

# PROJECT WET: WATER EDUCATION FOR 21<sup>ST</sup> CENTURY GLOBAL WATER CHALLENGES

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## Abstract

### Introduction:

Over the past quarter-century, global water problems have continued to escalate. Every day, the health and well-being of the 6.72 billion people on our planet is affected by the availability of clean water resources. To help students, their teachers, parents and community leaders meet 21<sup>st</sup> century water challenges, Project WET, an award-winning nonprofit global program, believes that water education has never been more important.

Through water education, learners identify their watershed address, discover their role in the hydrological cycle, and recognize that water knows no boundaries—flowing through and connecting us all. Through water education, students, teachers, parents, business and community leaders are empowered to take action in their local communities. These ActionEducation™ projects contribute to a healthier local environment and economy. On a worldwide scale, Project WET helps learners recognize the relationship between the availability of clean water and global stability.

Initiated in 1984, as a local water education project in North Dakota, USA, Project WET was developed by teachers, for teachers, with the guidance of water specialists and scientists. It soon became a national program in the United States and then grew internationally. Today, it is being used in more than forty countries and its curriculum has been localized and translated in several languages. Over 400,000 educators have been trained with 40 million students reached. As an outgrowth of the development of the ***Project WET Curriculum and Activity Guide***, Project WET has specialized in developing education materials on a variety of water topics.

### Methods:

Its curriculum and main tool, the ***Project WET Curriculum and Activity Guide***, includes 91 educational activities or lesson plans to be used with children, young adults, educators, and business and community leaders. The activities are science-based, interactive and require students to exercise skills important for solving 21<sup>st</sup> century challenges. Topics range from water's unique physical and chemical characteristics to social and cultural constructs. This cross-cutting, multidisciplinary curriculum is useful for formal and nonformal educators teaching subjects such as natural science, chemistry, geography, literature, history, government, math, art, biology and so forth.

## **Results and conclusion**

The mission of the Project WET Foundation is to reach children, parents, educators and communities of the world with water education. The Foundation accomplishes its mission by: producing water resource publications; training educators, business and community leaders; establishing an international network of educators, water resource specialists, scientists and citizens interested in their local water resources; conducting events such as community Make a Splash with Project WET festivals or the Global Water Education Village™ (4<sup>th</sup> World Water Forum, Mexico City, 2006). Here we will describe the major accomplishments of its international network. Its experience is already an example of international cooperation—promoting an understanding of water resources through education, irrespective of political boundaries, to empower communities to take action to solve local water resource challenges.

## Background

As schools, homes and businesses “go green,” the need for environmental education is increasingly being recognized worldwide, and water education has a major role to play. Our future is tightly bound to water. Global water issues must be addressed through greater public involvement at all socio-economic levels, among all water users, and across all borders. Young people must be provided a deeper understanding of our complex environmental issues and the skills necessary to undertake the challenges of this century. Sustainable water management is crucial to secure social and economic stability as well as a healthy environment—achievable only as a result of cooperation and commitment to education.

## Curriculum features

Two main tools define Project WET: the ***Project WET Curriculum and Activity Guide***, and the Project WET network. The 516-page ***Guide*** contains 91 interactive and classroom-ready activities or lesson plans, cross-reference tables, indexes and a glossary. Features include:

**1. Conceptual areas:** Project WET activities address the following conceptual areas:

- Water’s physical and chemical characteristics
- Water and life
- Water and Earth systems
- Water as a natural resource
- Water management
- Water and social constructs
- Water and cultural constructs.

**2. Activities:** The cornerstone of Project WET is its methodology of teaching about water resources through hands-on, investigative, easy-to-use lesson plans. Skills such as teamwork, decision-making and problem-solving that students develop through these activities help prepare them for the water resource challenges of this century. Following are the qualities of Project WET activities:

- **Interactive:** Learners participating in Project WET activities are not passive observers. Engaging students through questioning and other inquiry-based strategies, educators become facilitators involving students in hands-on lessons and encouraging them to take responsibility for their own learning. For example, students design investigations to seek answers to real-world problems; play games to explore scientific concepts; reflect; debate; seek common ground to resolve conflicts, and creatively share their findings through songs, stories and dramas.
- **Multi-sensory:** Activities engage as many of the learner’s senses as possible. Research has shown that stimulation of multiple senses enhances learning.
- **Adaptable:** While adaptable for any environment, many Project WET activities are ideal for outdoor settings and encourage children to be physically active.
- **Contemporary (21<sup>st</sup> Century Skills):** Project WET activities help students develop skills necessary for success in the 21<sup>st</sup> century. In most activities students work in small, collaborative groups; many activities engage students in higher level thinking skills requiring them to analyze, interpret, apply learned information (including problem-solving, decision-making and planning), evaluate and present. Project WET

is aggressively incorporating technology education into its activities and offering cross-cultural materials to prepare learners for participation in a global economy, in which an understanding of water resources will be critical.

