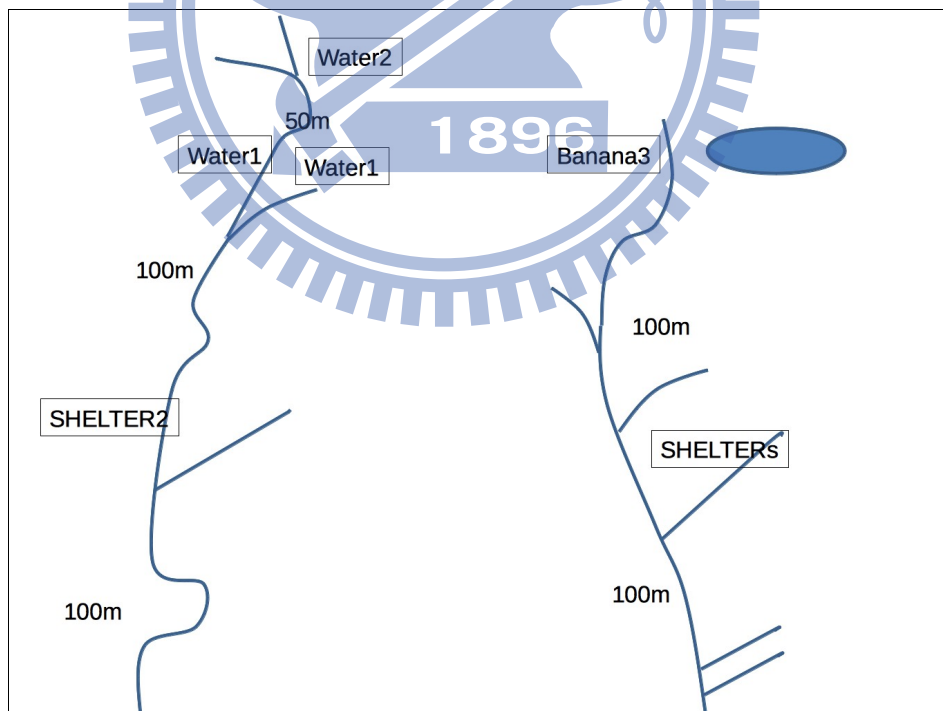


Illustration 56: The presentation of Group 3 in Episode 2 (Part 2).

6.6 Episode 3: Atayal Cuisine from the Wild

6.6.1 Game Scenario

A few weeks ago, a very serious nuclear power plant disaster happened in Taiwan caused by a major earthquake. You were evacuated to Mekarang in an emergency. All the supplies from outside Mekarang are **STOPPED**, including food, water, gas, electricity and utensils.

In order to survive here, you need to learn from the Atayal seniors about their precious food knowledge: (1) What are their food materials from wild plants in different seasons? (2) How do they cook without gas and utensils? (3) What is their recipe to make wild food delicious? (4) How do they store food for a very long time without refrigerators?

Find out more Atayal cuisine secret to get the highest score. Good luck!

6.6.2 Mission

Visit and Interview Mekarang Senior Families

6.6.3 Goal and Score

1. Organize yourselves into 2 groups:
 1. Group 1, visit and interview:
 1. Mr. Teling + Mrs. Kuna, near School, for 1 hour
 2. Mr. Amuk + Mrs. Muzing, near Church, for 1 hour
 2. Group 2, visit and interview:
 1. Mr. Mankay + Mrs. Azing, near Church, for 1 hour
 2. Mr. Basang + Mrs. Aking, in neighbourhood 9, for 1 hour
2. Find out the answers and create a presentation for:

Table 13: Score Rule of Episode 3

Items	Points
Atayal names and photos of food materials from wild plants	5 / name
Atayal cooking technology without gas and utensils	5 / cooking technology
Atayal cuisine recipe	5 / recipe
Atayal food storage technology without refrigerators	10 / storage technology
Group reflections for the visit and interview	5 / reflection
Extra points for pertinent photos	




6.6.4 Program





1. 12:00-12:40 Lunch, and find the seniors you'll visit
2. 12:40-13:00 Orientation
3. 13:00-13:30 Grouping, discussion and design
4. 13:30-14:30 Engage with the first family
5. 14:30-15:30 Engage with the second family
6. 15:30-16:30 Download interview data and deliver presentation
7. 16:30-17:30 Presentation and wrap-up

6.6.5 Game Result

The game result of learners are presented by Microsoft Powerpoint which will be re-edit in the form of table. In total, we divided learners in 2 groups and here are the game result examples of Group 1 and Group 2.

6.6.5.1 Presentation of Group 1

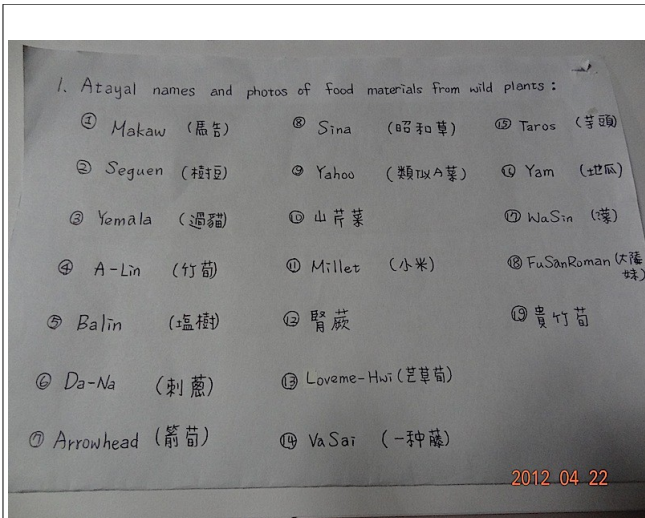
<p style="text-align: center;">Page 1</p> <ol style="list-style-type: none"> 1. Wild plants (7) 2. Cook without gas and utensils (7) 3. Recipe (2) 4. preserve food (3) 5. others(5) 6. reflections(6) 	<p style="text-align: center;">Page 2</p> <p>Wild Plant 1 Tree Bean</p> 
<p style="text-align: center;">Page 3</p> <p>Wild Plant 2 Makao</p> 	<p style="text-align: center;">Page 4</p> <p>Wild Plant 3 wild celery</p> 
<p style="text-align: center;">Page 5</p>	<p style="text-align: center;">Page 6</p>

<p>Wild Plant 4 Arrowhead bamboo (don't worry to cut it !)</p> 	<p>Wild Plant 5 Lu Bridge (Prevent from cancer, sickness)</p> 
<p>Page 7</p>	<p>Page 8</p>
<p>Wild Plant 6 Tana</p> 	<p>Wild Plant 7 Love grass</p> 
<p>Page 9</p>	<p>Page 10</p>
<p>Cook without gas and utensils</p> <ol style="list-style-type: none"> 1. make tri-column by rocks or wood sticks, and put pot on it. 2. Use fire to heat the rocks, then dig a hole, put a layer of banana leaves, then heated rocks, then leaves, then foods(potato, tarot), then a layer of banana leaves, some heavy rocks last. 3. Put rice in bamboo and heat it. Bamboo can also be used to be capacity and scoop. 4. The ash can cover the fired wood and keep the temperature. 5. Fixed the meat by bamboo sticks and roast it. 	<p>Cuisine Recipe</p> <ol style="list-style-type: none"> 1. Wild Banana (The central stem with white material is able to make soup.) 2. Bitter Flower Fish (First, it could be roasted ; second, it can be made into soup without taking out internal organs and plus additives such as makao, ginger.)

<ol style="list-style-type: none"> 6. Use heated rocks to make soup, and use crossed leaves as the pot. 7. The center cylinder of the banana can set the fire on easily. 	
Page 11	Page 12
<p>How to preserve food without fridge ?</p> <ol style="list-style-type: none"> 1. Take out the internal organs and put the meat into water to preserve it; or, we could grill the meat first and then put it into water later. 2. To preserve the meat with salt, which could maintain up to ten or even twenty years. 3. Mr. Teling consider it is important to share food with neighbours if there are remaining instead of keeping it or restoring it. 	<p>others</p> <ol style="list-style-type: none"> 1. Use the same land to plant every other year 2. Natural agriculture is good for environment and the out comes is safe!!! 3. Tribe people don't see the far. 4. Their main dish is tarot, potato and dry rice. 5. Hunting as interest now, but in the past they have to pass the hunting test to be a real man and can have a family.
Page 13	
<p>reflection</p> <ol style="list-style-type: none"> 1. People eat fresh, natural food live healthy. 2. Just get what you need, no more! 3. Be willing to share, then no need to store. 4. Hunting in winter to balance with nature. 5. Remember to ask the tribe name of the plants. 6. Teenager should be responsible for receiving and passing knowledge. 	

6.6.5.2 Presentation of Group 2

Page 1	Page 2
<p>Members: Bella, Winny, Cielo, Marco, Josh, Crack, Victor Episode 3: Atayal Cuisine from the Wild -Group 2</p>	<p>Outline</p> <ol style="list-style-type: none"> 1. Wild food materials: 19 2. Cook tech: 5 3. Recipe: 11 4. Food storage tech: 3 5. Reflection
Page 3	Page 4
<p>1. Food material</p>	<p>Food material: 馬告</p>



Page 5

Page 6

Food material: 樹豆

Food material: Yahoo



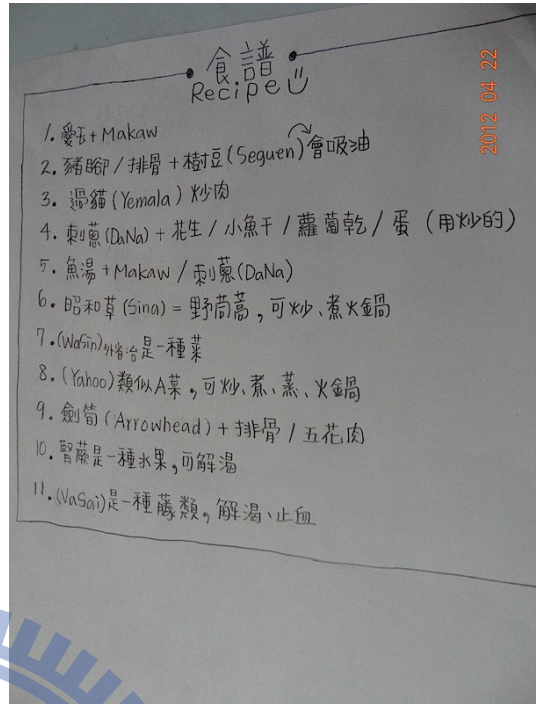
Page 7

Page 8

2. Cook tech

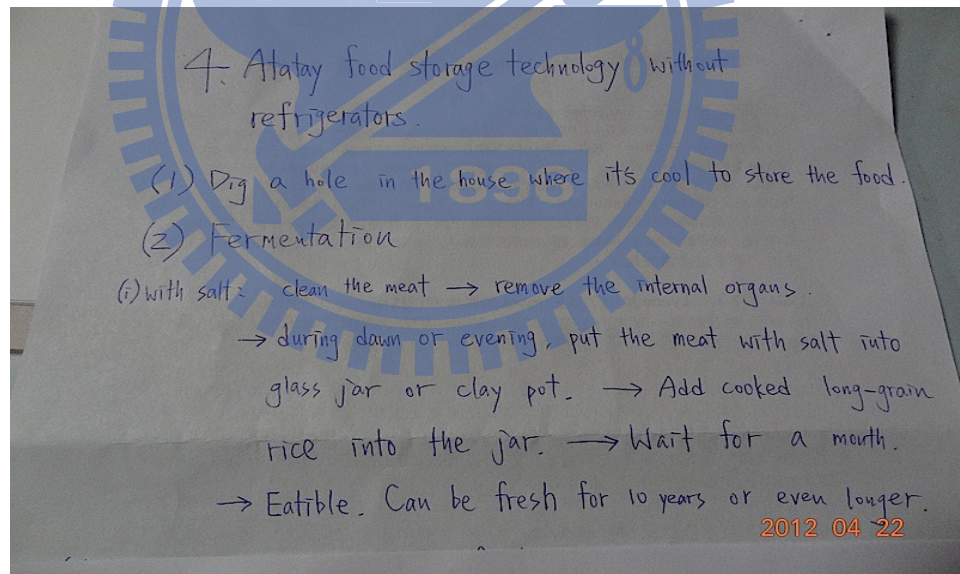
- Make fire
 - use cow's poo poo(wuchi-vana)
 - use wood
=>to make sparkle=>light the stem of banana
 - burn the stone to red, put it into the water to make the soup
- Utensils
 - banana leaf(any big leaf)
 - bamboo

3. Recipe



Page 9

4. Food storage tech



Page 10

4. Food storage tech


(ii) without salt: Get batin fruit, orange. → Expose it under the sun. → It will turn red, with some white crystal on it. → Put the crystal onto the meat. → Follow the steps above.

(3) Use water!!

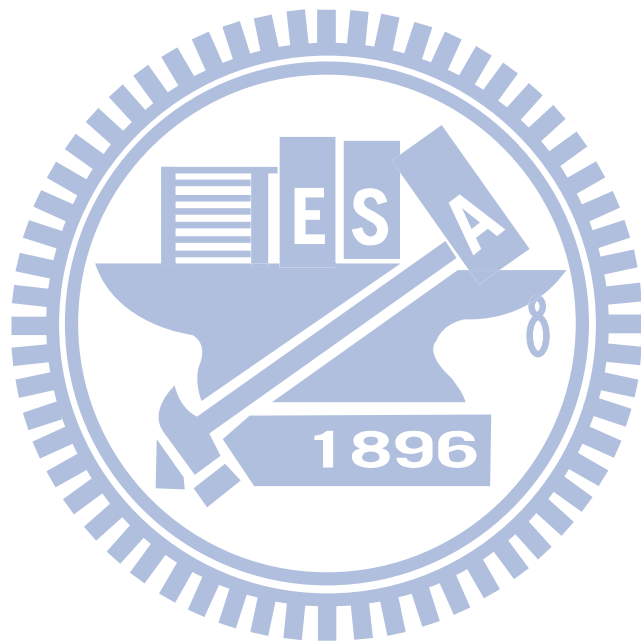
(i) Clean the meat and put it in cold water. ⇒ be fresh for 2~3 days

(ii) Clean the meat, burn it and put it in cold water. ⇒ fresh for 1~2 weeks.

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Page 11	Page 12
<p>Reflection</p> <ul style="list-style-type: none"> • makao <ul style="list-style-type: none"> • Makao national park, cooling effect • banana <ul style="list-style-type: none"> • A lot of usage: leaf, banana, stem • Tree bean absorb oil • millet <ul style="list-style-type: none"> • Expensive, used to be main food • Amazing 10 years conservation • A lot of 阿力 (Ali is Atayal name of bamboo shoot) • Different kind of wild vegetable 	<p>Mr. ManKey elder</p> 
Page 13	
Mr. Basang elder	





Chapter 7 : Game Rule and Game Result - Episode. 4-6

7.1 Episode 4: Colonial Taiwan, 1895-1945

7.1.1 Game Setting

1. Theme: East Asia Co-Prosperity
2. Mission: Mekarang Timber Harvesting Plan
3. Goal: Supplying Japan with the best timber for housing and industry needs
4. Role playing: You are Japanese colonialists
5. Land right: All the lands belong to Japanese emperor
6. Cultural dominance: All the people in Mekarang should speak Japanese
7. Issues to control: Atayal, Hakka, monkeys, trees

7.1.2 Game Rule

Table 14: Game rules of Episode 4

Category	Items
1. Map out Your Plan	1-1. Forests above 700m in attitude, log yards, transportation (railroads, roads), timber factories
	1-2. Offices, worker housing projects, labor training center
	1-3. Police stations, military fortresses
	1-4. Food, water and power supplies
2. Assign Missions to Roles	
Governance	2-1. Japanese police captain
Economy	2-2. Japanese timber industrialist
Ecology	2-3. Japanese botanist
Health	2-4. Japanese medical doctor
Culture	2-5. Japanese anthropologist
Education	2-6. Japanese school teacher
3. Prepare Education Paradigm: Design Undergraduate Programs for	3-1. Tokyo Imperial University (now University of Tokyo)
	3-2. Taihoku Imperial University (now National Taiwan University)
	3-3. Service Learning Programs for Japanese university students
4. Red Space Reflections	4-1. What kind of catastrophe that Atayal people will get from Mekarang Timber Harvesting Plan?

