















【指導單位】中華民國環境教育學會、Project WET Foundation、 國立臺灣師範大學、行政院環境保護署

【贊助單位】滙豐(台灣)商業銀行股份有限公司

【主辦單位】社團法人台北市野鳥學會關渡自然公園管理處、 北區環境教育區域中心

【 時 間 】 2014年11月11日-12日

【會議地點】國立臺灣師範大學公館校區國際會議廳 (116台北市文山區汀州路四段88號)

【連絡方式】關渡自然公園 環境教育部

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【大會議程】詳見內文

【注意事項】此次會議強烈建議攜帶下述項目

- 1. 請攜帶環保餐具與水杯。
- 2. 為節約資源,本次不提供會議手冊,請至 (https://drive.google.com/file/d/08zvvICLLGIMBZXIDTFcwZ0s5X2s/view?usp=sharing) 下載電子版,或是掃描會場中所提供的 QR CODE。
- 3. 最愉快及開放的心情。
- 4. 本次會議有提供各位夥伴交流的平台,歡迎攜帶各單位的宣傳品相互交流!

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壹、水資源教育夥伴網絡(TWEPN)

一、緣起

Project WET 目前暫譯為水資源教育計畫,此計畫成立於 1984 年,由北達科他州水資源委員會所編定,目的是為了教育公眾有關於水資源教育與管理。1989 年,美國內政部墾務 (BOR) 開始資助該計畫,故此計畫轉為蒙大拿州立大學負責,且在美國其他州開始廣為推廣使用,此後也獲得美國環境教育委員會 (CEE) 的五年贊助。1995 年後陸續出版了「水資源教育課程和活動指引 (ProjectWET Curriculum Activity Guide)」、「生活用水與健康 (Healthy Water Healthy People)」、其他兒童專用手冊與故事書,給予教師教學上極大的幫助。

社團法人台北市野鳥學會關渡自然公園管理處從 2010 年起與滙豐 (台灣) 商業銀行股份有限公司、中華民國環境教育學會、北美環境教育學會 (NAAEE) 合作,且在 Project WET Foundation 授權與協助下,開始組織建立起臺灣水資源教育夥伴關係。在 2012 年出版第一本 Project WET 的繁體中文課程手冊「臺灣水資源教育課程簡要指引」,裡面收錄了「水資源教育課程和活動指引 (ProjectWET Curriculum Activity Guide)」的 16 個課程方案。長期關懷濕地環境教育的關渡自然公園成為在臺灣第一個推廣本套課程的執行單位,將關懷濕地能量擴大到水資源議題的關注。並將水資源教育的教學能力、資源、策略與教學方法分享給更多單位,建構屬於臺灣的水資源教育夥伴網路。

2014 年國立臺灣師範大學接受行政院環境保護署的委託,成立「北區環境教育區域中心」,期望建立環境教育夥伴網絡與資訊平台,並提供專業領導與增能學習機會,提升區域內整體的環境教育量能。今年度關渡自然公園與北區環境教育區域中心合作,於 11 月 11 日 -12 日辦理第二屆臺灣水資源教育夥伴網路年會 (TWEPN),本次水資源教育夥伴網路年會更邀請了美國、日本以及澳洲等地長期推動水資源教育工作的夥伴,透過這樣的經驗交流與夥伴關係建立的工作,目的在於串連起更多水資源教育夥伴網路,共同分享自身的成果給關心水資源教育的夥伴。並且廣邀更多關注水資源教育的夥伴,一同對臺灣水資源教育提供更多元、深入目廣泛的新力。讓臺灣的環境因對水的重視而更加美好。

三、關於 Project WET International Foundation

美國 PW 基金會於 1984 年啟動,已有 29 年的經驗,並且成功引領全球超過 45 個國家、500 個組織推動水環境教育,亞洲地區目前已經有中國大陸、日本、南韓以及越南等國

家。除了基本水教育課程方案外,包含社區居民、各級參與者、政府人員以及相關人士, 從小到大,從基層到高層都是該方案培訓的對象。

四、為何引進 Project WET Curriculum & Activity Guide

選擇原因包含:

- ▲ 教學對象涵蓋幼稚園到高中參與者為主 (K-12)。
- ▲ 教材彙集了創新的、第一手的、好用的、以及有趣的水資源相關資料。
- ▲ 教材活動形式多樣,包含大組與小組的學習,全身活動、實驗的操作調查、在地與 全球環境主題的討論、或是社區參與和服務等等類型。
- ▲ 教材中強化並注重現場活動與實驗操作課程。

此外,該教材內容主要以人與水之間的關係進行連結,提供完整的水教育方案,內容呈現水的物理及化學特性、水質與水量議題、水棲生物、生態系、以及管理策略。活動也強化批判性思考、問題解決技能等重要環境教育推展概念,得以協助參與者對水資源的需求與使用,進行審慎決定所需的知識與產生經驗。教材活動也整合了研究與學科,包括化學、物理、生活科學、地球科學、自然資源管理、歷史與文化等,可以讓使用者依照相關指引,並且依照其教學需要來組織相關活動單元,選擇合適的活動,幫助參與者建構與聯結知識、經驗、感覺和行動,讓參與者將水資源的相關概念保留下來。

	貳、大會議程
時間	議程 11/11 (二)
09:10-09:40	報到 Registration
09:40-10:10	開幕 Welcome and Opening Ceremony
10:10-11:30	講 座 : 日本 Project WET - 驚奇之旅 Topic : The Foundation of Project WET JAPAN 講 者 : 菅原一成 計畫副主持人(河川集團 - 日本 Project WET) Speaker: Kazunari Sugawara // Associate coordinator //Project WET Japan 引言人: 陳仕泓 處長(社團法人台北市野鳥學會關渡自然公園管理處)
11:30-12:10	講 座 : 2014 年水資源網絡工作報告 Topic : 2014 water resource network report 分享人: 陳仕泓 處長 (社團法人台北市野鳥學會關渡自然公園管理處) Speaker: Nelson Chen // CEO // Guandu Nature Park
12:10-13:10	午餐休息時間 Lunch time
13:10-13:30	本次與會夥伴介紹 -1 Introduction TWEPN Partners (1)
13:30-14:50	講座:台灣人與地下水的故事—共生、搶水、污染三部曲 Topic:The story of Taiwanese and Groundwater: Living, Snatch, and Pollution 講者:于立平製作人(財團法人公共電視文化事業基金會) Speaker: Syu,Li-Pian // Producer // Public Television Service TAIWAN 引言人:汪靜明博士(國立臺灣師範大學環境教育研究所)
14:50-15:10	茶敘 Coffee Break
15:10-16:50	講座:台灣水資源夥伴網絡在地化經驗分享-1 Topic:Local implementation of water education in Taiwan(1)分享人: 1. 柯勇全 課長 行政院農業委員會水土保持局 2. 邱姿蓉 主任 台達電子文教基金會 Speaker: 1.Taichung Branch, Soil and water Conservation Bureau Council of Agriculture, Executive Yuan 2.Delta Electronics Foundaction 引言人:許民陽 博士(臺北市立大學 地球環境暨生物資源學系)
16:50	賦歸 Ending

