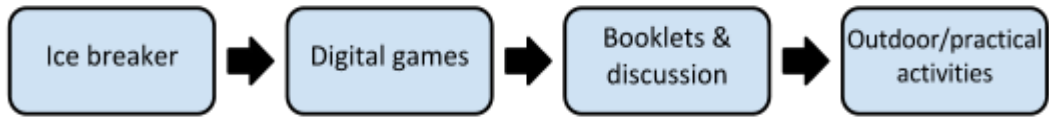
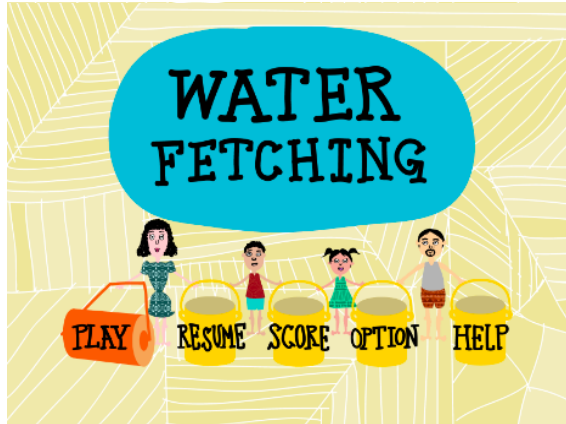


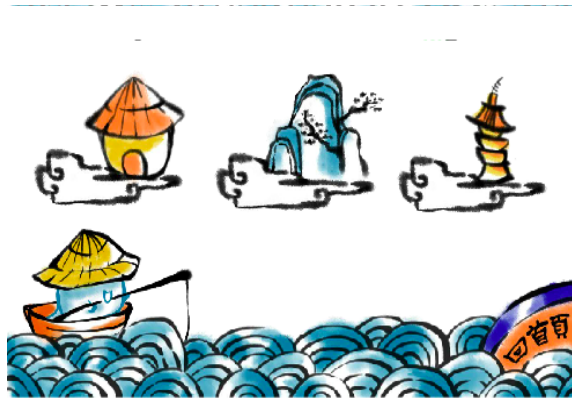
The Camp



1. Water Fetching



2. Water Distribution



3. Flood Protection



Modules/課程

1. Water and Climate Change/水與氣候變化
2. Water Footprint/水足跡
3. Water Security/水安全
4. Water Pollution/水污染
5. Water-related hazards/與水有關的危害
6. Water Management/水資源管理
7. Flooding and city planning/洪水和城市規劃
8. Drought and city planning/乾旱和城市規劃
9. Efforts in Water Education/為水教育所作的努力
10. Trivia Booklet/瑣碎的事實[小冊子]

Water and Climate Change 水與氣候變化

Table of Contents

1. Introduction to Climate Change
 - a. What is it?
 - b. How does it work?
2. How will Climate Change affect water resources?
 - a. Where water comes from
 - i. Mainly from surface water
 1. rivers and streams
 2. glaciers
 3. rain (rainwater harvesting)
 - ii. Underground
 1. water that percolates through the soil and porous rocks, forming an underground aquifer
 - iii. Other:
 1. ocean
 2. virtual water - through food imports
 - b. Surface water
 - c. Underground water
3. How will Climate Change affect water-related hazards?
 - a. Flooding
 - i. More frequent due to more intense rains
4. Climate Change and Taiwan
 - a. How much water from the rain is actually used in Taiwan ~22%

- b. Direct impacts
 - i. Rain
 - 1. Volume change
 - 2. Changing distribution patterns
 - 3. Seasons
 - ii. Extreme weather
 - 1. Increase in frequency (E.g. typhoons in Taiwan)
 - a. trend: average number of training days will remain the same
 - b. torrential rains during typhoon season expected to increase; in other words, the problem is intensity not the total number of days of rain
 - iii. Rising sea levels
 - 1. Coastal erosion
 - 2. Coastal flooding
- c. Indirect impacts
 - i. Food security
 - 1. Flooding - destruction of crops
 - 2. Drought - reduced yields

Water Footprint 水足跡

- 1. Definition
 - a. What is Water footprint?
 - b. How is it calculated?
- 2. Examples from research
 - a. tea
 - b. coffee
 - c. meat
- 3. How does it affect people?
 - a. Level of awareness
 - b. Consumption patterns
 - c. Would people change if they knew their water footprint?
- 4. How does it affect people in Taiwan?
 - a. Would citizens care even when water price is so low?
 - b. the importance of diet
- 5. Promotion of water footprint in Taiwan