7.1.3 Game Result

In total, we divide students into 2 groups.

7.1.3.1 Group 1: Mapping Plan



Illustration 57: The front of mapping plan of Group 1 in Episode 4.



Illustration 58: The back of mapping plan of Group 1 in Episode 4.

7.1.3.2 Group 1: Role Missions Assignment

Table 15: Presenter, mission assignment and connections among roles of Group 1 in Episode 4

Roles	Presenter	Mission Assignment	Connections Among Roles
2-1. police captain	Allen	<ol style="list-style-type: none"> 1. security, show power, make people love + afraid 2. Protect all Japanese (high) and Mekarang (low) 3. Find some little brother (<u>patrol</u>) 4. census>check people number and jobs 5. Keep training and stronger 	Protect the other roles
2-2. timber industrialist	Sam	Find the easily access resource and the densest one-->the dense distribution of forest	Information Receiver of Japanese botanist
2-3. botanist	Allen	<ol style="list-style-type: none"> 1. High economy efficiency 2. easy to deforest 3. Encyclopedia 4. 1)get cut, 2)sick, 3)energy-->timber worker (<u>help timber workers not to get sick but preserve energy to cut timbers</u>) 	Information Giver of timber industrialist
2-4. medical doctor	Crack	<ol style="list-style-type: none"> 1. Stomach 2. Anti-blue 3. Anti-pest 4. Anti-flu 5. Iodine 6. OK B (<u>bandage</u>) 7. Vitamin A C E 	
2-5. anthropologist	Summer	<ol style="list-style-type: none"> 1. Research Taiwanese's races history, language, custom (aboriginal, han, hakka, Fu)--><u>fu mean Hokkien</u> 2. habitual their relation 3. let police captain can control Taiwanese easily 	
2-6. school teacher	Joyce	<ol style="list-style-type: none"> 1. Japan language 2. Japan culture 3. Japan music 4. Math 5. Japan Mikado (<u>Japanese Emperor</u>) 6. Japan history 7. Japan convenance (<u>Japanese manner system</u>) 8. physical education (to enter on) (<u>modern sports</u>) 	

3-1. Tokyo Imperial University (now UT, 東大)	S. Apple	<ol style="list-style-type: none"> 1. Language 2. agriculture 3. transportation 4. mechanical engineering 5. medical (<u>medicine</u>) 6. math 7. hydraulic power 8. civil engineering 	human resource provider of timber industrialist
3-2. Taihoku Imperial University (now NTU, 台大)	S. Apple	<ol style="list-style-type: none"> 1. Japanese language 2. history 3. doctor 4. nurse 5. geography 6. music 7. civil engineering 	human resource provider of timber industrialist
3-3. Service Learning Programs for Japanese university students	Daniel	<ol style="list-style-type: none"> 1. Japanese youth with love but has little to know about Taiwan 2. Introduce comics like Doraemon to Taiwan 	

Note:

1. This table was edited from the original posters drew by the learners, as shown in Appendix 6. The underscored words were added by the research as the note for readers' full understanding.
2. The column of "Connections Among Roles" was developed by the Group 1, but for Group 2, it didn't develop the connection in their result.

7.1.3.3 Group 2: Mapping Plan

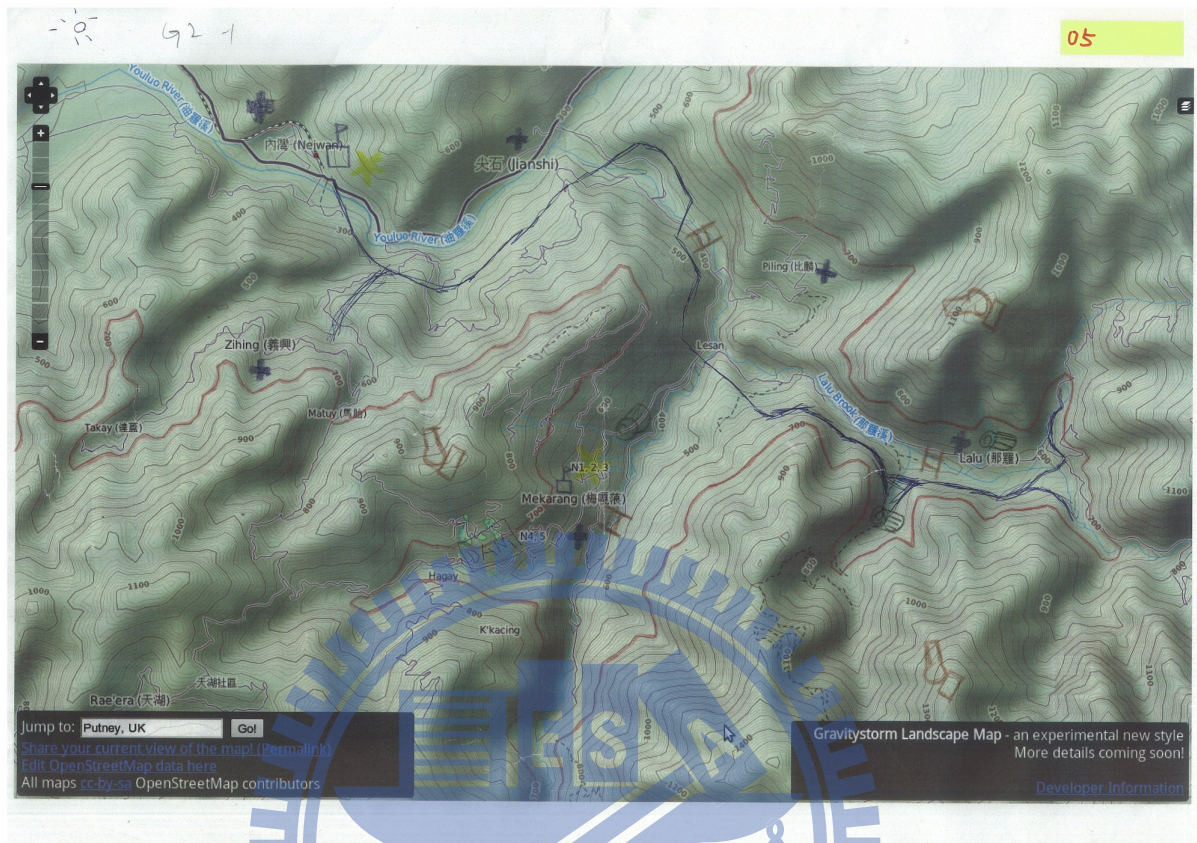


Illustration 59: The mapping plan of Group 2 in Episode 4.

7.1.3.4 Group 2: Role Missions Assignment

Table 16: Presenter and mission assignment of Group 2 in Episode 4

Roles	Presenter	Mission Assignment
2-1. Japanese police captain	Willy	<ol style="list-style-type: none"> 1. Mission <ol style="list-style-type: none"> 1. set police station 2. set bunker 3. set quick bridge 4. army, force 5. people investigation 6. meeting, activity constrain 7. carry out the rule, law 2. Goal <ol style="list-style-type: none"> 1. control their behavior 2. group people
2-2. Japanese	James	<ol style="list-style-type: none"> 1. Mission <ol style="list-style-type: none"> 1. teach people to hew wood

timber industrialist		<ul style="list-style-type: none"> 2. build worker house 2. Goal <ul style="list-style-type: none"> 1. build Japanese house 2. Create paper
2-3. Japanese botanist	Victor	<ul style="list-style-type: none"> 1. Mission <ul style="list-style-type: none"> 1. find more trees 2. training botanist 3. continuing tree supply resource 4. cutting skill 5. discover more good place 2. Goal <ul style="list-style-type: none"> 1. maximum tree supply 2. ecology balance 3. healthy plants 4. Health: Japanese medical doctor
2-4. Japanese medical doctor	Winnie	<ul style="list-style-type: none"> 1. Mission <ul style="list-style-type: none"> 1. symbols: medicine, teeth brush, herb, poo, eye sight, lice 2. Goal <ul style="list-style-type: none"> 1. Every Japanese get used to the environment well. 2. Taiwanese has good sanitary knowledge.
2-5. Japanese anthropologist	Josh	<ul style="list-style-type: none"> 1. Mission <ul style="list-style-type: none"> 1. Brain-washing the folks 2. Goal <ul style="list-style-type: none"> 1. make them embrace Japan/ be eager to be Japanese
2-6. Japanese school teacher	Krystal	<ul style="list-style-type: none"> 1. Mission <ul style="list-style-type: none"> 1. Teach Japanese 2. Set School 3. Japanese Courtesy 4. Japanese Name 2. Goal <ul style="list-style-type: none"> 1. Improve Japanese Comm(<u>Communication</u>) 2. Be a good Japanese
3-1. Tokyo Imperial University (now UT / 東大)	X	X
3-2. Taihoku Imperial University (now NTU / 台大)	Josh	<ul style="list-style-type: none"> 1. Forestry 2. Geography 3. Water 4. Civil Engineer 5. Management 6. History 7. Education 8. Japanese

		9. Agriculture 10. Medicine 11. Anthropology 12. Transportation
3-3. Service Learning Programs for Japanese university students	Josh	1. Teach them medical common sense 2. Teach them Japanese & English/ help them with school works 3. Construct map-information system

Note:

1. This table was edited from the original posters drew by learners, as shown in Appendix 6.
2. The underscore text was added by the author for readers' understanding toward the role players' assignment of missions.

7.2 Episode 5: Industrial Taiwan, 1945-2012

7.2.1 Game Setting

1. Theme: High-Tech Super Island
2. Mission: Piling Water Dam Project
3. Goal: Supplying Hsinchu Science Park and household water need for another 30 years
4. Role playing: You are Han industrialists
5. Land right: All the lands belong to Taiwanese government
6. Cultural dominance: All the people in Mekarang should speak Chinese
7. Issues to control: Atayal, monkeys, crops, tree

7.2.2 Game Rule

Table 17: Game rules of Episode 5

Category	Items
1. Map out Your Plan	1-1. Choose the best location to build the dam, and decide the height of it
	1-2. Map out the flooded area after the dam construction
	1-3. New housing projects for the Atayal people moved out from the flooded area
	1-4. New routes for major roads in Mekarang
2. Assign Missions to Roles	
Governance	2-1. Han local governor
Economy	2-2. Han water dam engineers
Ecology	2-3. Han biotech scientists
Health	2-4. Han medical doctors
Culture	2-5. Han social scholars

Education	2-6. Han school teachers
3. Prepare Education Paradigm: Design Undergraduate Programs for	3-1. NCTU and CHU
	3-2. Service Learning Programs for Han college students from mountain people service clubs
4. Blue Space Reflections	4-1. What kind of catastrophe that Atayal people will get from Piling Water Dam Project?

7.2.3 Map Material

The map that we used is the same as Episode 4, shown as Illustration 45.

7.2.4 Game Result

7.2.4.1 Group 1: Mapping Plan



Illustration 60: The mapping plan of Group 1 in Episode 5.

7.2.4.2 Group 1: Role Missions Assignment

Roles	Presenter	Mission Assignment
2-1. Han local governor	SAM	1. Mission: 1. Meet the requirement of IC Industrial and take

		<p>care of the original place</p> <p>2. Goal:</p> <ol style="list-style-type: none"> 1. Water supply for TSMC 18" chip 2. Development of sightseeing tour
2-2. Han water dam engineers	Marco	<p>1. Mission:</p> <ol style="list-style-type: none"> 1. Build a dam <p>2. Goal:</p> <ol style="list-style-type: none"> 1. Supply water to science park, also storage of water 2. Build roads 3. Build power plants, fully use of water, flows of river
2-3. Han biotech scientists	Daniel	Maintain the biodiversity by keeping animals in cages and collect seed bank
2-4. Han medical doctors	Summer	<p>1. Mission:</p> <ol style="list-style-type: none"> 1. Collect plants to hospital and research(<u>benefit how to use</u>) <p>2. Goal:</p> <ol style="list-style-type: none"> 1. Develop medical technology
2-5. Han social scholars	Allen	<p>1. Mission:</p> <ol style="list-style-type: none"> 1. Build museum 2. Culture trip 3. Culture creative: movie, novel, local art 4. Restaurant sell local food <p>2. Goal:</p> <ol style="list-style-type: none"> 1. Preserve culture 2. make local culture popular 3. Psychology
2-6. Han school teachers	S. Apple	<p>1. Mission:</p> <ol style="list-style-type: none"> 1. Know the environment 2. Chinese 3. Writing 4. Listening 5. Know Han's history 6. Know Han's life style <p>2. Goal:</p> <ol style="list-style-type: none"> 1. Culture Recording 2. Can Speak Chinese fluently 3. Vocational Training to work locally after the DAM construction 4. Can communicate with Han People
3-1. NCTU and CHU	Daniel	<p>1. NCTU</p> <ol style="list-style-type: none"> 1. Civil engineering 2. Biotech 3. Psychology

		<ol style="list-style-type: none"> 4. Environmental Engineering 5. Electrical Engineering 2. CHU <ol style="list-style-type: none"> 1. Business Management 2. Foreign Language 3. Tourism
3-2. Service Learning Programs for Han college students from mountain people service clubs	Joyce	<ol style="list-style-type: none"> 1. Mission: <ol style="list-style-type: none"> 1. (<u>Invite indigenous kids to</u>)visit NCTU, NTHU and 2. CHU Goal: <ol style="list-style-type: none"> 1. Let Atayal people know Han education systems

Note:

1. This table was edited from the original posters drawn by learners, as shown in appendix 7.
2. The underscore text was added by the author for readers' understanding toward the role players' assignment of missions.

7.2.4.3 Group 2: Mapping Plan



Illustration 61: The mapping plan of Group 2 in Episode 5.