時間	議程 11/12 (三)		
08:50-09:10	報到 Registration		
09:10-09:20	開場致詞 Opening		
09:20-10:40	講 座 : 美國島木自然教育中心將 Brightwater Center 設施做為社區自然 教育資產的過程 Topic : Educational facility of Brightwater Center and how to use the community infrastructure as educational assets 講 者 : John Haskin 副總裁 (島木自然中心) Speaker: John Haskin // Senior vice President // Island Wood Nature Center 引言人: 周儒 博士 (國立臺灣師範大學 環境教育研究所)		
10:40-12:00	講座:日本 Project WET 在地化工作坊推廣過程與 未來校園課程發展規劃 Topic: The Localization case on Project WET material and workshop model, and Futuredevelopment targeting school curriculum 講者:管原一成計畫副主持人(河川集團-日本 Project WET) Speaker: Kazunari Sugawara // Associate coordinator //Project WET Japan 引言人:王順美博士(國立臺灣師範大學環境教育研究所)		
12:00-13:00	午餐休息時間 Lunch time		
13:00-14:20	講 座:社區投入海洋環境行動方案 - 澳洲案例 Topic: Engaging the community in marine environmental action programs, an Australian example. 講 者: David Kopelke PSM 校長(柏伊恩環境教育中心) Speaker: David Kopelke PSM // Principal // Boyne Island Environmental Education Centre 引言人: 陳仕泓 處長(社團法人台北市野鳥學會關渡自然公園管理處)		
14:20-14:40	茶敘		
14:40-16:20	講座:台灣水資源夥伴網絡在地化經驗分享 - 2 Topic:The implementation of water education at the local(2)分享人: 1. 汪俊良 主任 武荖坑環境教育中心 2. 胡秀芳 老師 鹿角溪人工溼地課程發展工作坊 Speaker: 1.Wang, Chun- Liang // Director // Wulaokeng Environmental Education Center 2. Hu, Siou-Fang // Teacher // 鹿角溪人工溼地課程發展工作坊 引言人:方偉達 博士(國立臺灣師範大學 環境教育研究所)		
16:20-16:40	表揚儀式與大合照 Recognition Ceremony & Group Photo		
16:40-17:10	問題討論與未來展望 Conclusion and Future Perspectives		
17:10	賦歸 Ending		

參、講座介紹

日本 Project WET— 驚奇之旅 The Program for Disseminating the River Education and Project WET in Japan



一、講者:菅原一成 (KAZUNARI SUGAWARA)

日本河川集團 - 日本 Project WET 副召集人。畢業於東京 學 藝 大 學,擁有 Project WET Facilitator、Project WILD Educator、Project Learning Tree Educator、RAC Trainer、NEAL Trainer (CONE Trainer)、Rescue3 Swift Water Rescue Technician1、Second-class Architect 等多項資格。從 2002 年開始投身於河川環境教育,除了是日本 Project WET 副召集人,同時也是河川集團內兒童教育方案的研究人員,擁有豐富的推廣經驗。近年除了在日本推廣演講之外,也到美國、韓國等地方以

講座的方式與其他人分享他的水資源教育相關經驗。

二、摘要

介紹河川集團在針對日本孩童在河川環境教育以及河川相關災害教育上的幾個議題,例如目前學校中的河川教育狀況、孩童在河川的事故對應策略以及日本 Project WET 的目前活動狀況。



The Program for Disseminating the River Education and Project WET in Japan

日本推廣Project WET課程與河川教育的計畫

Kazunari SUGAWARA

Researcher of Center for Supporting Children's Waterside Activities, The River Foundation Associate Coordinator of Project WET Japan







History and Background of Education on River Environment in Japan

日本河川環境教育的歷史與背景

History and Efforts of
River Environmental Education by
River Foundation

河川集團在河川環境教育的歷史與努力

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日本河川環境教育的歷史與背景



01

History and Background of Education on River Environment in Japan

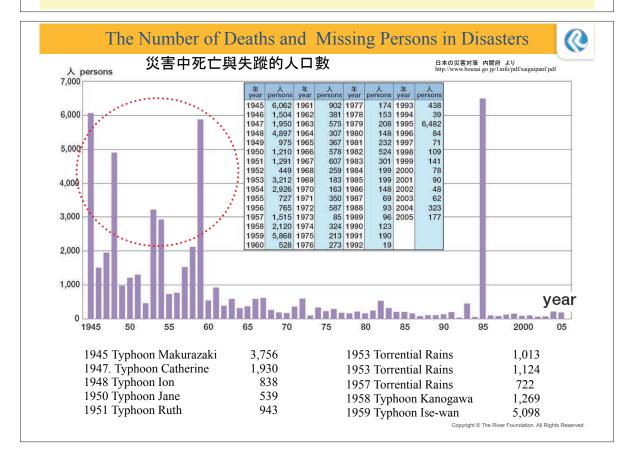
1.Nation Loosing access from Rivers during High Economic Growth period

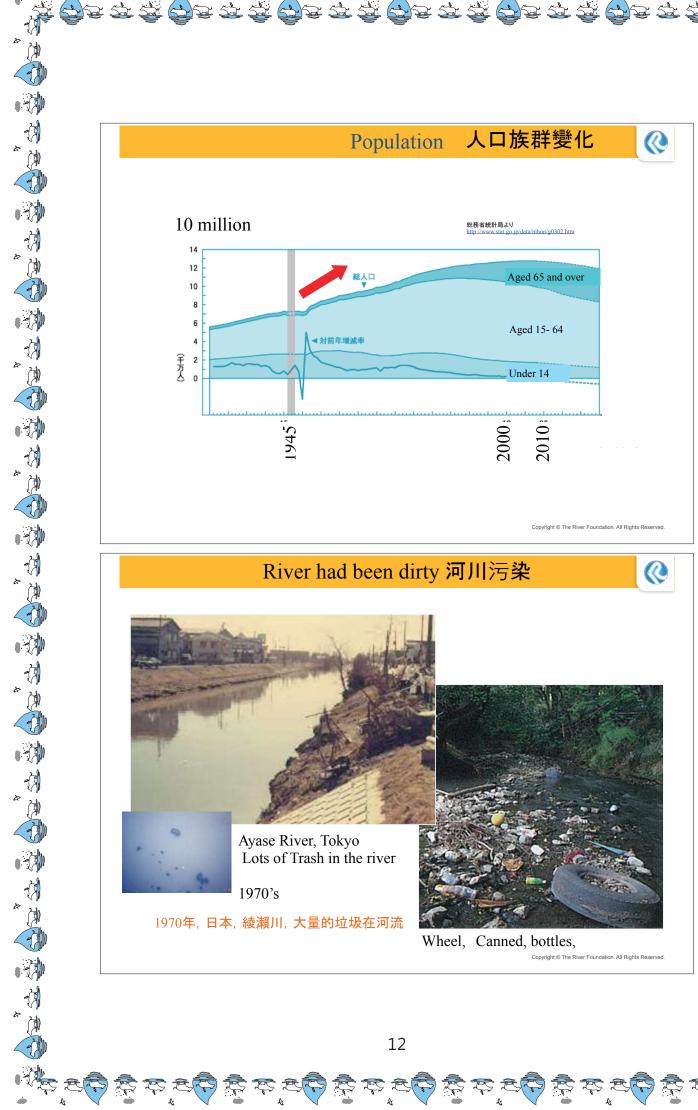
在高經濟成長期間, 國家對於河川利用的放任

2.Amendment of River Act, Readjustment of Education on River Environment, and Growing Importance of Experiential Activities in Education

修訂河川法案, 調整對於河川環境的教育及增加教育的經驗活動重要性

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River became backstage of the city



河流成為城市的後台



Flood countermeasure was conducted by cost minimum policy. As a result, cement concrete surrounded the river.