Water Security 水安全

- 1. Definition
 - a. Availability

- i. Physical
 - ii. Clean and safe
 - b. Accessibility
 - i. Physical
 - ii. Economical
 - c. Integrated Water Resource Management
 - i. Finance, Planning, Agriculture, Energy, Tourism, Industry, Education, Health
 - d. Protection against water-related hazards
 - i. Floods
 - ii. Drought
2. Levels
 - a. National
 - b. Regional
 - c. Local
3. General Statistics
 - a. Most water insecure countries
 - b. Countries with most precipitation
4. Why is this important?
 - a. Essential for sustainable development
 - b. Food security
 - c. Improves gender equality
 - i. Women can invest in other skills
 - ii. More girls can go to school
 - d. Essential for survival of all species
 - e. Essential to reduce poverty

Water Pollution 水污染

1. Definition
2. Sources of pollution
 - a. Point
 - i. industry discharges
 - ii. domestic charges
 - b. Diffuse
 - i. Mobile sources - transportation
 - ii. Agriculture
 - iii. Transboundary pollution
3. Treatment/Taiwan
 - a. Process
 - b. Authorities

4. Water quality
 - a. Situation in Taiwan - pollution is washed away during flooding but pollution is carried down to coastal plains; Need to deal with industrial pollution (need to treat their own wastes).
 - b. Health and diseases
 - i. statistics
 - c. Standards
 - d. Nutrition

Water-related Hazards 與水有關的災害

1. Floods/landslides
 - a. Taiwan
 - i. Morakot
 - b. International
 - i. United Kingdom
 - ii. Bangladesh
 - iii. Thailand
2. Drought
 - a. Taiwan
 - b. International
 - i. Africa
 - ii. Australia7

Water Management 水資源管理

1. Taiwan Water authorities
2. Introduction to policies and water rights
3. Major water user (in order of priority)
 - a. Civil use
 - i. Efficiency
 - ii. Leakages
 - b. Agricultural use
 - i. Problems
 - ii. Solutions
 1. Smart agricultural practices
 2. Reclaimed water
 3. Rain collection
 - c. Industrial use
 - i. Manufacturing
 - ii. Power generation
 - iii. Tourism

iv. Other

4. How systems can be improved
 - a. Urban
 - b. Agricultural
 - c. Industry
 - d. Need for Integrated water management between all stakeholders

Flooding and city planning (comparison between Taiwan and International) 洪水和城市規劃

1. Engineering Approach
 - a. Dams
 - i. Problems with dams in Taiwan
 1. Ineffective
 2. Facilities getting old
 3. Limited resources and management
 - b. Dikes and Levees
2. Non-engineering Approach
 - a. Retention pools
 - b. Flood parks
 - c. Sponge city
 - d. Do nothing
3. Social management
 - a. Protocols before/during/after disaster
 - b. Flood forecasting
 - c. Warning systems
4. Performance - policies & planning are poor in Taiwan
 - a. Mountain roads act as city sewers during flooding
 - i. Rapid water flow
 - ii. Need better design
 - b. Private lands cannot be touched (i.e. installing retention ponds)

Drought and city planning 乾旱和城市規劃

1. Introduction to drought in Taiwan
2. Engineering Approach
 - a. Wells
3. Non-engineering Approach
 - a. Rainwater collection
4. Water Rights
 - a. Agriculture must pay for its losses - is this right?
5. Water distribution

- a. All industries
- b. Ethics: Social vs Economy vs Environment
 - i. Over extraction of underground water resources
 1. Situation in Taiwan

Efforts in Water Education 為水教育所作的努力

1. Government-led initiatives
 - a. Science and technology parks
 - b. Nature parks
 - i. Guandu Nature Park
 - c. Regulations
 - d. Early Warning Systems for Flooding
2. Non-governmental Organizations
 - a. Beach clean-ups
 - b. Across the Ocean - 沙巴Project
 - c. Taiwan Camp
3. Schools
 - a. Curriculums
 - i. more in-depth courses are available mostly in universities
 - b. Water-treatment ponds
4. Comparison with other countries
 - a. Most coastal and island nations invest similar amounts of efforts

Trivia Booklet 瑣碎的事實[小冊子]

1. Infographics
2. Random facts about or related to water
3. Is water a blessing or a curse?
4. Other resources