7.2.4.4 Group 2: Role Missions Assignment

Roles	Presenter	Mission Assignment
2-1. Han local governor	Winnie	<ol style="list-style-type: none"> 1. Mission: <ol style="list-style-type: none"> 1. Migrant local people. Provide money to local people 2. working opportunity----->How? 3. composite houses 4. water, electricity. fee reduced 2. Goal: <ol style="list-style-type: none"> 1. Local people accept the project and migrate to somewhere else.
2-2. Han water dam engineers	Lilian	<ol style="list-style-type: none"> 1. Mission: <ol style="list-style-type: none"> 1. Design blue map of dam 2. provide part-time job----->long-term?? 3. train people to manage the dam 2. Goal: <ol style="list-style-type: none"> 1. make sure the dam works well
2-3. Han biotech scientists	Willy	<ol style="list-style-type: none"> 1. Mission: <ol style="list-style-type: none"> 1. Investigate the environment 2. Rebuild the ecosystem somewhere else----->where?? 3. Claim it is not harmful 4. Supply GMO food to increase harvest----->Monsanto again?? 2. Goal: <ol style="list-style-type: none"> 1. Maintain the local ecosystem stable----->how?? we just flood it up
2-4. Han medical doctors	Josh	<ol style="list-style-type: none"> 1. Mission: <ol style="list-style-type: none"> 1. Provide regular, free health examination and consultation for them 2. Goal: <ol style="list-style-type: none"> 1. Let the local people own healthy body and positive thinking
2-5. Han social scholars	Willy	<ol style="list-style-type: none"> 1. Mission: <ol style="list-style-type: none"> 1. study issues of local society 2. set DOC(Digital Opportunity Center) 3. lead college club 4. care the older 2. Goal: <ol style="list-style-type: none"> 1. solve local issue
2-6. Han school teachers	Krystal	<ol style="list-style-type: none"> 1. Mission: <ol style="list-style-type: none"> 1. Provide bonus score 2. Provide tutors -----> do home review racial discrimination??> _ <

		<ol style="list-style-type: none"> 3. Tuition fee reduction 4. home visit 2. Goal: <ol style="list-style-type: none"> 1. Enter good school 2. Happy learning----->? 3. Take care kids
3-1. NCTU and CHU	James	<ol style="list-style-type: none"> 1. Landscape 2. Geography 3. Information 4. Tourism 5. Sociology 6. Civil Engineer 7. nurse 8. Environment 9. Agriculture 10. Media 11. Education 12. Transportation 13. Medicine 14. I.E.S.M(<u>International Conference on Industrial Engineering and Systems</u>)
3-2. Service Learning Programs for Han college students from mountain people service clubs	Krystal	<ol style="list-style-type: none"> 1. Mission: <ol style="list-style-type: none"> 1. Take care of local people 2. help kids to tutors 2. Goal: <ol style="list-style-type: none"> 1. Let old man can be happy 2. Let kids get more knowledge

Note:

1. This table was edited from the original posters drew by learners, as shown in Appendix 7.
2. The underscore text was added by the author for readers' understanding toward the role players' assignment of missions.
3. The arrow signs are the reflections of Group 1 toward Group 2's mapping plan of Mekarang.

7.3 Episode 6: Post-Disaster Taiwan, 2012-2100

7.3.1 Game Setting

1. Theme: Read the Book by God
2. Mission: Church Road Undevelopment Plan
3. Goal: Making Mekarang bountiful and beautiful with Atayal Wild Perennial Crops (WPC)
4. Role playing: You are Atayal earth citizens
5. Land right: All the lands belong to Atayal people
6. Cultural dominance: All the people in Mekarang should speak Atayal language
7. Issues to control: Han people evacuated to Mekarang after the nuclear disaster

7.3.2 Game Rule

Table 18: Game rules of Episode 6

Category	Items
1. Map out Your Plan	1-1. Find and map out Atayal WPC along Church Road Map out current land use along Church Road, and decide which part to keep and which part to change
	1-2. Choose the best locations to sow new Atayal WPC trees, and decide how many species to sow
	1-3. Choose the best locations for monkeys to live
	1-4. Create housing projects for the Han people evacuated to Mekarang
	1-5. Choose the best locations for the Atayal, Han and Japanese young people to learn Atayal earth knowledge
2. Assign Missions to Roles	
Governance	2-1. Atayal seniors
Economy	2-2. Atayal farmers
Ecology	2-3. Atayal farmers
Health	2-4. Atayal medical doctors
Culture	2-5. Atayal church pastors
Education	2-6. Atayal school teachers
3. Prepare Education Paradigm: Design Undergraduate Programs for	3-1. Atayal Tribal University
	3-2. Service Learning Programs for Atayal college students
4. White Space Reflections	4-1. What kind of catastrophe that Atayal people will get from the Han people evacuated to Mekarang?

7.3.3 Game Result

7.3.3.1 Group 1: Mapping Plan



Illustration 62: The mapping plan of Group 1 in Episode 6.

7.3.3.2 Group 2: Mapping Plan



Illustration 63: The mapping plan of Group 2 in Episode 6

Chapter 8 : Game Rule and Game Result – Hands-on

8.1 Hands-on 1. Coming of Age Test in Mekarang

8.1.1 Earth Legend

The Atayal senior gives you some samples of ma'aw fruits and tana leaves, then says, "Oh, young people, young people! Be brave! Be a sensitive monkey! With hearts! Go into the deep Mekarang rainforest! By yourselves! With Atayal technologies! Collaborate! Hunt the treasure Atayal plants! Eat them! Appreciate the food by God! To declare your adulthood! To transit into Atayal earth citizens! To make the world bountiful and beautiful! For another thousand years!"

8.1.2 Goal for Test

1. Find out at least 15 ma'aw trees and 10 tana trees in Pnmwan and Kaway, for each group
2. Eat at least 5 ma'aw fruits and 1 tana leaf with your lunch, for each volunteer
3. Draw the track on the map of your journey today, with at least 30 waypoints, for each group

8.1.3 Program

1. 09:00-10:00 - Orientation, at Mekarang Church
2. 10:00-11:30 - Challenge 1: The Adventure to Kaway, hiking from Pnmwan to Kaway
 - o Mekarang Church --(biking)--> Pnmwan --(walking)--> Kaway
3. 11:30-12:30 - Challenge 2: The Hunt for Ma'aw and Tana, around Kaway
4. 12:30-13:00 - Challenge 3: Eat Your WPC Fresh, at Kaway
5. 13:00-14:30 - Challenge 4: Find Your Way Home, hiking from Kaway to Pnmwan
 - o Kaway --(walking)--> Pnmwan --(biking)--> Mekarang Church
6. 14:30-16:00 - Mapping and Summarization, at Mekarang Church
7. 16:00-17:00 - Presentation and Atayal Coming of Age Ceremony, with Pastor Rimuy as the honored guest, at Mekarang Church

8.1.4 Navigation Tools

1. School Road Map: Pinpoint Pnmwan Bamboo Hut, Kaway Path, Kaway Orchard first
2. Mekarang Rainforest Map: for drawing track and adding waypoints
3. Smartphone with GPS: for knowing where you are and where have you been, by using OsmAnd / My Tracks in Android, OpenMaps / myTrack in iOS. Download Mekarang area map first for working offline

8.1.5 Atayal Plants of Interest

1. Ma'aw (馬告), tana (刺蔥)
2. Hom (山肉桂), ali (桂竹), Taiwan cherry (山櫻花), fern tree (筆筒樹), Taiwan tree fern (台灣紗羅), wild banana (野生香蕉)
3. Maple (楓樹), camphor (樟樹), pine (杉樹), peach (桃), plum (李), coffee (咖啡)
4. Singut (樹豆), shell ginger (月桃), taro (芋頭), giant taro (姑婆芋, non-edible), sweet potato (番薯), nest fern (山蘇)

8.1.6 Map Material

Shown as Illustration 48 and Illustration 49.

8.1.6.1 Game Result: Group 1



Illustration 64: The mapping result of Group 1 in Hands-on 1



Illustration 65: WPC check-in result on the Kaway Path of Group 1 in Hands-on 1.

8.1.6.2 Game Result: Group 2



Illustration 66: The mapping result of Group 2 in Hands-on 1.



Illustration 67: WPC check-in result on the Kaway Path of Group 2 in Hands-on 1.

8.2 Hands-on 2. Journey into the Unknown

8.2.1 Earth Legend

Unknown journeys for unlearning;
Rewilding the earth through Wild Perennial Crops (WPC);
Understanding WPC through indigenous food culture;
Using Wild PC to quest WPC;
Gaming is perfect for education;
Mapping is storytelling;
Undevelopment is innovation!

8.2.2 Unknown Journeys

1. Unknown destinations: Naro, Nahuy, Slaq, Zihing
2. Identifying the Wild PCs you brought with you today
3. Engaging with local seniors for directions
4. Points of interest: schools, churches
5. Plant of interest: wild bananas

8.2.2.1 Program

1. 09:00-10:00 - WPC Orientation: Can You Save Banana?
2. 10:00-11:00 - Storytelling 1: Unknown Journey by Summer
3. 11:00-12:00 - Storytelling 2: Unknown Journey by L. Bella and Rita
4. 12:00-13:00 - Indigenous Food Culture: Mekarang Church Lunch
5. 13:00-15:00 - DDD Game: A Journey to the Center of Banana Jungle
6. 15:00-16:00 - Group Discussion: Mapping and Summarization
7. 16:00-17:00 - Presentation: Storytelling of Your Nahuy Journey

8.2.2.2 Game Result: Group 1

Group 1 was assigned to find Naro (錦屏村) and the Presbyterian church and the primary school within. It turned out that they didn't find the destination but visited to Senior Dali's house (打立長老家). They drew their story on the poster.

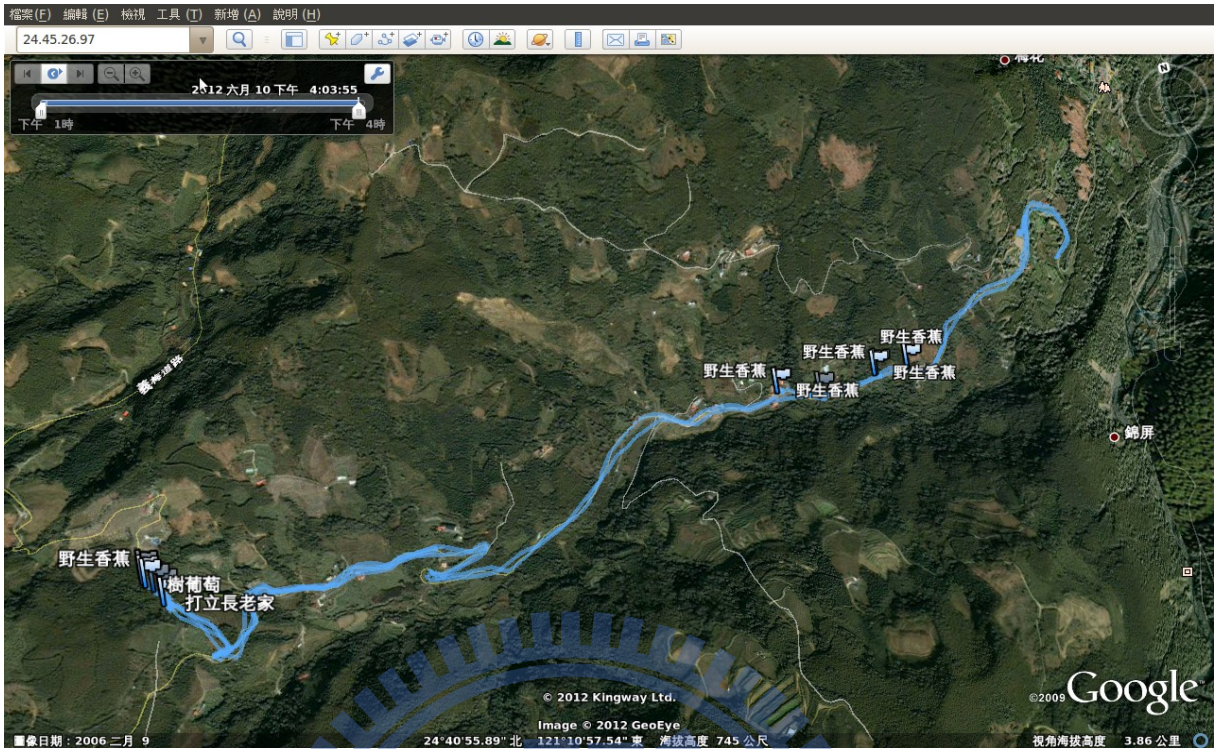


Illustration 68: GPS track and WPC check-ins from Mekarang Church to Senior Dali's house of Group 1 in Hands-on 2, Google Earth.

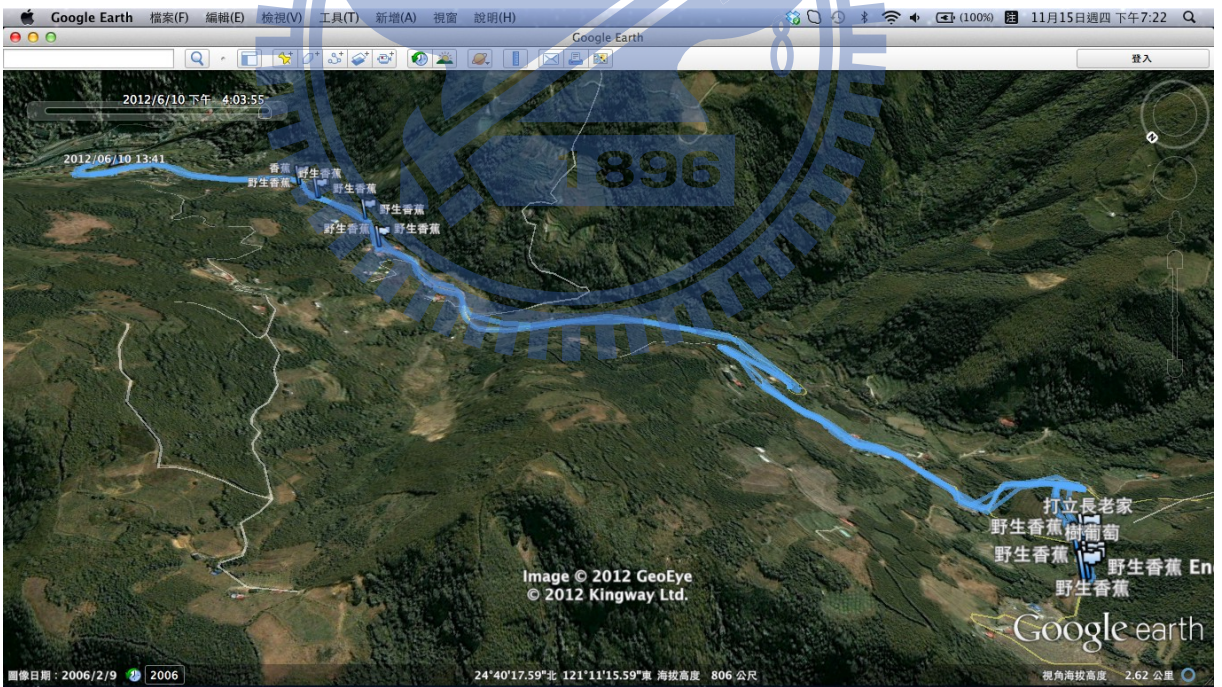


Illustration 69: Another view on GPS track and WPC check-ins from Mekarang Church to Senior Dali's house of Group 1 in Hands-on 2, Google Earth.