過去的洪水防治採取低成本工

程策略,導致河川被水泥牆所

包圍。



High wall of river bank made split from the city

河岸的高牆江城市與河川一分為二

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Long time ago, ... river and people



River as a life stage

很久很久以前,河川與人類....



Washing clothes in river (1940's)

在河邊洗衣



Played in the River 在河邊玩耍 1920's

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History and Background of

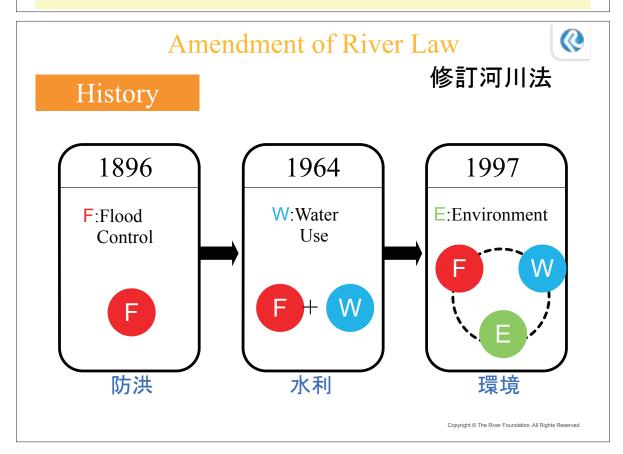
Education on River Environment in Japan

1. Nation Loosing access from Rivers during High **Economic Growth period**

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- Growing Importance of Experiential Activities in Education

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針對實現社會學習到河川 Aiming at Realizing 'Society Learning to river'



Sub committee of river council June, 1998

Main point of the report

了解到目前為止現代物質的文明的限制並承認河計畫的錯誤。 ● Recognize the limitation of modern material civilization and admit the mistake of river projects so far...

承認來自河的利益, 像是河川可以培育人的心, 以及河川是環境教育的有力地點

- Acknowledged the benefits from the river, as that the rivers could foster the hearts of people and they are the effective location of the environmental education 不單僅有河川管理人需擔任一個角色並且有所行動,河川的使用者、居民以及社區都需要
- Not only river administrator but also user, residents, community, local government should play a role and action 與教育部、環境以及國土交通省分享與合作
- Sharing and cooperation for Ministry of Education, Environment, and MLIT



4 Basic Policies

四個基本方針



- 1. Make Rivers Attractive to Catch People's Interest
 - →Many people must become interested in the river
- 2. Share Correct and Broaden Knowledge about Rivers
 - →Relation between human and environment, safe and wise use for river
- 3. Provide People with Opportunities to Learn to Rivers
 - →Motivation for environment, Attitude for self avoidance for danger
- 4. Continue Activities under Proactive Cooperation
 - →User, residents, river administrator, local government play each role and better cooperation is needed



Make rivers Attractive



Correct and Broaden Knowledge



Opportunities to learn
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4 Basic Policies



四個基本方針

- 1.讓河流有吸引力, 以趕上人民的利益
 - -將會有許多人對河川有興趣。
- 2.分享正確且拓寬關於河川的知識
 - -人類與環境、安全以及合理使用與河川的關係
- 3.提供人民有機會了解河川
 - -對環境的動機,為自己安全的態度
- 4.在積極的合作之下繼續活動
 - -需要使用者、居民、河川管理人, 地方政府扮演好自己的角色並







Correct and Broaden Knowledge



pportunities to learn
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The prospects of education for 21 Century

1996 Report by the Central Educational Council

21世紀的教育期望

- In order to foster the zest for living of Children, they need to experience the real nature and real Society. 為了培養孩子的生活品味, 他們需要經歷真正的自然與社會。
- Experiences are foods for children's growth and basic things fostering the zest for living.

經驗是孩子的成長的營養品、基本事物培育孩子的生活品味

- Today, Many children face <u>lack of direct experience</u>. 今日, 孩子面對的是缺少直接的經驗
- We need to provide many chance of experience for real life or nature to children.

我們需要提供更多真實的自然生活經驗機會給孩子們





Amendment of School Education Act 2001 修訂校園教育法

• Article No31 第31條

To further enhance 進一步提昇

Experiential learning activities for children

孩童的經驗學習活動

_Volunteer Activities 自願活動

Community Activities 社群活動

Nature Experience Activities 自然經驗活動

第31条

小学校においては、前条各号に掲げる目標の達成に資するよう、教育指導を行うに当たり、児童の体験的な学習活動、特にボランティア活動など社会奉仕体験活動、自然体験活動その他の体験活動の充実に努めるものとする。この場合において、社会教育関係団体その他の関係団体及び関係機関との連携に十分配慮しなければならない。(第49条、第62条で中、高に準用)

http://www.mext.go.jp/a_menu/shotou/seitoshidou/04121502/055/003.htm

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環境教育/從現在開始學習 Environmental Education / Learning from now on



- The prospects of Sustainable development - 1999 Report by the Central Educational Council

Environmental Education / Learning is necessary that following critical perspective. 環境的教育/學習需要以批判的角度來看。

1 Comprehensive 廣泛的

2 Clear Goal 清楚的目標

3 Emphasis on experience _{強調經驗}

Sensitivity for nature or mind for protect environment are cultivated through the a lot of real experiences of touching, surprising and fear in rich nature.

Especially during young age should need a chance of experience of high quality.

4 Community base 以社區為基礎

http://www.env.go.jp/council/former/tousin/039912-1.html Copyright © The River Foundation. All Rights Reserved.



加強環境保護與推動環境教育的法規



Law for Enhancing Motivation on **Environmental Conservation and Promoting of Environmental Education**



可持續發展的社會

Sustainable Society

環境的保護

Environmental Protection

加深理解且提高動機 Deepen understanding and raise motivation

環境動機 Env., Motivation

- Skill-up in workplace
- Personal Certification Information Improvement of manual
- Development of Site function
- · Cooperation of private sector
- Partnership

Env,. Education 環境教育

- · Assistance for School
- Env Edu in workplace



- · Active disclosure
- · Consider of the independent of private sector

Rediscovery Project on Children's 重新認識孩童在水邊活動的 **Waterside Activities**

國土資源部 MLIT MOE Ministry of Land, Infrastructure, Transport and Tourisr Ministry of Environment 教育部 河川 環境 MEXT Ministry of Education 教育

Relevant Ministries, region base, school and citizen volunteer in connection. 相關部門、地方社區、學校以及志工的連結

"Rediscovery Project on Children's Waterside Activities"



"Center for Supporting Children's Waterside Activities" was established in 2002 to support this project