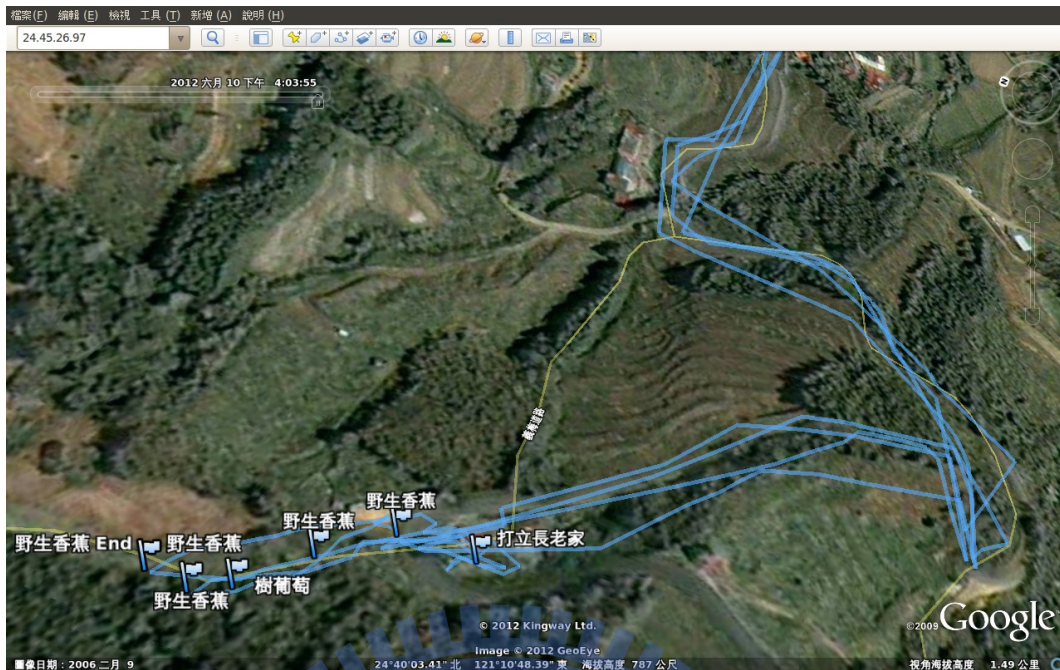


Illustration 70: Zoom-in on GPS track and WPC check-ins from Mekarang Church to Senior Dali's house of Group 1 in Hands-on 2, Google Earth.

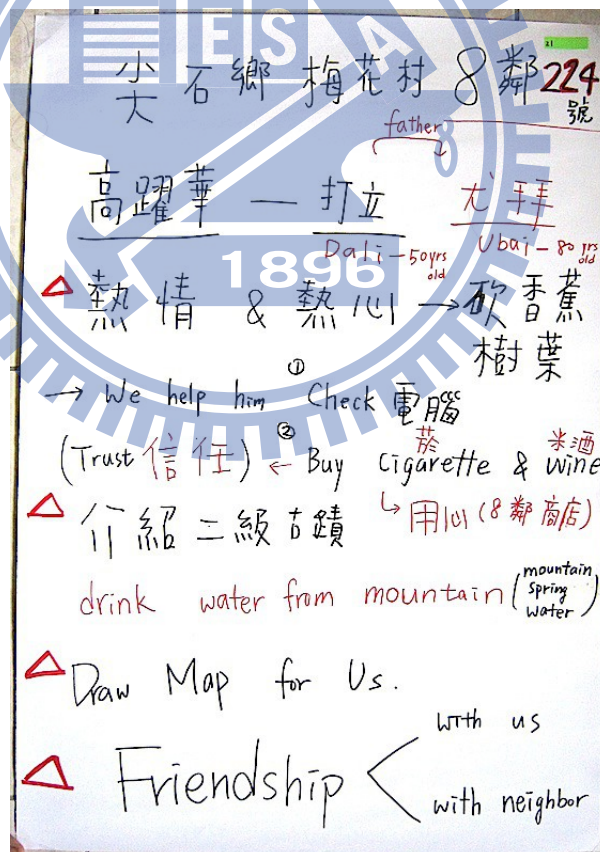


Illustration 71: Storytelling on the encounter with Senior Dali of Group 1 in Hands-on 2.

8.2.2.3 Game Result: Group 2

Group 2 was assigned to find Nahuy (嘉樂村) and the Presbyterian church and the primary school within. Due to running out of mobile phone batteries and transpiration issues, Group 2 didn't record GPS tracks for their journey and took free rides on the way to the destination and back to Mekarang Church. They used the poster to tell stories on the exploration.



Illustration 72: Storytelling on the exploration of Group 2 in Hands-on 2.

8.2.2.4 Game Result: Group 3

Group 3 was assigned to find Slaq (新樂村) and the Presbyterian church and the primary school within.

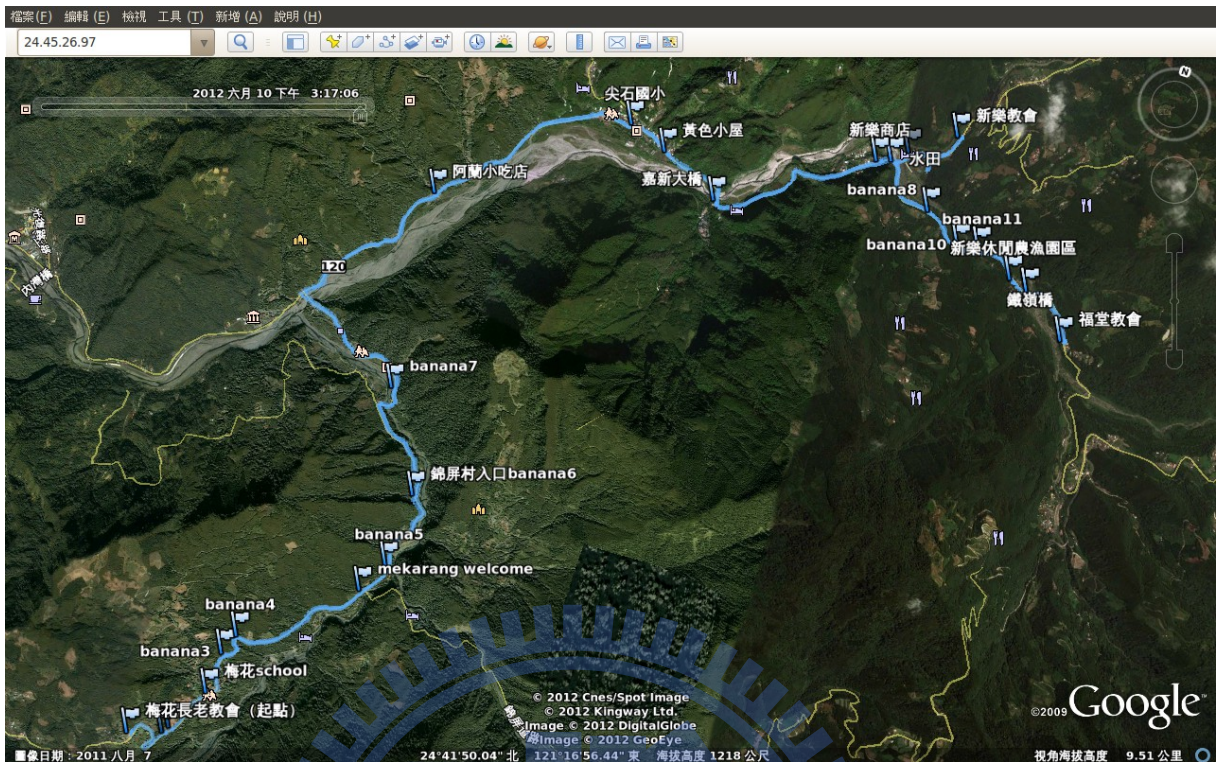


Illustration 73: GPS track and WPC check-ins from Mekarang Church to Slaq of Group 3 in Hands-on 2, Google Earth.

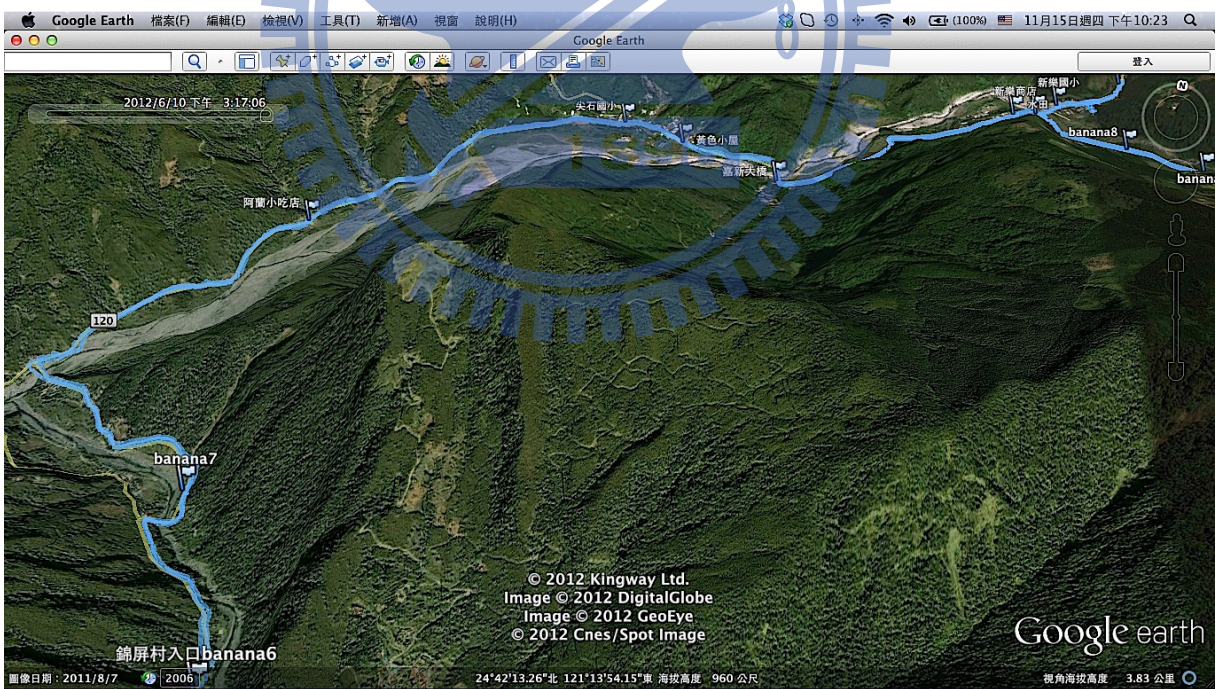


Illustration 74: Zoom-in on GPS track and WPC check-ins from Mekarang Church to Slaq of Group 3 in Hands-on 2, Google Earth.

8.2.2.6 Game Result: Group 5

Group 5 was assigned to find Slaq (新樂村) and the Presbyterian church and the primary school within.



Illustration 77: GPS track, photos and WPC check-ins from Mekarang to Slaq of Group 5 in Hands-on 2, MS PowerPoints.

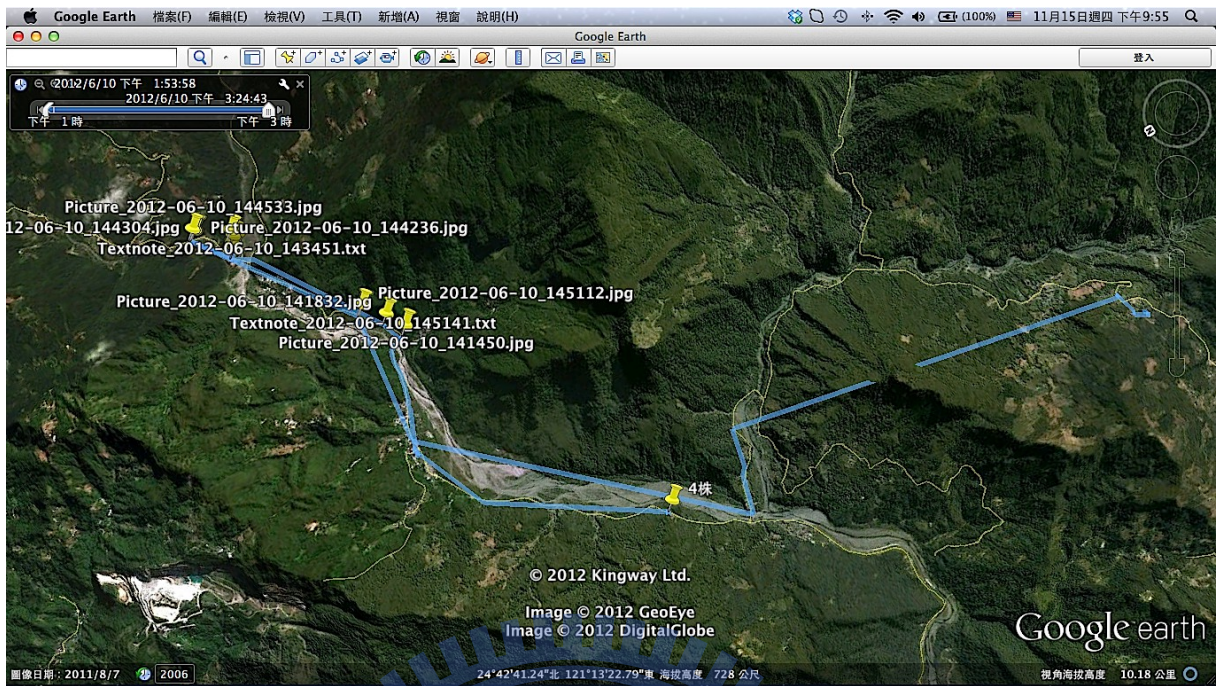


Illustration 78: GPS track and WPC check-ins from Mekarang to Slaq of Group 5 in Hands-on 2, Google Earth.

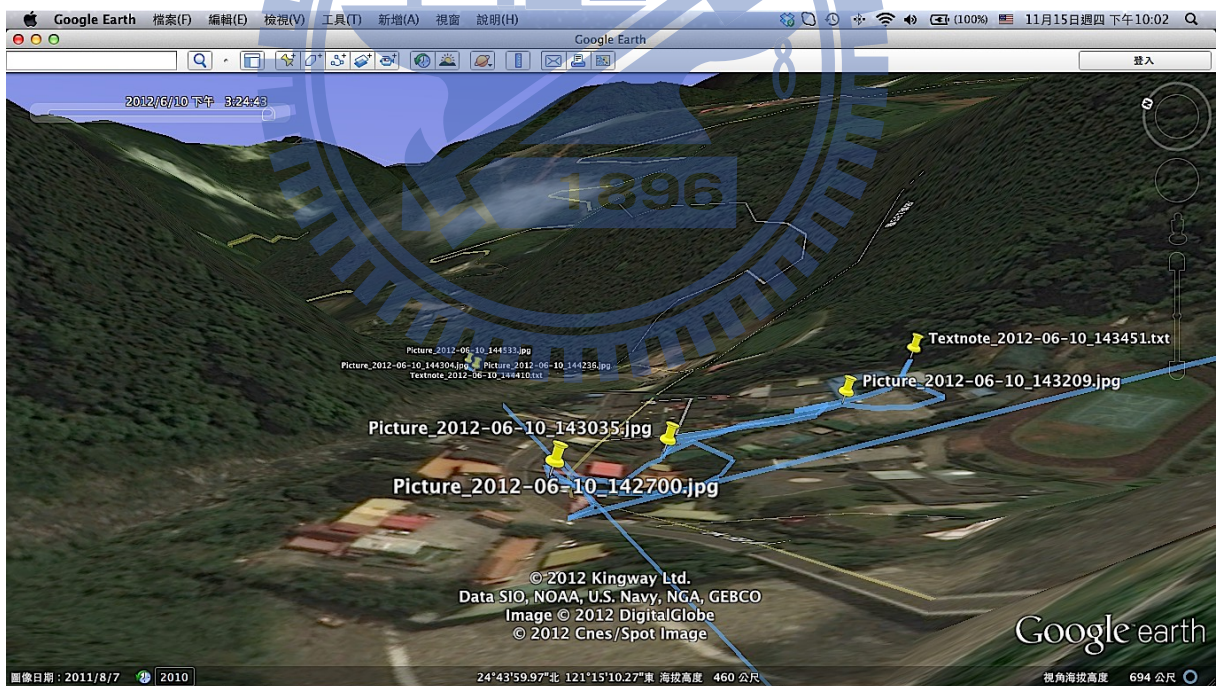


Illustration 79: Another view on GPS track and WPC check-ins from Mekarang to Slaq of Group 5 in Hands-on 2, Google Earth.

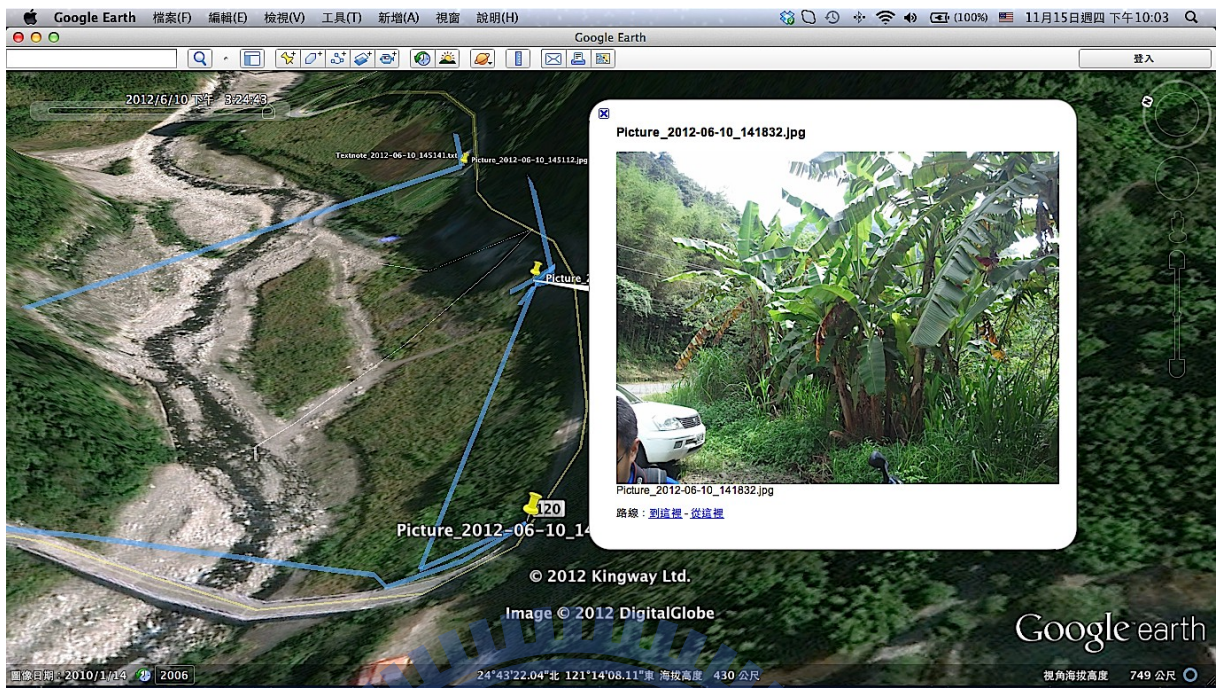
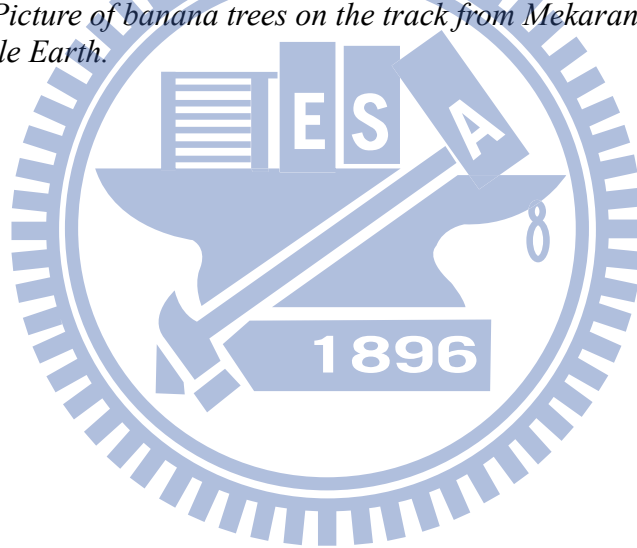


Illustration 80: A Picture of banana trees on the track from Mekarang to Slaq of Group 5 in Hands-on 2, Google Earth.



Chapter 9 : Conclusions and Discussions

9.1 Introduction

We can find answers from previous chapters to answer the research questions of Chapter 1. Chapter 4, 6 and 7 answer the 1st question; Chapter 4 presents us the content of 4 approaches of "Whole System Thinking" toward WPC and how RE integrated these contents into the game design; Chapter 6 and 7 show us their game rules and results of 6 episodes.

Chapter 5 and Chapter 8 answer the 3rd question. Chapter 5 tells us that RE used OpenStreetMap to edit a WPC centered and Atayal perspective map for the games; Chapter 8 is about hands-on activities that RE used to test the WPC game prototype.

In the following sessions of this chapter, I will continue to answer the 2nd research question from my field observations on how the game design did impact on learners in REA 12 and contribute my findings in LBG design with suggestions to the WPC game prototype.

9.2 Impact on the Learners

9.2.1 The Learners Gained Learning Experiences from Playing and Confidence to Share with Other People

I observed that the learners collaborated and shared knowledge to solve problems they had in games and the playing experience has become their own knowledge that gives the learners confidence to share with other people.

Hands-on 1 and 2, they are gaming activities that provide a longer period of time, more difficult tasks and larger game space than the others. After playing, the learners who had finished tasks and gained confidence from the gaming experiences, were more able to express their reflections and tell stories in a vivid way, compared with their reflections of previous activities.

In Hands-on 1, James reflected that through the age test game on the Kaway Path that he learned how to identify WPCs in the wild and said:

I want to conclude my reflection with six words for my group that is "Learning by Doing and Doing by Learning". (做中學、學中做)

Summer is an urban aboriginal of Amis. Her family had moved from home town to big city long time ago and her life has been influenced deeply by Han culture²⁷. In the previous activities, she felt stressed that as an indigenous youth, she had so little knowledge in indigenous cultures and could hardly express her reflections in depth. But after she finished Hands-on 2, she said:

...I could not express my reflections on the land that I live until now.

And also Rita's sharing in the same activity:

before I never tried to drive motorcycle from my campus to Mekarang and this is the first time for me to try. An old Chinese saying "Experience is the Mother of

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Wisdom" (不經一事，不長一智) could express my feeling.

Krystal is a shy girl and poor in presentation but, in Hands-on 2, I observed the confidence and excitement that she got from the gaming. She and her team member Meilani needed to find a place called "Nahuy" and locations of primary school and Presbyterian church within. The destination is around 5km from Mekarang Church. They didn't have motorcycle then, so they started their exploration from walking and inquiring information from passersby and had successfully taken free rides to reach destinations and to go back to Mekarang Church before the game was over.

9.2.2 The Learners Contributed Personal Knowledge Inside and Outside of Games

The learners contributed their personal knowledge inside of games to make playing more fun and they also practiced knowledge that learned from gaming in the real world which is outside of games.

In Episode 5, Marco, who is an undergraduate student of Department of Civil Engineering, NCTU, contributed what he learned from school. He proposed the height of Piling water dam and warned the consequences that tribal people and neighboring areas will have after the dam construction; tribal people will lose their houses and evacuate to other places; it will dry up Youlue River (油羅溪) and eventually influence the environment and tourism development of Neiwan.

In Hands-on 1, I followed Group 2 to explore the Kaway Path and observed Victor and Elton who were mountain climbing club members shared their climbing skills to help members climb steep slopes.

These above cases are learners' contributions inside of games. Daniel demonstrated a case that how he practiced knowledge that he learned from the gaming to engage with the environmental issues in Taiwan. He said:

When I traveled to Taidong, I was sad to see the eastern costal line destroyed by Meliwan Resort Hotel...I joined a meeting in Kaohsiung and shared my opinions with a person who has engaged in the movement of Anti-Meliwan Resort Hotel for some time...I said "the key factor to take into consideration of community management is to think from local people's perspectives and to keep the affection to the land that we live"...and he could not agree with me more...

9.2.3 The Learners' Empathy Toward Targeted Service Group Was Fostered by the Role-playing and the Virtual Stories Based on Real Events and Scenes in Games

From skills like role-playing and "reverse role-playing" used in the gaming, I saw great empathy for the local people emerged from the learners and the virtual story background based on real events and scenes augmented learners' learning experiences.

What is empathy? Empathy is the feeling that triggers you to feel as other people feel and improve your attitude and behavior toward other people or groups. If we want the learners to think from different perspectives and to think for targeted service group, they must have empathy from their heart instead of from the facilitators' instructions.

In Episode 5, it was played in a real scene which is Mekarang Village under a virtual scenario that the learners are government representatives in different eras. When the learners drew their plan on print-out maps, the facilitator encouraged them to look around surrounding mountains, rivers and houses and passersby and said,

the place that you are standing now is Mekarang Church at the elevation around 500m, after the dam construction which was designed by you, everything you can see from here will be flooded and disappearing...image that... (Apple Jia)

The learners' reflections on their dam projects are as follows,

Group 1

...and we call the new flooding area "Mekarang Tears", because when we build the dam and the water covers this area and people cry...because they lose their original homes so we call this "Mekarang Tears"...we're really sorry but we have to do that...so they may cry if they feel sad...because their original homes disappear...(Willy)

Marco, a member of Group 2, reflected that as a Civil Engineering Department student, he realized that what he learned in school and in the lab was not necessary working in the real world and he never knew that a dam construction will do impact on people's lives so much.

Episode 4 and 5 are similar to the construction and management simulation game "SimCity", mindsets behind them are to simulate the construction and development projects but are different in the game space they are played, SimCity is in a virtual world and Episode 4 and 5 are in a physical world; SimCity's players use the perspective of a mayor to develop an urban city; the players in Episode 4 and 5 using the perspectives of the rulers in Japanese Colonial era and Industrial Taiwan era were to plan the timber harvest and Piling water dam which are real events that had happened or are going to happen in Taiwan.

According to Lobo (2005), SimCity's black box unveils "an inherited colonial view of land as an infinite supply" and it as a game which has powerful influences in education for over a decade should not only teach power accumulation. It has been criticized for only teaching the unlimited development model but there are untouched issues about the development ideology.

Although game play of Episode 4 and 5 are similar to SimCity, RE's game design led the learners to play the role of "the rulers" and "the ruled" to know the negative side of development ideology and also to urge the learners to think for targeted service group that was the problem statement mentioned in Chapter 1.

Episode 6 is an undevelopment game that the learners used an Atayal mindset to manage local resources for the survival of different ethnic groups to live in Mekarang for 50-100 years. However I observed that the learners still planned a lots of development projects in Mekarang with an old mindset. I think that it is because the learners do not have much life experience in this kind of scenarios and we need to encourage the learners to do more exercises like this for them to have more imagination and practical ideas.

9.2.4 The Learners' Competence Was Improved Through Group Collaboration and Group Competition

Playing games is a team work and that is why it is easy for players to have collaborative behaviors. In group presentations, the facilitators asked every member to present

independently while demonstrating collaboration. I observed that high achievement learners taught and shared knowledge with low achievement learners, who improved their performance especially in presentation and communication skills from this learning environment.

9.3 Findings in LBG Design

9.3.1 Potentials to Foster Multidisciplinary Learnings

I saw the potential to develop multidisciplinary learnings in LBGs from the game result of REA 12.

In Episode 2, the learners drew the map and did the naming and geo-positioning for Points of Interests (POIs) with limited technology products in hand. Two groups used their feet to measure the distance among POIs and one group used motorcycle meters to do the measurement. From mapping results shown as Illustration 53, Illustration 54, Illustration 55 and Illustration 56, they tell us that without GPS devices which are using 3-D of geo-positioning technology, people still can use 1-D drawings as maps to navigate.

When the facilitators did the mapping preparation for games, we also figured out that the best way to do the geo-positioning for WPCs along the roads in mountainous areas is power poles that are artifacts distributing along the roads and marking with a series of systematic numbers on them. Therefore, the naming for WPCs could be like "A Tana tree is between power pole 梅花高幹 62 and power pole 梅花高幹 62 and 10 feet away from 梅花高幹 63 on 竹 62 (a tertiary road)", shown as Illustration 81 and Illustration 82.



Illustration 81: This is a tana tree founded on 竹 62.



Illustration 82: This tana tree is between power pole "梅花高幹 62" and "梅花高幹 63".

That's why RE added the power pole tags on Mekarang Road shown as Illustration 42 and School Road shown as Illustration 43.

From the example of Episode 2, it shows the potential to develop the learning of measure in Mathematics and Geography in games.

9.3.2 Incorporating Coincidence and Unplanned Events in the Real World in Game Design

Reid (2008) mentioned in her research that "Game designers have the opportunity to

incorporate artifacts, elements and events that might naturally occur in the real world into the game play so that a particular place becomes more meaningful". In RE's games, except "Coincidence" was one of the key design factors, I observed that "Unplanned Events" could create authentic playing experience although it broke the game immersion at the same time.

"Coincidence" is something we hope players to encounter under our designation. If the game designer could survey thoroughly on the local environment and weather conditions, it is even more possible to incorporate into location-based games.

The weather in Mekarang tribe from spring to winter, changes always with mist and rain. Compared with the artifacts like houses, water towers or power poles, the plants are much more challenging to be identified and to be located as they always grow up dramatically after raining and they look exotic and mysterious while covering with mist. Natural conditions like storms make the plant identification even more difficult. Human activities and seasonal changes like blooming or fruiting seasons will bring different outlooks to the same plants as well.

Mekarang tribe is a mountainous community with stories, history and traditional knowledge. By observing their land usage, resource management, cultural lives and so forth, game designers could integrate these historical, ecological and cultural layers into the game design.

"Unplanned Events" is something that players encounter out of our expectation and design . Although it breaks learners' sense of immersion, it also augments their playing experiences. For example, in Episode 2 and 6, learners had to finish their tasks on School Road and Church Road when it was raining, however it surprised us that the players related the raining atmosphere to that of the post disaster scenario as if playing in a "doomsday".

In Episode 6, learners had an unplanned encounter to Han people who own 513 Farm House (513 農莊), while role playing as Atayal and trying to finish tasks on Church Road. Han people drove a luxury jeep passing by them and asked them curiously what they were doing at the entrance of his house. At the moment, learners were shocked and speechless because they were so immersed in the gaming. The facilitators encouraged the learners to respond Han people's questions as a role of a learner not as a player in order to keep the game going. This event gave a convincing proof to the learners that Han people have higher economic status than indigenous people in the real world and the learners also integrated this impression into their mapping assignment later on.

9.3.3 Evaluation - Combining Quantitative and Qualitative Dimensions

Evaluation is necessary in REA12 because the facilitators must decide which learners are qualified to be the international volunteers and then the learners could get the permission and financial support from universities to apply services abroad after this training program. We could say that most participants are with strong motivation to join in the program.

The evaluation is divided into individual and group evaluation. The individual evaluation is mostly dependent on learners' absence and engagement in the program, competence improvement in English language, communication and collaboration skills and their understanding to the subjects delivered by RE. However if the learners' engagement is high but absence is lower than 4 out of 6 times (6 salons), we will strongly advise them to join the 7th Salon (hands-on 2) as the effort to make up for the low absence.