孩童水邊活動支持中心

RECENT HISTORY of RIVER EDUCATION



YEAR	近年的河川。 MATTERS PO	X自歴史 DINTS
1997	"The River Law" was amended	Flood Control, Water Use + Improvement and Conservation of River Environment
1998.1	"Aiming at Realizing 'Society Learning from River'" was issued by the River Council	m Shorten the sense of distance between the people and rivers
1999.5	"Rediscovery Project on Children's Waterside Activities" launched (joint project of MLIT, MEXT, MOE)	Lead the children to the river side and let them notice or learn about the benefits and risk of rivers
2000.1	"To Enjoy the River with Knowing the Risk of rivers" was reported by River bureau	Guideline for safety river activity
2000.9	"River Activities Council (RAC)" was founded	RAC trains leaders for river experience activity and let children learn about the safety in rivers
2002.7	"Center for Supporting Children's Watersid Activities" was established (joint project of MLIT, MEXT, MOE)	e The center was founded in River Foundation
2003	"Law for Enhancing Motivation on Environmental Conservation and Promoting of Environmental Education" was established	MLIT: Ministry of Land, Infrastructure, Transport and
2003.10	"Project WET JAPAN" launched	MEXT: Ministry of Education, Culture, Sports, Science
2009.1	"Drowning prevention Measures in river" wannounced by MLIT	and Technology MOE: Ministry of the Environment River Foundation: Foundation of River & Watershed Environment Management

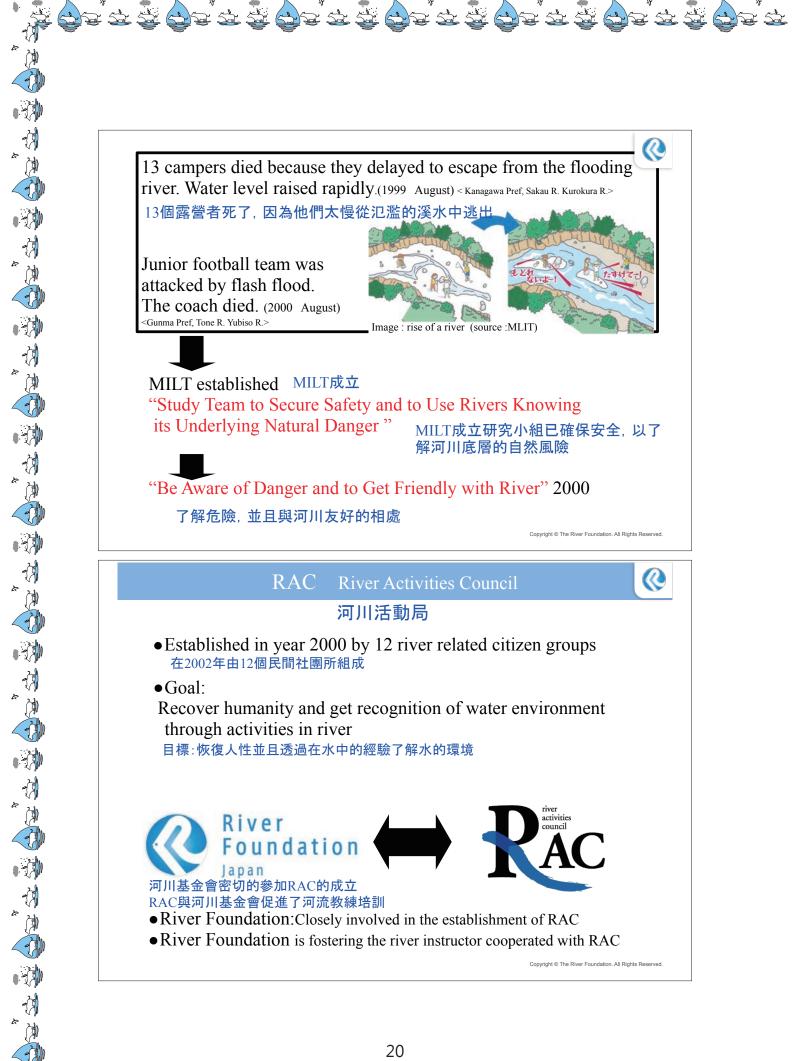
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History and Efforts of River Environmental Education by **River Foundation**

河川集團在河川環境教育的歷史與努力

- ▶1 Training for river instructor by RAC
 - 2 Provide Guidebook, leaflet, program, DVD for river education
 - 3 Lending river equipment as E-boat, Life Jacket, Helmet, etc.
 - 4 Countermeasure against drowning in the river
 - 5 Project WET Japan
 - RAC 訓練河川教練
 - 提供河川教育的指導手冊、宣傳單、計畫以及DVD
 - 3. 出借河川相關設備E-boat, 救生衣; 頭盔等
 - 4. 針對在河川溺水的對策 5. 日本Project WET



13 campers died because they delayed to escape from the flooding river. Water level raised rapidly.(1999 August) < Kanagawa Pref, Sakau R. Kurokura R.>

13個露營者死了, 因為他們太慢從氾濫的溪水中逃出

Junior football team was attacked by flash flood. The coach died. (2000 August) Gunma Pref, Tone R. Yubiso R.>







MILT established MILT成立

"Study Team to Secure Safety and to Use Rivers Knowing its Underlying Natural Danger" MILT成立研究小組已確保安全, 以了 解河川底層的自然風險



"Be Aware of Danger and to Get Friendly with River" 2000

了解危險, 並且與河川友好的相處

RAC River Activities Council



河川活動局

- Established in year 2000 by 12 river related citizen groups 在2002年由12個民間社團所組成
- Goal:

Recover humanity and get recognition of water environment through activities in river