Group evaluation includes quantitative and qualitative dimensions, shown as Table 19.

In Episode 1, scores were given by 3 facilitators, Joy Tang, Arne Garvi and I. We used different dimensions that match to the facilitators' expertise to evaluate the learners' performance, shown as Table 20. In the end of the presentation, Joy reflected groups' performance with comments and I summed up scores for the facilitators to announce scores and ranking (details are shown as Appendix 8). I observed that the announcement made the learners feel frustrated and stressed.

In Episode 2, Apple Jia decided to design the score rule for Episode 2 and 3, like most games do, for the learners to focus on finding their target objects, as shown in Table 12 and Table 13.

After group presentation, the facilitators had no time to accumulate scores, so we assigned groups to calculate the points they got as a homework and at the end of the presentation, Apple Jia reflected groups' performance just like Joy did in Episode 1 with comments.

In Episode 3, to make the accumulation of score more efficiently, we asked groups to point out amount of missions they had accomplished with number marks in their presentation (see 6.6.5.1 and 6.6.5.2 of Chapter 6), so I could sum up scores before the end of this activity. From the lesson learned from Episode 1, we decided not to announce scores and ranking to the learners to keep the learning environment playful.

The comments from the facilitators towards the presentations as a qualitative evaluation has its significance in the process because it shows how the facilitators appreciate the learners' effort. In Episode 3, G1's score is much lower than G2 according to missions they had accomplished, but G2's reflection is not so deep as G1's. If we just look at scores, we will ignore that G1 had a deeper digestion to the knowledge learned from the seniors' sharing.

Table 19: The usage and result of group evaluation in Episode 1, 2 and 3

Game	Quantitative Evaluation		Qualitative Evaluation / Comments	Ranking	Notes
	Group	Score			
Episode 1	G1	8.25	your monkey group behavior like a family, like a team...awesome.	4	Accumulated scores given by Joy, Arne and I, the result is shown as Appendix 8
	G2	9	your ability to be empathetic, your empathy, you can relate our feelings.	3	
	G3	10.5	you inspire me to be playfulness, to be playful, it is childlike not childish.	2	
	G4	10.75	your human-less, selfless and unselfish.	1	
Episode 2	G1	X	you used tools to have a good numbering system for coordinates...you don't have to use 3-D coordinates...1-D is already enough...that's why in the past...	X	Score table was designed by Apple Jia, shown as Table 12.
	G2	X	your strength, you have very strong story telling capacities...describe smell..create your style to share stories...your story is fun and playful...even in the disaster we need to be playful.	X	There is no score result because learners didn't account the

	G3	X	you use digital tools to draw a very good map for yourself...you're very brave to find out different fruits and also you use a stone..don't think it is primitive...it is high tech..it is an inspiration.	X	scores by themselves, but eventually
Episod e 3	G1	144	I really like Sam's reflection...I mean this group, of course...the way he presented I think he really digested, so he has inner thought, so it is not superficial...I really feel the points have philosophy inside and deep thoughts. I really appreciate that.	2 (not annou nced)	Scores table was designed by Apple Jia, shown as Table 13. The result is shown as Appendix 9
	G2	205	for the points, I think the second groups seems to come to a little bit stronger...both team, I found out that your team work is strong...you shared the logs, you seems to be able to learn and teach each other...I really appreciate that from my perspective. I think the environment itself helped us.	1 (not annou nced)	

Table 20: Evaluators and evaluation dimensions of Episode 1, 2 and 3

Evaluator	Evaluation Dimensions
Joy Tang	Group dynamics
Apple Jia	Scoring rule design based on different games
Arne Garvi	English Presentation, body language and reflections on learning subjects
Synic Wu (the researcher)	Reflections on learning subjects

From the above, I concluded advices on evaluation for the facilitators to refer to,

1. If facilitators just give scores and ranking on learners' performance, it probably will make learners feel frustrated and stressed.
2. The way we evaluate groups' performance should depend on the goal of games and should be adjustable according to learners' reactions.
3. Evaluation in gaming should include both quantitative and qualitative dimensions.
 1. Quantitative dimension: scoring design help players to focus on missions and tasks.
 2. Qualitative dimension:
 1. different facilitators' point of views base on their expertise should be included in order to see learners' strength and weakness in a constructive and holistic way
 2. comments for learners should be given especially in group competitions
4. Facilitators should give learners time to do the reflections and from which facilitators could observe if learners had digested information into their inner thoughts and they were not giving superficial feedbacks to flatter or please the facilitators.

5. Playing games is a team work and that's why it is easy for players to collaborate. The facilitators should encourage group competition and group presentation. Facilitators should encourage every member to present and reflect to avoid learners' dependent behaviors or taking a free ride attitudes.

From Point 3-2, I think that we could expand comments to a virtual badge reward system which is similar to Foursquare's design to reward players. For example, in Foursquare, it will give players "Newbie", "Explorer" or "Adventurer" badges to reward their participation and in RE's games, it could give badge awards like "Family Monkey", "Playful Monkeys", "Empathized Monkeys" and "Unselfish Monkeys" to reward learners in Episode 1. With continuing participation in episodes, the learners will get a collection of virtual badges representing their personal learning history and accomplishment.

In Episode 4 to 6 and Hands-on 1 and 2, the ultimate goal of game play is not "winning over" other teams but how the learners collaborated in the missions and expressed their learning reflections are the key points for the facilitator to review. That is why RE didn't use the evaluation methods like they did before in these activities.

9.4 Making Suggestions to the WPC Game Prototype

9.4.1 Mobile Phone App Design

To finish this game design, the design of a mobile app supported by a web server and database for users to update and share WPC check-ins and photos should be taken into consideration.

This app could be downloaded via the internet to smart phones and provide a interface for users to collect OSM data for offline use and do check-ins for WPCs. The check-in data could be saved in smart phones until users update them to the web server through the internet for sharing.

9.4.2 WPC Icon Design

We could further design WPC into icons based on RE's analysis on their identification features shown as Table 7 to increase players' enjoyment while playing this game. After players update check-ins to the website, WPC icons will show on the map to demonstrate its distribution rather than just showing the ping points or WPC names.

9.4.3 Game Character Development

From the experiences we gained from REA 12, I suggested to further develop 4 game characters, including,

1. Mapper
2. Plant Expert
3. Explorer
4. Wizard

Mapper should be in the first order as a pioneer and his main job is to draw maps for areas where WPCs grow and do the map maintenance.

Plant Expert is the one who has the professional knowledge to identify WPCs; they are probably botanists or just plant lovers. Plant Expert does not necessarily need to visit to the

place where WPCs grow but can verify the plant data online through photos that were updated by players.

Explorer could do new check-ins or double check-ins and update photos and living conditions for WPCs; they are probably nature lovers, bikers or just passersby who have interests to know information of WPCs in their neighborhood areas.

Wizard is the most difficult part of game design in this context. As a virtual game host, Wizard which is a preprogrammed narrator in the application will provide different game rules and instructions, after players input some boundary conditions, like number of participants or specific locations. After playing, Wizard should give points and badge rewards to players' performance.

9.4.4 Reward System

Except points will be given to Explorers' contributions like number of WPC check-ins, badge reward is also important to high-light their special contributions and interests. Explorers who would like to check in Tana trees in different places could be given a badge like "Tana Explorer" or update Tana trees' living conditions in the same area as their responsible zone could be given a badge like "Tana Guardian".

Also, without Mappers and Plant Experts' help, the check-in results could be a mess and we should ask players to add points and comments on Mappers and Plant Experts for their contribution as credibility.

9.4.5 OSM as a Participatory Mapping Platform and its Related Ethical Issues

In Taiwan, PPGIS is a very popular method for academia and NGOs to engage communities to do the participatory mapping for public issues. Most PPGIS projects use Google Maps to ping point POIs and save the file as the .KML for sharing. However the background map is still based on Google Maps and its satellite imagery photos, the public can not edit, highlight nor remove data features of them. Besides, sharing the .KML is neither an efficient nor transparent way of collaboration on mapping.

There are some advantages to use OSM for participatory mapping,

1. Promoting public issues: like bikers' rights, conservation issues, culture reservations, urban and suburban tourism and so forth.
2. Global attractions: except filling up basic name in local dialect for an object, users could add additional names in different language to raise global attraction.
3. Open data license: for open sharing and redistribution of the collaboration, both uncommercial and commercially.

Here are some higher requirements of using OSM for participatory mapping that probably will discourage some users:

1. English interface: its interface is for English users.
2. Vector drawing skills: mappers must learn basic drawing skills to edit vector data.
3. Bad performance of Bing's satellite photos: Bing's satellite photos are not as clear as Google's and most of time, mappers need to refer to Google Maps' satellite photos for accurate map drawing.

The most controversial issue that using OSM or other map drawing system in location-based games is the possibility to destroy privacy of indigenous knowledges. Drawing a map is not only to delivery messages to users but through drawing mappers could find out secrets of the local environment like their land use ethics, natural resource, biodiversity maintenance and cultural heritage. Mappers who are bridging indigenous knowledges and users through representation of maps must notice the ethical issues involved here.

Indigenous people are not necessarily happy to share all they know with others because lessons learned that once outsiders obtain their knowledge, local assets will be stolen and destroyed. So I suggest that the location-based game design involving indigenous knowledge must collaborate with indigenous people and the indigenous people should have the authority to decide the level of data opening for their indigenous heritage.



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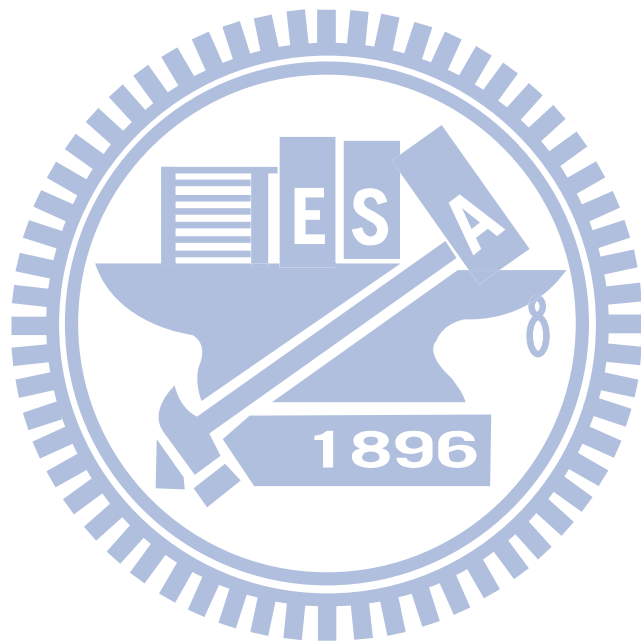
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Appendix

Appendix 1: Rewilding Earth co-founders' Professional Background

Appendix 2: Video Record List on 8 Salons of REA 12

Appendix 3: Interview List and Interview Records

Appendix 4: Mapping Schedule

Appendix 5: Learners' Attendance and Grouping in REA 12

Appendix 6: Original posters of learners' presentation in Episode 4

Appendix 7: Original posters of learners' presentation in Episode 5

Appendix 8: Scoring Results of Salon 1

Appendix 9: Scoring Results of Salon 3





Appendix 1: RE co-founders' Professional Background

Arne Garvi has 27 years of expertise in land and indigenous plants restoration specializing in the needs of the people in the world's poorest region of West Africa. His deep care for humanity reflects in his philosophy and creative design for innovation.

Apple Jia has pioneered community development and education in Taiwan for the past 15 years while promoting ICT4D in the developing countries addressing world critical issues such as rainforest protection and human capacity building.

Joy Tang worked as a Cisco Fellow for Cisco Community Development providing professional experiences onto the community organizations to better serve their constituency. Her experiences of enabling access to the Internet for the opportunity-poor regions from America to Africa and Asia since 1996 will be an added force to facilitate service-driven and human-focused innovations.





Appendix 2: Video Record List on 8 Salons of REA 12

Salon 1

Keynote

1. 191: Arne's speech
2. 192: Advantage and threat to WPC
3. 193: plant documentation, field station, seed bank, weather data monitor, direct seeding
4. 194: hand computer with GPS, harvest period of Wild perennials,
5. 195: from Niger desert to Indonesia rainforest
6. 196-197: story of Tanout
7. 198-199: students tasted the wild bananas
8. 200: Synic present banana story

DDD

1. 201-202: Apple introduced the game rules
2. 203-206: group1 played in the field
3. 207-209: group preparation for presentation
4. 210: Arne
5. 212: group1 presentation (presenter: Marco's group)
6. 213: voice sensibility exploring
7. 212: group2 presentation (presenter: Ali's group)
8. 215: group3 presentation (presenter: Jasmine's group)
9. 216: group4 presentation (presenter: NTHU James' group)*
10. 218: Joy's review on students' presentation
11. 219: evaluation report

Salon 2

Keynote

1. 0231: Joy's presentation, work in Cisco, Africa & India
2. 0232-0242: work in ACTOM, definition of technology, exercise co-creating value
3. 0243: important events of the Internet
4. 0244: connection, 2080, the Internet in Africa, models of Digital Centers,
5. 0245-0248: development dynamics, exercise: ideal learning hub for ADOC

DDD

1. 0250: group 1 presentation preparation (Sam)
2. 0251: group 1 presentation
3. 0252-0253: teach group 1 to organize the report
4. 0254: group 2 presentation (Josh)*
5. 0255-0256: group 3 presentation (Small Apple)

Salon 3

Keynote

1. 0265: April 22, 2012
2. 0266-0274: exercise 1: personal diet journal
3. 0275: exercise 2: ready for the feast, food safety
4. 0276: exercise 2: whole system approach
5. 0277: homework this week and also last week sharing

DDD

1. 0288: interview deacon's husband
2. 0290: interview decon's husband

3. 0289: interview another senior
4. 0291: interview another senior
5. 0292: interview another senior
6. 0294: group 1 presentation

Salon 4

1. 0310 : roles pictures
2. 0322:G2-1 present
3. 0323: afternoon session, preparation for reflection
4. 0326: G1-1 Refection
5. 0327: G2-1 Reflection
6. 0328: Briefing to Industrial Taiwan
7. 0329:G2-2 present
8. 0330:G1-2 present
9. 0331:explain of styrofoam model of Mekarang terrain
10. 0332: G2-2 Reflection

Salon 5

1. 00237: Big Bella & Elton share the ASUS Garden experiences
2. 00241-00242: Apple explain the game rule, how to develop local knowledge?
3. IMG_1763.MOV: group1 discussion
4. 00243: group2 discussion
5. 00245: group1 presentation (Josh's group)
6. 00246: group2 presentation (Willy's group)