目標:恢復人性並且透過在水中的經驗了解水的環境

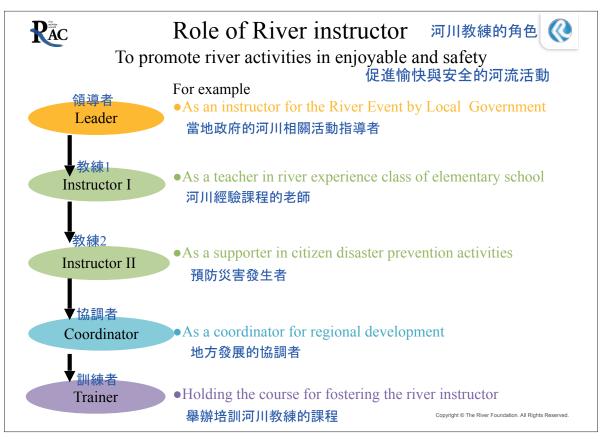




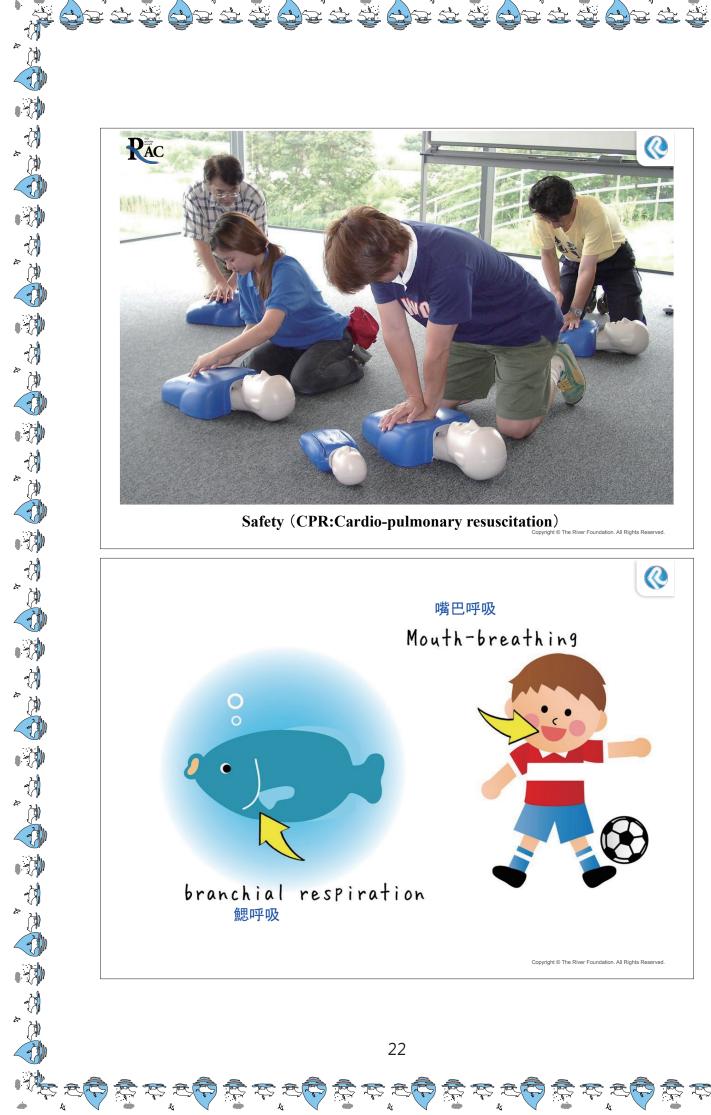


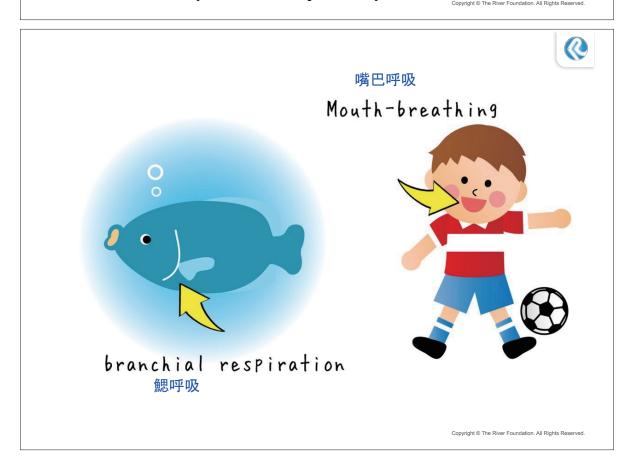
河川基金會密切的參加RAC的成立 RAC與河川基金會促進了河流教練培訓

- River Foundation: Closely involved in the establishment of RAC
- River Foundation is fostering the river instructor cooperated with RAC

















河川集團在河川環境教育的歷史與努力

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 - 4. 針對在河川溺水的對策
 - 5. **日本Project WET**

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Development and Distribution of Teaching material for River Education





Major publication 主要出版品





Experienced Study Program using 河川經驗教育 River Environment

- •11 Example
- Educational program 11個案例、教案





安全戲水在溪流 For Safe Play at Rivers [DVD and Handbook]

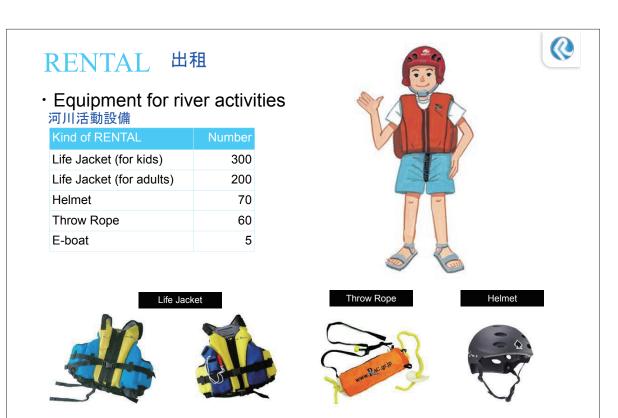
- Introduce the basic point for safety in river by movie and book
- for kids and for adults DVD 與 手冊



History and Efforts of River Environmental Education by **River Foundation**

河川集團在河川環境教育的歷史與努力

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 - 針對在河川溺水的對策 日本Project WET







History and Efforts of River Environmental Education by **River Foundation**

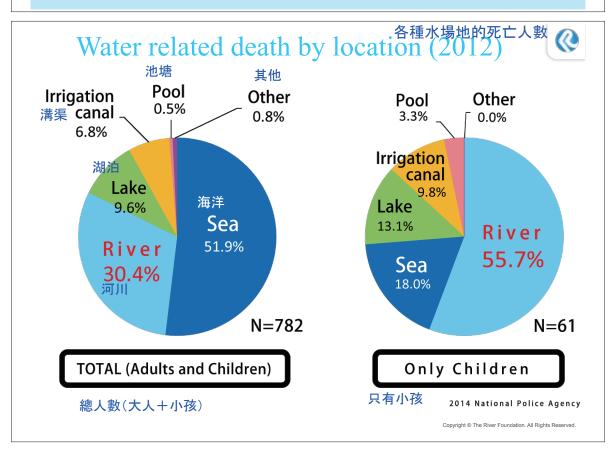
河川集團在河川環境教育的歷史與努力

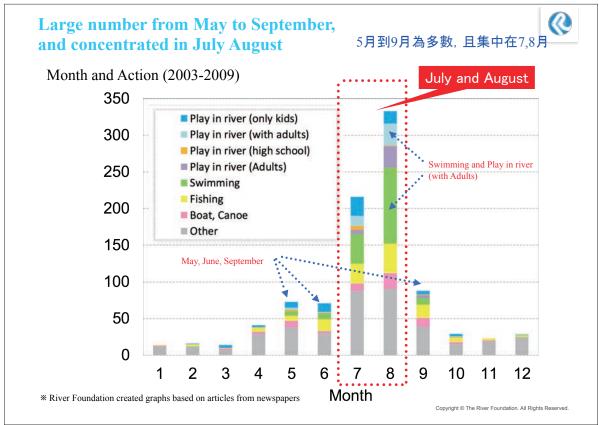
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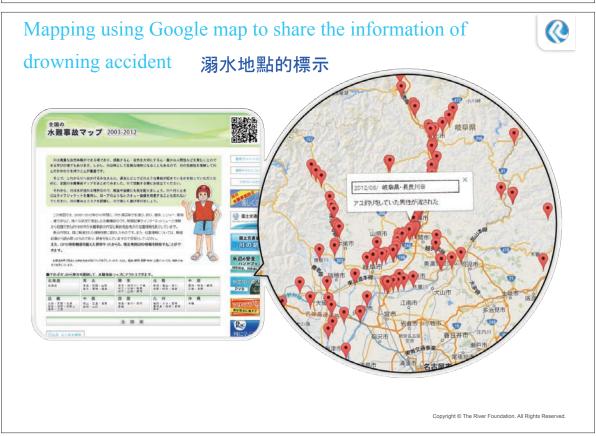
 - RAC 訓練河川教練 提供河川教育的指導手冊、宣傳單、計畫以及DVD 出借河川相關設備E-boat, 救生衣; 頭盔等

 - 針對在河川溺水的對策
 - 日本Project WET

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History and Efforts of River Environmental Education by **River Foundation**

河川集團在河川環境教育的歷史與努力

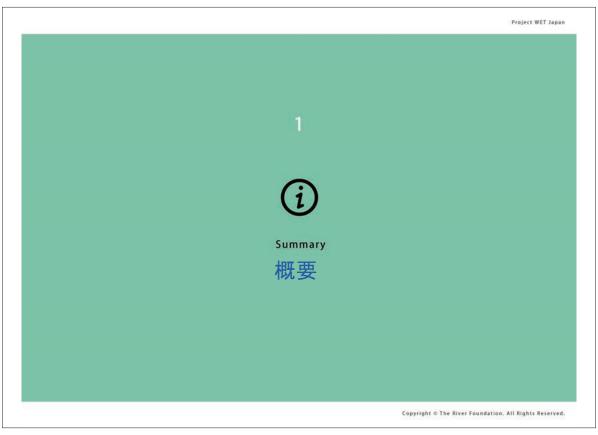
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 - 日本Project WET





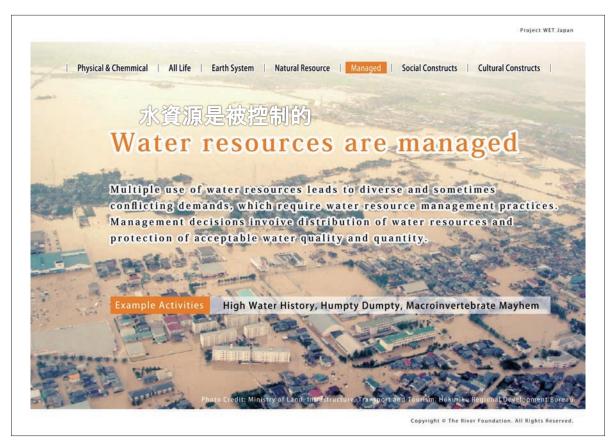
















Project WET Japa

Let's

TRY! 來試試看吧!

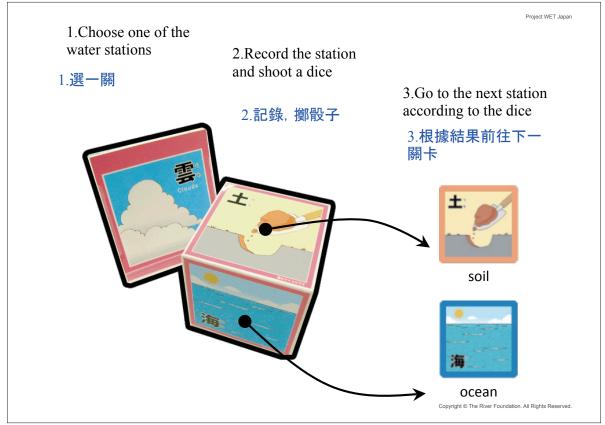
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Imagine the Water Cycle

想像水的循環

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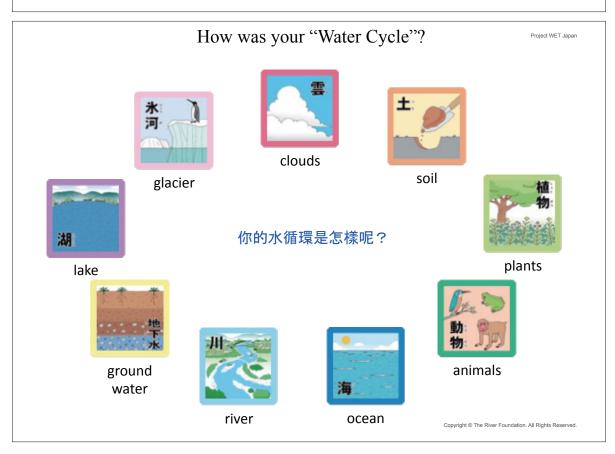
Project WET Japan



"STAY" means you stayed the same station so you should shoot the same dice. You should record anytime you stay at a station.

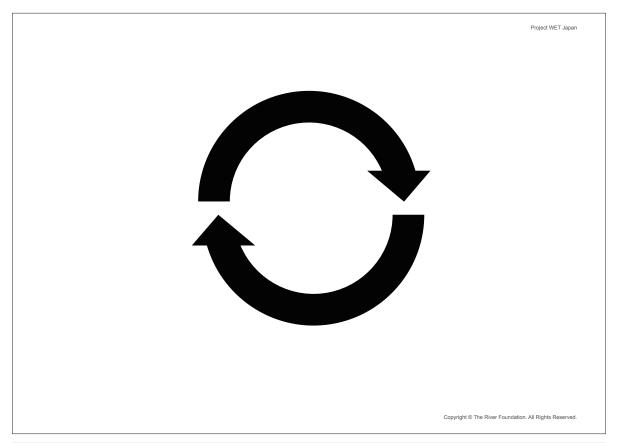
"STAY"表示你停留在同一關卡, 所以你應該在記錄一次。應該要記錄你任何時間所停留的關卡

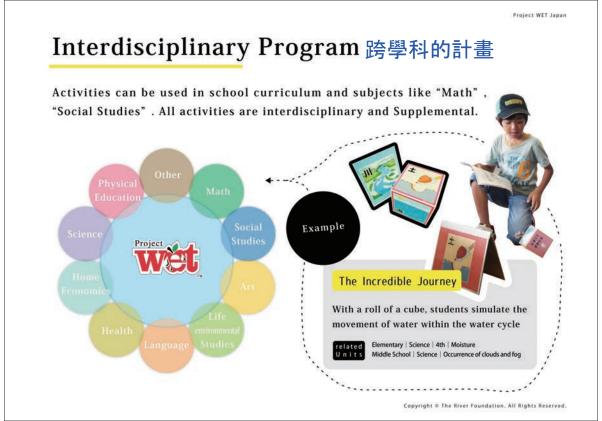
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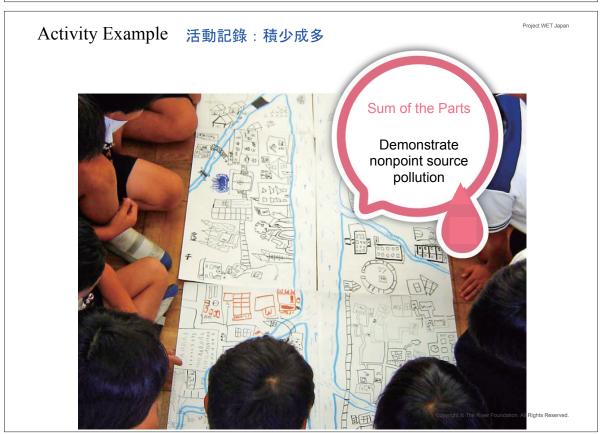