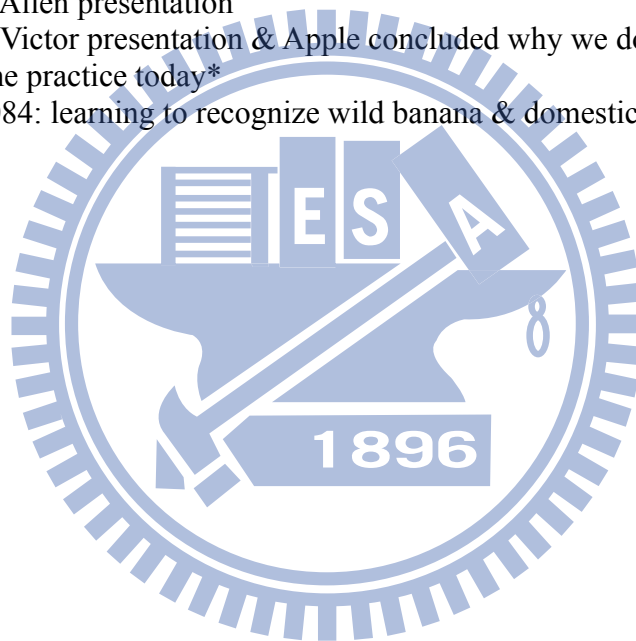
Salon 6

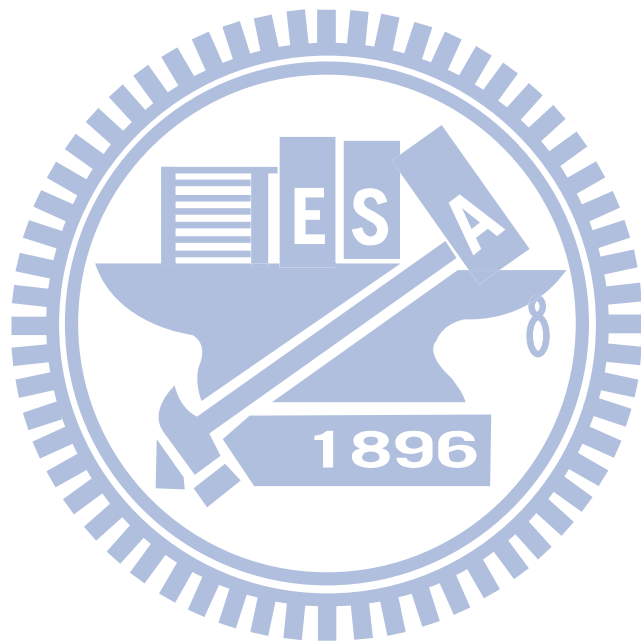
1. 0278: grouping
2. 0279: subgrouping and check cellphone
3. 0280:
 - briefing that we're new Atayal people and also earth citizen with modern device, bringing cellphone with GPS to complete the Atayal adulthood test.
 - explain the game rule
4. 0281: demo the the Kaway Path map
5. 0282: group 2(Vanessa from NCHU as the presenter) shared the ma'aw and tana taste
6. 0283: group 1(Sheng from NCU as the presenter) shared the ma'aw and tana taste
7. 0284:
 - Apple conclude the popular ma'aw and tana recipe
 - outdoor activity reminding
 - apps installation preparation
8. 0285: introduce Pastor Rimuy to students
9. 0286: G2 presentation
10. 0287: G1 presentation
11. 0288: students shared their reflection to the training in Mekarang Tribe
12. 0289: Pastor Rimuy's reflection to students' presentation
13. 0289: Apple made conclusion and invited Pastor Rimuy to pray for students

Salon 7

1. 00063: what is the typical day in Indonesia?
2. 00064:
 - assumption and enterprises, transportation in Taiwan & Indonesia
 - keywords: journey, WPC

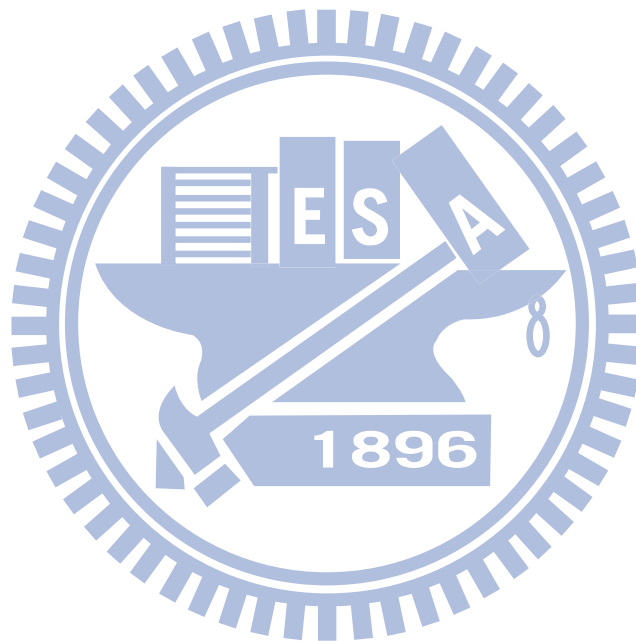
3. 00065: what are Wild Perennial Crops?
4. 00067: gene pool and the definition of what is "wild" perennial crops, banana, orangutan and panda are going to be extinct.
5. 00068:
6. 00069: endemic species & Sahara Desert & game rule briefing
7. lunch
8. 00070: no content
9. after the gaming
10. 00071: put your personal ICT devices on the chair
11. 00072~00074: tell us what is your assumption to bring these devices to join this training and to Indonesia?
12. 00075: Summer shared her journey story to Mekarang on this Wednesday
13. 00076: Rita & S. Bella shared her journey story to Mekarang on this Wednesday
14. 00077: G1 Vanessa & S. Bella presentation
15. 00078: G2 Krystal & Vanessa presentation
16. 00079: G3 Summer & Rita presentation
17. 00080: G4 Allen presentation
18. 00081: G5 Victor presentation & Apple concluded why we do this finding place in Atayal name practice today*
19. 00082~00084: learning to recognize wild banana & domestic banana leaves





Appendix 3: Interview List and Interview Records

1. 3/8: Interview to Pastor Sangas about the WPC in Mekarang Tribe
2. 3/9: Interview to Pastor Sangas about the WPC in Mekarang Tribe
3. 3/13: interview to senior women in the Mekarang church and Pastor Sangas
4. 3/18: Consult to Pastor Rimuy about the recommended families for students to interview in the Salon 3
5. 3/22: Do the observation and filming on Pastor Sangas' Atayal language class in Mekarang Primary School
6. 4/12: Interview to facilitators, Arne and Joy
7. 4/19: Interview to tribal senior Mr. Deling
8. 5/10: Interview to Joy as the designer of Whole System Thinking
9. 6/27: Interview to Apple as a mapper for the teaching program



Discussion Minutes 20120308 - with Pastor Sangas

Summary

- Sangas: We have the knowledge of what are edible what are not edible plants in the neighbour area and also in the deep mountains.
- Sangas: There's a story about an Indigenous people who was recruited by Japan army and turned out to survive in the forest in Borneo, Indonesia, after not knowing the WWII had been ended for over 30 years / He is an Amis / After war, he came back to the Eastern part of Taiwan / His name is 李光輝(Lee, Kuang-hui)
- Arne: this is a powerful story to show the valuable knowledge of indigenous people.
- Sangas: I have this kind of skills to survive in the mountains without bring bowels or salt, but just a knife.
- Arne: There're two things that I am thinking,
 - Sangas would be a very good teacher for us because his brain is the university for us to learn from.
 - We should know exactly where are the Wild Perennial Corps / A kind of sensitive question.
- Sangas: Some plants are poisonous, some will trigger allergy, some will cause diarrhea without proper way of cooking.
- Sangas: I am teaching native language in Mekarang Primary School / For junior students, I will show them the traditional plants knowledge in the neighbour are, for senior, I will take them to the mountains to learn.
- Sangas: according to my estimation, there are 7-8 species in this area and 2-3 more in the mountains.
- Sangas: I will also teach tribal kids to learn how to cook in the wild. After burning the dry and hard stones until red, we will throw it into tree barks with filling water to boil the meat or vegetables / Just like the way Amis in the eastern part of Taiwan cook.
- Arne: we could design an exercise for students to figure out how to cook without utensil in the forest.
- Sangas: you could also use the similar way to cook the sweet potato and yam, covering them with tree leaves and burying them with hot stone and dust / It is very delicious.
- Sangas: The knowledge is very good for people to survive if they want to survive after disasters / also very useful for young mountain climber if they were lost in the mountain.
- Arne: Share the experience about Amis and Morakot typhoon.
- Sangas: During the WWII, I studied as a jet pilot in Hsinchu Airbase. After Japan surrendered, there is a time interval for 2 months without any supply from Japan to Taiwan, we Indigenous people help to teach Japanese soldiers eat the wild plants.
- Arne: Do you use any skill to walk in the wild?
- Sangas: We do use some skills. 15 years ago, I walk from 梨山(a place in the Central Mountain Range among the border of Taichung City, Hualian and Ilan County) to 宜蘭(Ilan) with the speed of 12 km an hour in the mountain and achieve my destination in only 1 day.
- Sangas: There're 3 ways to eat the wild banana trees, to suck water of flower bag while thirsty, to eat the banana fruit and to cook the heart of the tree trunk with soup / there're 50 % of seeds and 50% of meat of the wild banana / eat the wild banana fruit

in raw only / the banana seeds are small and black / you can't eat too many wild banana seeds which will cause the constipation / cut the root of wild banana with knife to produce materials like cotton as the fire source / you could find domesticated banana trees in this area and in the mountains / dry the banana leaves as ropes to carry things in the mountains.

- Arne: I am a hunter for the wild bananas / people don't understand the function of seeds for genetic diversity.
- Arne: It is a good example because people know bananas. It is easy to tell the story.
- Arne: How you protect trees?
- Sangas: Even we cut the tree root to make fire source or eat the heart of tree trunk, trees will regenerate again.
- Sangas: Usually, the banana trees will start to bloom in the late March, start to fruit in April or May, after 3-4 months, the fruit will be ripe / the ripe speed depends on the sun direction / we could find wild banana trees in the valley where is always hot and humid.
- Arne: The banana is the only quest for us. Students could taste and geotag it.
- Sangas: We must be careful the domesticated banana trees with pesticide. People must not suck the water from the flower bag.
- Arne: In Orchid Island, we could find the wild banana trees which will die out in the future. We hope not that it will happen here.
- Sangas: It won't happen, because we need the wild banana trees to preserve the water resources in the valley / This is part of our traditional knowledge / The banana tree roots are very deep and could retain the water for 3 months in the valley but not in the mountain slope / we use the water for irrigation and household use / Young people don't have this knowledge.
- Sangas: The wild banana size is 12-13 cm / It tastes kind of wet, sweeter or drier compared with domesticated bananas / we will eat the meat with seeds and spit it out just like the way we eat water melon / we call it monkey's food / Monkeys won't suck the water of flower bag, but raccoons (Masked Palm Civet) like it very much.
- Arne: How do they prepare the food? Do they do anything with the food?
- Sangas: We mostly eat it raw on the spot when they're yellow ones. We'll take the green ones ready to ripe home, and put it in the sun to make it ripe faster / If there's no sun, we always keep the bananas at home for 2 weeks / We never dry, fry or cook bananas / Frost is not good for banana trees.
- Arne: Did you ever sell it? We're thinking about a whole eco-system. Collection in the wild, growing on the farm, bringing the food to the people from the Science Park.
- Sangas: No, we never sell it.
- Joy: The connection between 麝香貓 and in Indonesia and monkeys in Taiwan.
- Arne: Do wild banana trees have the same sprout season or it will take some time to sprout since the seeds are spited on the ground?
- Sangas: They have the same sprout season, mostly in March / If you want to make it sprout faster, you could use seedling.
- Arne: That's a clone. Just like trees have kids and kids mate to each other which will cause the genetic problems. It is not healthy. (Sangas don't agree with this point but can't say more for answering the calling from school)
- Sangas: I am not available every Thursday and Sunday. On Thursday, I need to deliver courses in the school and on Sunday, I have church activities to attend all day long.

Conclusion

- We'll meet next Tuesday morning around 11:00 at Sangas' house.
- In fact, there're 2 kinds of wild banana trees in this area.
- How to tell which one is domesticated or wild is their back leaves color. The domesticated one is whiter but the wild one is almost as dark as the front side.
- Sangas mentioned that there're many snakes near the banana tress. Arne mentioned that keep to make sounds with feet could scare snakes away. Apple said there're not many snakes nowadays.



Discussion Minutes 20120419 - with Senior Deling

- 1.香蕉樹跟筆筒樹
- 2.那個不能砍，我爸爸看到這種樹不能砍
- 3.那一顆你門叫什麼？talau
- 4.很新鮮
- 5.我門那邊是聯合國鄰，我是一鄰，大石頭是三鄰
- 6.馬告樹不一定長在潮溼的地方，種子掉在哪邊長哪邊
- 7.梅嘎蕨商店是你家開的？對
- 8.馬告樹，我們叫 ma'aw
- 9.ma'aw 的葉子像榕樹？榕樹比較寬
- 10.葉子就有味道
- 11.ma'aw 的根可以做中藥
- 12.仙草
- 13.名字 Deling
- 14.沒有賣醃豬肉，會做
- 15.甜柿9月就有了
- 16.田裡面的薑會倒掉，太多了
- 17.週日下午如果好天氣我不在
- 18.採桂竹筍價錢不好
- 19.人要大方一點會比較快樂





Appendix 4: Mapping Schedule

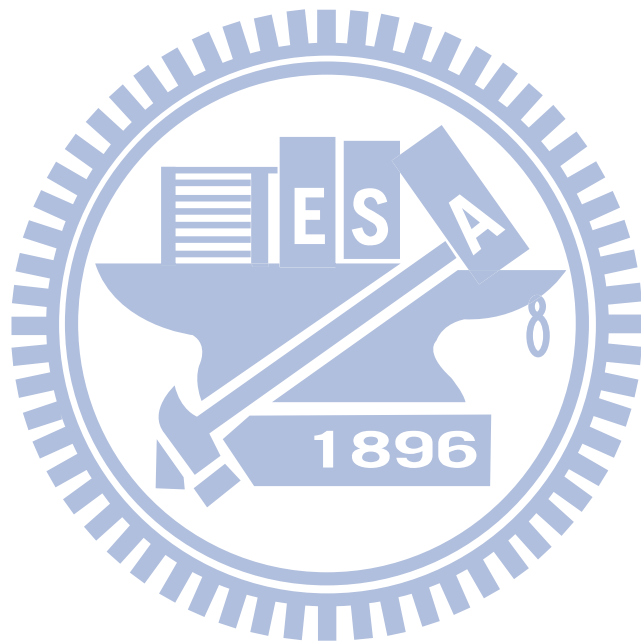
Note: before 4/4, only using iPhone 4S to do GPS tracks, after 4/4, using HTC Desire S and iPhone 4S at the same time.