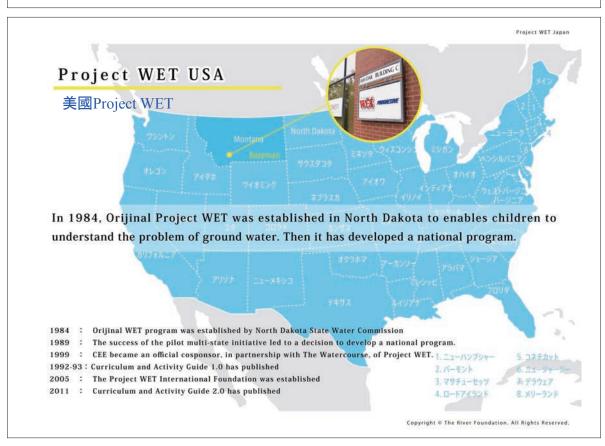














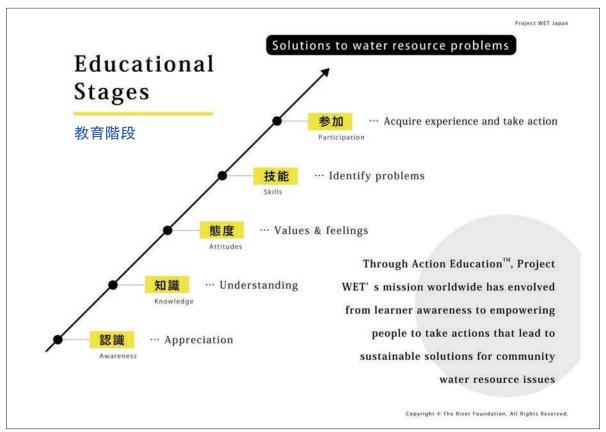
Project WET禀持著下列信念

Project WET Japan

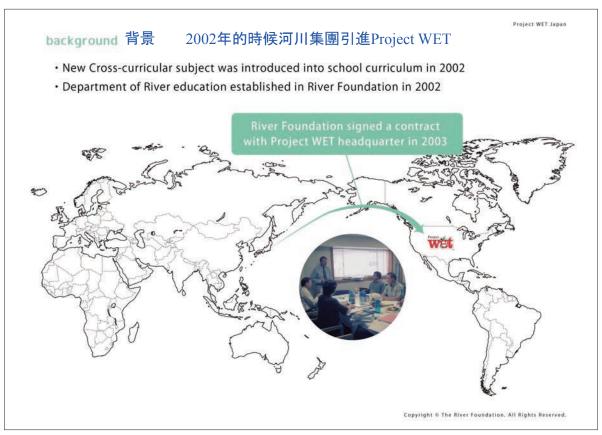
Project WET is grounded in the following beliefs:

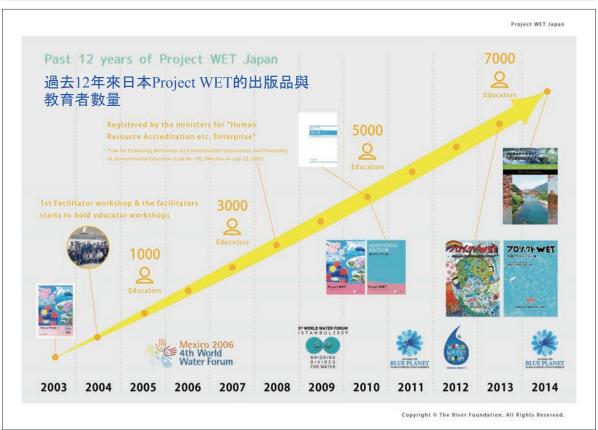


Awareness of and respect for water resources can encourage a personal, lifelong commitment of responsibility and positive community participation 對於水資源的意識與關心,可以激發出個人的終生承諾與積極的社區

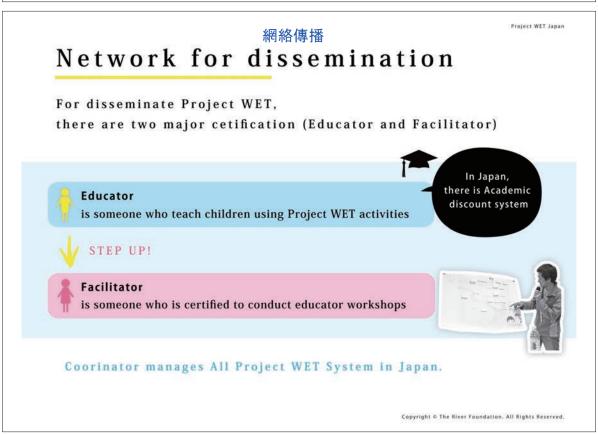


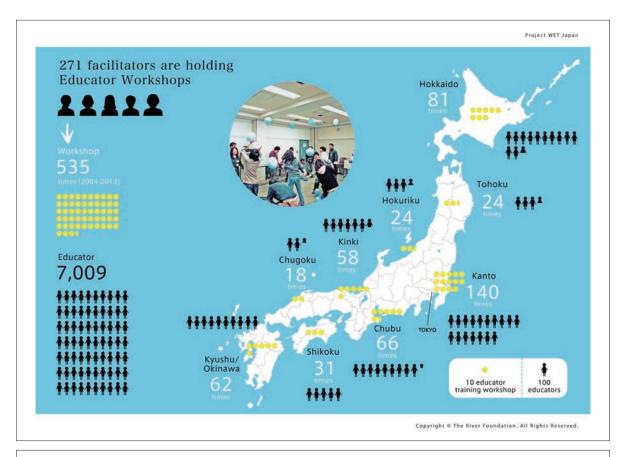






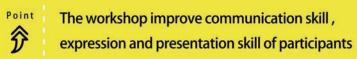






基礎工作坊 Project WET Jap

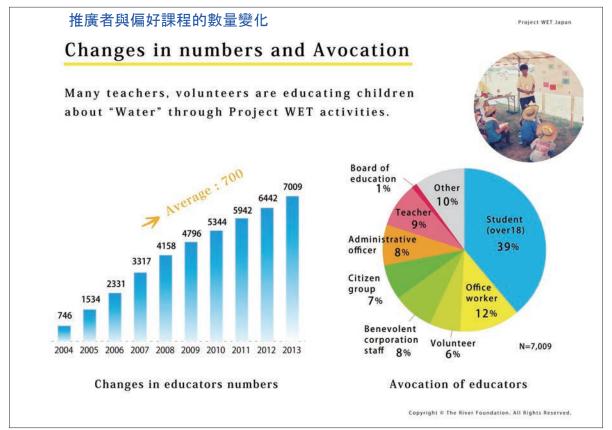
Partcipatory and experienced-based workshop



Ih the workshop, participants can learn not only Project WET activities and teaching method, but also how to organize group work and presentation through training. In the process, their business solution skill and presentation skill improve.



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"Water cycle" In the curriculum guideline

水循環課程指引



ministry's curriculum guideline junior high school Science

(4) 気象とその変化 身近な気象の観察、観測を通して、気象要素と天気の変化の関係を見いださせるとともに、気象現象についてそれが起こる仕組みと規則性についての認識を深める。

天気の変化

(ア) 霧や雲の発生 霧や雲の発生についての観察、実験を行い、そのでき方を気圧、気温及び湿度の変化と 関連付けてとらえること。

...内容の(4)については、次のとおり取り扱うものとする。 ア イの(ア)については、気温による飽和水蒸気量の変化が湿度の変化や凝結にかかわりがあることを扱うこと。また、水の循環も扱うこと。

(4) Weather and its Changes

To enable students to discover the relationship between meteorological elements and weather changes through observations of nearby weather. To enable students to deepen their recognition of the mechanisms and the regularity by which climatic phenomena occur.

(b) Weather changes

a. Formation of fog and clouds

To enable students to perceive the way they are formed in relation to changes in atmospheric pressure, atmospheric temperature and humidity, by conducting observations and experiments on the formation of fog and clouds.

...With regard to Content-(4), the following items should be dealt with: (a) With regard to (4)-(b)-a., the fact that changes in the saturation water vapor volume caused by the atmospheric temperature are connected with changes in humidity and condensation should be dealt with. The hydrologic water cycle should also be dealt

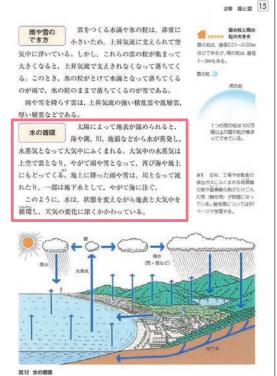
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Example of textbook

教科書範例

Junior high school science textbook (Kyoiku-shuppan. Co..Ltd.)





Water Cycle

When the surface is heated by the sun, the water evaporates and lakes, sea, river, etc. from the ground, included in the atmosphere and water vapor. Water vapor in the atmosphere is the cloud in the sky, and rain or snow soon, come back to the earth and the sea again. Or river flows and, as groundwater, rain and snow that falls on the ground, in part, into the sea eventually.

In this way, the circulation in the atmosphere and the earth's surface while changing the state, water has been deeply involved in the changes in the weather.

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Takigami junior high school

(Takigami city, Hokkaido prefecture)

教案:國中

Teaching plan - Science -

理 科 学 習 活動案

> 2009年12月22日 (火) 第2校時 日 時 滝上町立滝上中学校 2年A組教室 男子11名 女子10名 計21名 生 徒 授業者 富山 光太郎

> > Kotaro Tomiyama

1 単元·題材名

4 天気とその変化 1章 空気中の水の変化 1-4 水の循環

気象現象の仕組みや規則性に気づくとともに、気象要素の観測を通して、天気の変 化の規則性についての認識を深める。

水は太陽エネルギーによって大気と地表の間を循環し、気象現象に深く関わってい る。また、我々人間を含めた動物、植物の体内にも水は多くふくまれ、状態変化をし、 さまざまな姿で広く地球を循環している。しかし、これらの事象について教科書中では イラスト1枚にて簡単に紹介されているに過ぎない。

そこで、地球上に存在するすべての水を 1 ℓ の水で表現するProjectWET「大海の-滴」で大まかな地球上に存在する水について知り、大規模な水の循環をを一人一人が疑 似体験することで学ぶ同「驚異の旅」を体験することで、研修テーマである「五感に訴 える教材・教具の工夫」を実施し、本単元の定着をはかりたいと考える。また、現在の 教育現場にて重要視されている「言語活動の充実」についても、自らの疑似体験を文章 にまとめ表現する活動を通して、理科でできる言語活動について探っていきたいと考え

4 単元の指導計画

○教師の支援 ☆評価

○ 八周の 周)の天施 ☆地球上の水の存在について例をあ げることができる

が、椅子を前へ移動し活動場所を

〜 ○9つの場所にビーズ、さいころを

巡視して活動がわからない生徒へ

☆「驚異の旅」理解し、楽しく活動

○机椅子を元に戻すよう指示 ☆ワークシートに自分の行った旅を

正確に記載することができる。【観察・実験の技能・表現】…記述・

物語を書くことが困難な生徒への

へ ○全員が物語を書けたらグループに なるよう指示

○グループ間を巡回し随時質問を受

)発表する態度、聞く態度の支援

☆活動結果を適切に発表することが できる【観察・実験の技能・表現】

○話し合いの支援

することができたか。 【関心・意欲・態度】…観察

○本時の説明 ○ビーズのついたモールを配布

発表を促す。

【知識理解】…発表

プリントの配布

設置

支援

「驚異の旅」の実施

「大海の一滴」の実施

Teaching plan - Science -

私達の体に最も多くふくまれている物質は

もし地球上のすべての水が

1 ℓだとしたら?

THE INCREDIBLE JOURNEY ~電 異 の 旅~

「君たち一人一人は水の分子です」 「これから地球を巡る

驚異の旅へ出かけよう!」 つの水の状態の説明

「さあ、たくさんの場所を旅することができたかな?」 ・得ることができたピーズの確認

「どこを終してきたかな?ビーズの色を確

認して『君の旅』の欄に順に書いてみよ

「それではその旅をもとに『君の旅の物

・それぞれのグループで発表し、グループ 代表者を決定する

物語をワークシートへ記入

・ワークシートへの記入

語』を書いてみよう」

グループ形態へ

活動方法の説明

地球は宇宙から見ると何色だろう

先週にて「4 天気とその変化」のすべてを終了している。 本時はそのまとめとし て行う。 また、昨日より学習している第1分野「化学変化と原子・分子」にてはじめ て分子について学ぶ。本時では彼らにはじめて「水分子」の存在を紹介し、以降で学習 する化学変化や原子、分子のしくみについての興味、関心をも抱いてほしいと考えてい Project WET Japan

- Weather Changes Change of water in the air
- 1-4 Water cycle

Circulates between the atmosphere and the earth's surface by solar energy and water are heavily involved in weather phenomena. In addition, the water is rich in animals, including humans we also within the plant, and the state change, it is widely circulating in his various Earth, However, only in textbooks are briefly ntroduced in the illustration for one of these events

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教案:國中課程

Takigami junior high school (Takigami city, Hokkaido prefecture)

○教師の支援 ☆評価 発表者、質問者への支援 「さて、皆さんはどのような旅をすること ☆活動結果を適切に発表することが できる【観察・実験の技能・表現】

各グループ代表者の発表

・発表シート ○太陽のエネルギーの存在 ン化学変化と原子・分子へのつなが 「水が地球上を旅することができるのはな ☆大気と地表の間の水の循環を太陽 のエネルギーや気象現象と関連づけ ながら考察、説明することができる 【科学的思考】【知識理解】…発 ぜだろうか?」 ・自己評価・感想

本時の評価)水の循環に関心を持ち、大気と地表の間の水の循環の関係を活動を通して探求するこ とができたか。 …自然事象への関心・意欲・態度

○自分が体験した水の循環を物語に表し、発表することができる

・・観察・実験の技能・表現(言語活動) ・大気と地表の間の水の循環を太陽エネルギーや気象現象と関連ブけながら考察し説 明することができる。

・科学的な思考、自然事象についての知識理解

Assess whether the students were able to have an interest in the circulation of the water, through the activities to explore the relationship between the circulation of water between the atmosphere and the earth's

- ... Interest and motivation and attitude to natural events
- Evaluate whether the story can be represented in the circulation of the water is its own experience, the students will be announced
- Skills of observation and experiment, expression (language activity)
- Assess whether students were able to describe and discuss weather phenomena associated with solar energy and the circulation of water between the atmosphere and the earth's surface.
 ... Scientific thinking, understanding knowledge of natural events



Project WET Japan

The Committee for adapting school curriculum was assembled 為了配合學校課程的委員會

We revised the Guide book to ensure consistency with Japanese educational curriculum

We developed the "List of case studies on Project WET activities

adapted to school curriculum in Japan"







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Project WET Japan

結盟單位

Sister Programs

There are two sister programs of Project WET

Vild

Project WILD

Project WILD is an interdisciplinary environmental education program emphasizing wildlife.









Project Learning Tree is an interdisciplinary environmental education program emphasizing tree.

Host Institution in Japan: International Education Resource and Innovation Center



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Promotion 推廣



2010 2010

2011

2012

2013



Project WET & WILD + PLT National Convention in Japan





Promotion event at COP10 (Nagoya Japan)

Promotion 推廣

Think O the Earth www.ThinktheEarth.net/jp/

みず









"Water School 2011" with UNICEF