1. 3/11
 - Subject: GPS tracking on Mekarang Primary School and nearby amenity
 - Participants: Apple & Synic
2. 3/13
 - Subject: GPS tracking on Mekarang Primary School and nearby amenity
 - Participants: Apple & Synic
3. 3/14
 - Subject: GPS tracking on Mekarang Primary School and nearby amenity
 - Participants: Apple & Synic
4. 3/17
 - Subject: photo recording on the domestic & wild banana trees of "Mekarang Road"
 - Participants: Apple & Synic
5. 3/22
 - Subject: GPS tracking and photo recording on WPC of the "School Road"
 - Participants: Apple & Synic
6. 3/26-3/27
 - Subject: GPS tracking from Tribe to Mrgwang Tribe
 - Participants: Apple, Arne, Joy & Synic
7. 3/31
 - Subject: GPS tracking on 竹 33, 竹 35 and Hengshan(橫山) to Zhudong(竹東) area
 - Participants: Apple & Synic
8. 4/01
 - Subject: GPS tracking on 竹 34, 竹 35, and Hengshan(橫山) to Zhudong(竹東) area
 - Participants: Apple & Synic
9. 4/02
 - Subject: GPS tracking on 竹 59, Matuy Tribe(馬胎), Zihing Tribe(義興部落) and Takay Tribe(達蓋部落)
 - Participants: Apple & Synic
10. 4/04-4/6
 - Subject: GPS tracking and photo recording on "School Road"
 - Participants: Apple & Synic
11. 4/14
 - Subject:
 - GPS tracking from Lesan Presbyterian Church(錦屏基督長老教會) on 竹 60 to Piling Tribe(比麟部落) and to Naro Tribe(那羅部落)
 - Recording power poles on "Mekarang Road"
 - Participants: Apple & Synic
12. 4/15
 - Subject: GPS tracking & recording power poles of "Mekarang Road" from the

- Mekarang Primary School to Mekarang Village Up N6(梅花部落上六鄰) and N6, N7 and N9(梅花部落六鄰、七鄰、九鄰)
- Participants: Apple & Synic
13. 4/17
- Subject:
 - Checking in WPC on the "Church Road"
 - GPS tracking & recording on power poles of "Church Road" to the Mekarang Village N4 and N5(梅花部落四鄰、五鄰)
 - Participants: Apple & Synic
14. 4/18
- Subject:
 - Checking in WPC on the "Church Road"
 - GPS tracking & recording on power poles of "Church Road" to 513 Farm House(513 農莊) and Meihua Guest House(梅花山莊)
 - Participants: Apple & Synic
15. 4/19
- Subject: Guided by Mekarang Tribe senior Mr. Deling to know WPC on the "Mekarang Road" & "School Road"
 - Participants: Apple, Arne, Joy & Synic
16. 4/20
- Subject: GPS tracking & photo recording on WPC in "Naro Tribe"
 - Participants: Apple, Arne, Joy & Synic
17. 4/24
- Subject: Double Checking in WPC on 竹 62
 - Participants: Apple & Synic
18. 4/28
- Subject: GPS tracking on 竹 58(水田道路) and Slaq Tribe(水田部落)
 - Participants: Apple & Synic
19. 5/1
- Subject:
 - Join Mekarang "Kaway Path" eco-tourism with tourists from the other church.
 - GPS tracking on & photo recording on WPC of "Kaway Path" and Mekarang Forest
 - Participants: Apple, Arne, Joy & Synic
20. 5/14
- Subject: GPS tracking on 竹 120, Nahuy(新樂) area and Lavender Cottage(薰衣草森林)
 - Participants: Apple, Arne, Joy
21. 5/27
- Subject: GPS tracking & photo recording on WPC of "Kaway Path" and Mekarang Forest
 - Participants: Apple & Synic
22. 5/29
- Subject: GPS tracking & photo recording on WPC of "Kaway Path" and

- Mekarang Forest
- Participants: Apple & Sunic





Appendix 5: Learners' Attendance and Grouping in REA 12

English Name/英文名	Sex(M or F)/性別	University/大學	Department/單位或科系	Attendance & Grouping/ 出席登記與分組表														
				Salon 1(3/25)	DDD Group / DDD 組別	Salon 2(4/8)	DDD Group / DDD 組別	Salon 3(4/22)	DDD Group / DDD 組別	Salon 4(5/6)	DDD Group / DDD 組別	Salon 5(5/20)	DDD Group / DDD 組別	Salon 6(6/3)	DDD Group / DDD 組別	Extra Salon(6/10)	DDD Group / DDD 組別	attendance subtotal
Elton	M	NCTU	Staff	1	Observer	1	G2 observer	1	G2 observer	1	observer	1	G2	1	G2	1		7
Daniel	M	NCTU	Teaching Assistant	1	Observer	1	X	1	X	1	G1	1	G1	1	G2			6
Victor	M	NCTU	Computer Engineering(PHD Candidate)	1	G1	1	G1	1	G2	1	G2	1	G1	1	G2	1		7
Crack	M	NCTU	Computer Engineering	1	G3	1	G3	1	G2	1	G1	1	G2	1	G1			6
Sam	M	NCTU	Electrophysics	1	G4	1	G1	1	G1	1	G1	0		1	G1			5
Josh	M	NCTU	Electronics engineering	1	G3	1	G2	1	G2	1	G2	1	G1	0	X			5
Marco	M	NCTU	Civil Engineering	1	G1	1	G2	1	G2	1		1	G2	1	G2			6
Willy	M	NCTU	Computer Engineering	1	G2	0	X	1	G1	1	G2	1	G2	1	G1			5
Allen	M	NCTU	Computer Engineering	1	G4	0	X	1	G1	1	G1	0	X	0	X	1		4
Ivy	F	NCTU	Communication & Technology	1	G2	0	X	0	X	0	X	0	X	1	G2	1	G2	3

(To be continued)

English Name/英文名	Sex(M or F)/性別	University/大學	Department/單位或科系	Attendance & Grouping/ 出席登記與分組表													attendance subtotal	
				Salon 1(3/25)	DDD Group/ DDD組別	Salon 2(4/8)	DDD Group/ DDD組別	Salon 3(4/22)	DDD Group/ DDD組別	Salon 4(5/6)	DDD Group/ DDD組別	Salon 5(5/20)	DDD Group/ DDD組別	Salon 6(6/3)	DDD Group/ DDD組別	Extra Salon(6/10)		DDD Group/ DDD組別
Big Bella	F	CHU	Staff	1	G1	1	G1 Observer	1	G1 Observer	1		1	G1	1	G1			6
Small Bella	F	CHU	Computer Science	0		1	G2	1	G2	0		0		0	X	1		3
Tabi	F	CHU	Tourism	0		1	G1 Observer	0	X	0		0		0	X			1
Krystal	F	CHU	Computer Science	0		1	G2	1	G1	1	G2	0		0	X	1		4
Small Apple	F	CHU	Tourism	0		1	G3	0	X	1	G1	1	G1	1	G2			4
Joyce	F	CHU	Computer Science	0		1	G3	1	G1	1	G1	1	G2	0	X			4
James	M	CHU	Computer Science	1	G2	1	G3	1	G1	1	G2	1	G1	1	G1			6
Cielo	F	CHU	Foreign Language	0		1	G2	1	G1	0		1	晚到, 未分組	1	G2			4
Summer	F	CHU	Foreign Language	0		1	G1	1	G1	1	G1	1	晚到, 未分組	1	G1	1		6
Rita	F	CHU	Computer Science	0		0		0		0		0		1	G1	1		2
Winnie	F	CHU	Industrial Management	0		1	G1	1	G2	1	G2	1	G2	0	X			4
Meilani	F	ASUS	Engineer	0		0		0		0		1	G1	1	G2	1		3
Angie	F	ASUS	Engineer	0		0		0		0		0		1	G1			1
Vanessa	F	NCHU	ASUS campus CEO	0		0		0		0		0		1	G2	1		2
Sheng	M	NCU	ASUS campus CEO	0		0		0		0		0		1	G1			1
total				12		17		17		16		16		18		9		

Group 2

★ Police Captain

- M:
- set policy / arrest
 - set budget
 - set quick bridge
 - Army / Police
- G:
- control their behavior
 - group people
 - people respect / justice
 - set money / security / construction
 - carry out / rule / law

Timber Industrialist

- M:
- build bridge / set road / road
 - build water / road
- G:
- build / house / Great paper

School Teacher

- M:
- teach Japanese
 - set school
 - Japanese courtesy
- G:
- improve Japanese comm.
 - Be a good Japanese
 - Japanese name

botanist.

- M:
- find new uses
 - training botanist
 - smart / supply / tree / wood
 - caring / still
 - discuss / new / good / place
- G:
- harvest / the / supply
 - egg / balance
 - plants

Medical Doctor

- M:
- +
 - syringe
 - pill
 - bandage
 - stethoscope
 - microscope
- G:
1. Every Japanese get used to the environment well.
 2. Taiwanese has good sanitary knowledge.

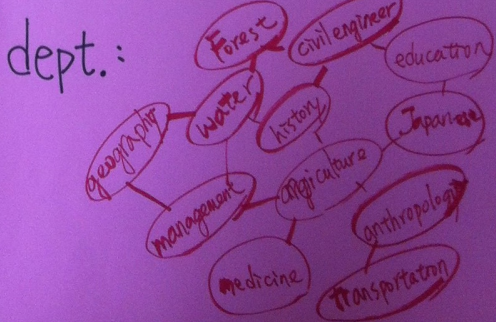
Anthropologist.

- M:
- Brain-washing the folks.
- G:
- Make them embrace Japanese culture / be eager to be Japanese

Volunteers

1. Teach them medical common senses.
2. Teach them Japanese & English / help them with their schoolworks.
3. Construct map-information system.

President of University.



Appendix 7 : Original posters of learners' presentation in Episode 5
Group 1

local governor
Meet The Requirement (SAM)
M: of IC Industried And Take Care of The Original Place

Water dam engineers:
M: build a dam. (Macro)

G: Water Supply For TSMC 18' Development of Sightseeing Tour Substitues

G: supply water to science park, also storage of water build roads.

build power plant Full use of water Flow from river Dam: H=300m A: ? V → large area

biotech scientist
(Daniel)

M: collect plants provide to hospital and research

G: develop medical technology

social scholar
(Allen)

M: 1 build mesuem 2 culture trip 3 culture creative 4 restaurant sell local food

G: 1 prevent culture popular 2 make culture 3 psychology

School teachers (APPIE)

M: 1 know the environment 2 chinese 3 writing 4 listening 5 know how to use 6 know what life style

G: Culture recording Can speak chinese fluently Vocational training can communicate with Han people

Principal

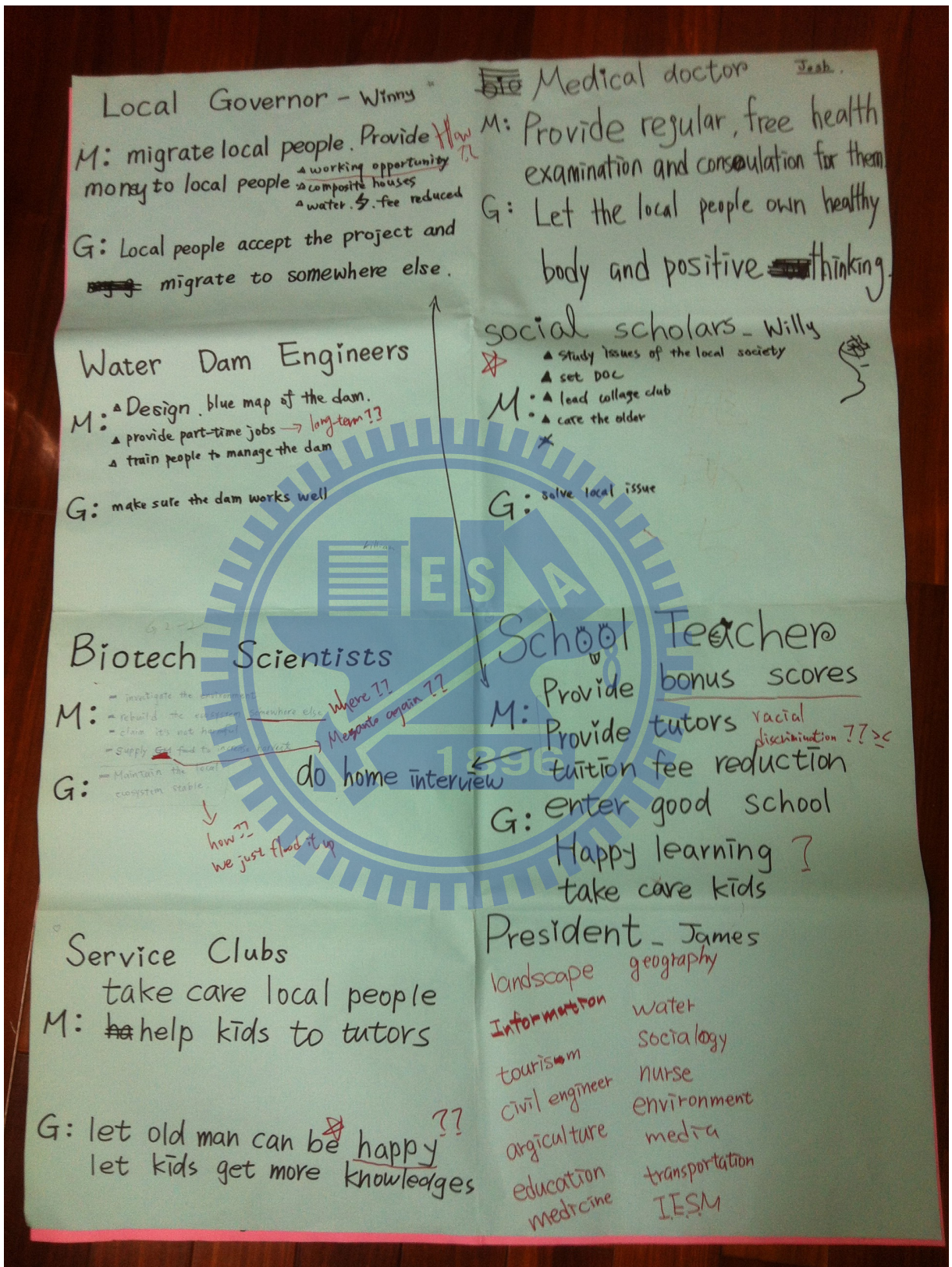
M: Civil Engineering biotech electronic engineering Environmental engineering NCTU CHU Foreign Language

G: Biz mangement Tourism Psychology

mountain people service
M: visit NCTU and NTHU & CHU Clubs: (Joyce)

G: Let Atayal know Han people education systems

Group 2



Appendix 8: Scoring Results of Salon 1

Total Scoring Table

Facilitator	Group 1	Group 2	Group 3	Group 4
Arne	2.75	5	4	4.25
Joy	2.75	2	3.5	3
Synic	2.75	2	3	3.5
Subtotal	8.25	9	10.5	10.75
Ranking	4	3	2	1

Arne's Scoring Table

ARNE total scoring

Team 1	Team 2	Team 3	Team 4
it is not nice to eat now = human, as monkeys will tend to eat fruits also unripe if hungry	good story telling	nice map	map
good performnace	nice map	so curious, abandoned house	fruit, not know if edible, take it
good performnace	fruits	empty banana tree	go into a dead end - wilderness
good performnace	monkey perspective picture	strange monkey - clever monkey - know it can't be eaten, pick one	monkey poses, king of monkeys,
fruit	food trail on the map	insect - larva	bambboshoot
	red fruit	explore abandoned chicken house	leaf
	other fruit	cabbage field	bananas
	fruits	snail	start to climb
	placed fruits out on map according to places they found it	bananas	our territory
	fruit good? Smelt it - sweeet smell		

Joy's Scoring Table

joy's comment & scoring					
Salon 1: DDD (Monkey Business)					
					Score
Group 1	1	1	1	1	4
	-1	-1			-2
Group 2	1	1	1		3
	-1				-1
Group 3	1	1	1	1	4
	-1				-1
Group 4	1	1	1		3
					0
					3

Comments

(--)

(+)

ref of church		identify food
		venture into food forest
ref of road		usage of nature objects for mappying
		monkey group behavior

afraid of reaching food		empathy
		fetch of the food
		senses of smell

identity of farm		bring nature in
		usage of the leave
		playfulness
		rich impression

		monkey homebase
		imaginative on threat
		humanless

Appendix 9: Scoring Results of Salon 3

Group	Quantitative Score							Qualitative comments
	Food name	Cooking technology	Recipe	Storage technology	Pertinent photos	Reflections	Total	
G 1	29	20	10	20	35	30	144	more reflections, poor presentation
G 2	75	20	55	15	20	20	205	dig out more information from the interviewees & good presentation

Notes: Scores and comments were given by Synic Wu