- **Relevant:** Information is not delivered in isolation; educators are encouraged to localize activities to give them relevance.
- **Solution-oriented (ActionEducation™):** Through education, Project WET empowers students, teachers, parents and leaders to take action and find solutions in local communities. In this context, Project WET and local education and water partners seek to incorporate educational materials and training with on-the-ground action and solutions.
- **Measurable:** Project WET activities provide simple assessment tools to measure student learning.

3. **Interdisciplinary:** *The Project WET Curriculum and Activity Guide* can be used by teachers of different disciplines such as art, physics, language, literature, biology, history, geography, government, mathematics, chemistry, environmental science, ecology, health and so forth. The activities can also be used by nonformal educators representing community organizations, government agencies, NGOs (non-government organizations), corporations, museums and parks.
4. **Complement existing educational programs:** Project WET activities are designed to satisfy the goals of educational programs by complementing existing curricula rather than displacing or adding more concepts.
5. **Friendly format:** The guide was written and designed to respect the time and resources of educators. All activities have been extensively field tested. The book's organization has educators' needs in mind, from clarity of topic to suggested teaching units. Photos, maps, illustrations, and graphs highlight key concepts, and student pages are ready for copying and distribution.

### **Project WET Beliefs**

Throughout all Project WET activities, we can find three main premises:

1. Water is important for all water users (e.g., rural and urban communities, energy production, farming and ranching, fish and wildlife, manufacturing, navigation, recreation, etc.).
2. Wise water management is crucial for providing tomorrow's children social and economic stability in a healthy environment.
3. Education can encourage a lifelong commitment to responsible and positive community participation toward water.

### **Development of the Project WET International Network**

Project WET has proven to be a sound, creative, useful, accurate and fun tool to educate people on water issues regardless of country, culture or language. This is evident by the rapid development of its international network; the program has grown considerably during the last five years. Interest in water education is growing in many countries and Project WET can address this interest as well as provide a link among these countries.

## **Project WET International Countries and Host Institutions as of August 2008**

1. U.S.A. (1984)	Project WET Foundation
2. Canada (1996)	Canadian Water Resources Assoc. and Env. Canada
3. N. Marianas Islands (1997)	Commonwealth Utility Corp, Saipan, NMI
4. Palau (1998)	Republic of Palau Utility, Koror, Palau
5. American Samoa (1998)	Am. Samoa EPA, Pago Pago, AS
6. Mexico (1999)	CONAGUA Mexican Water Authority
7. Philippines (2001)	Center for Environmental Awareness and Education
8. Ukraine (2002)	Ministry of Education and Science
9. Togo (2003)	Young Volunteers for the Environment, Lome, Togo
10. Cameroon (2003)	Cameroon Vision Trust, Limbe, CM
11. Uganda (2003)	Ministry of Water and Environment, Kampala
12. Japan (2003)	Foundation of River and Environment Management
13. Dominican Republic (2004)	sponsor pending
14. Argentina (2004)	Association for the Friends of the Patagonia
15. Costa Rica (2004)	Terra Nostra Association, San Jose, Costa Rica
16. Fiji (2005)	Live and Learn Foundation
17. Vietnam (2005)	Nestlé Waters LaVie and Ministry of Education
18. Lebanon (2005)	Nestlé Waters Sohat and local partners
19. South Africa (2005)	South Africa Department of Water Affairs and Forestry
20. United Arab Emirates (2006)	Nestlé Waters UAE and Ministry of Education via MOU
21. Hungary (2006)	Nestlé Waters Kekkuti and local partners
22. Italy (2007)	San Pellegrino, Nestle Waters Italy and local partners
23. France (2007)	National educational partners and Nestlé Waters France
24. Chile (2007)	UNESCO-IHP, Gota a Gota NGO
25. Jamaica (2007)	UNESCO-IHP, Jamaica Water Authority
26. Uruguay (2008)	UNESCO-IHP Regional Office
27. South Korea (2008)	Korea Water Forum
28. Pakistan (2008)	UNESCO, Nestle Waters Pakistan
29. Turkey (2008)	Turkish Ministry of Education
30. Democratic Rep. of Congo (2008)	USAID and NGO partners
31. Ethiopia (2008)	USAID and NGO partners
32. Kenya (2008)	Engineers Without Borders, MSU Chapter
33. Lesotho (2008)	USAID and NGO partners
34. Madagascar (2008)	USAID and Ministry of Education
35. Malawi (2008)	CREPA, NGO partners
36. Mali (2008)	CREPA, NGO partners
37. Niger (2008)	Microcredit in Africa NGO
38. Nigeria (2008)	CREPA, NGO partners
39. Senegal(2008)	USAID, NGO partners
40. Tanzania (2008)	Private school and NGO partners
41. Zambia (2008)	USAID, Africare, and NGO partners

### In Progress:

- United Kingdom
- Thailand
- China
- (Mexico – new sponsors)
- Inquiries: New Zealand, Australia, Singapore, Russia, Poland



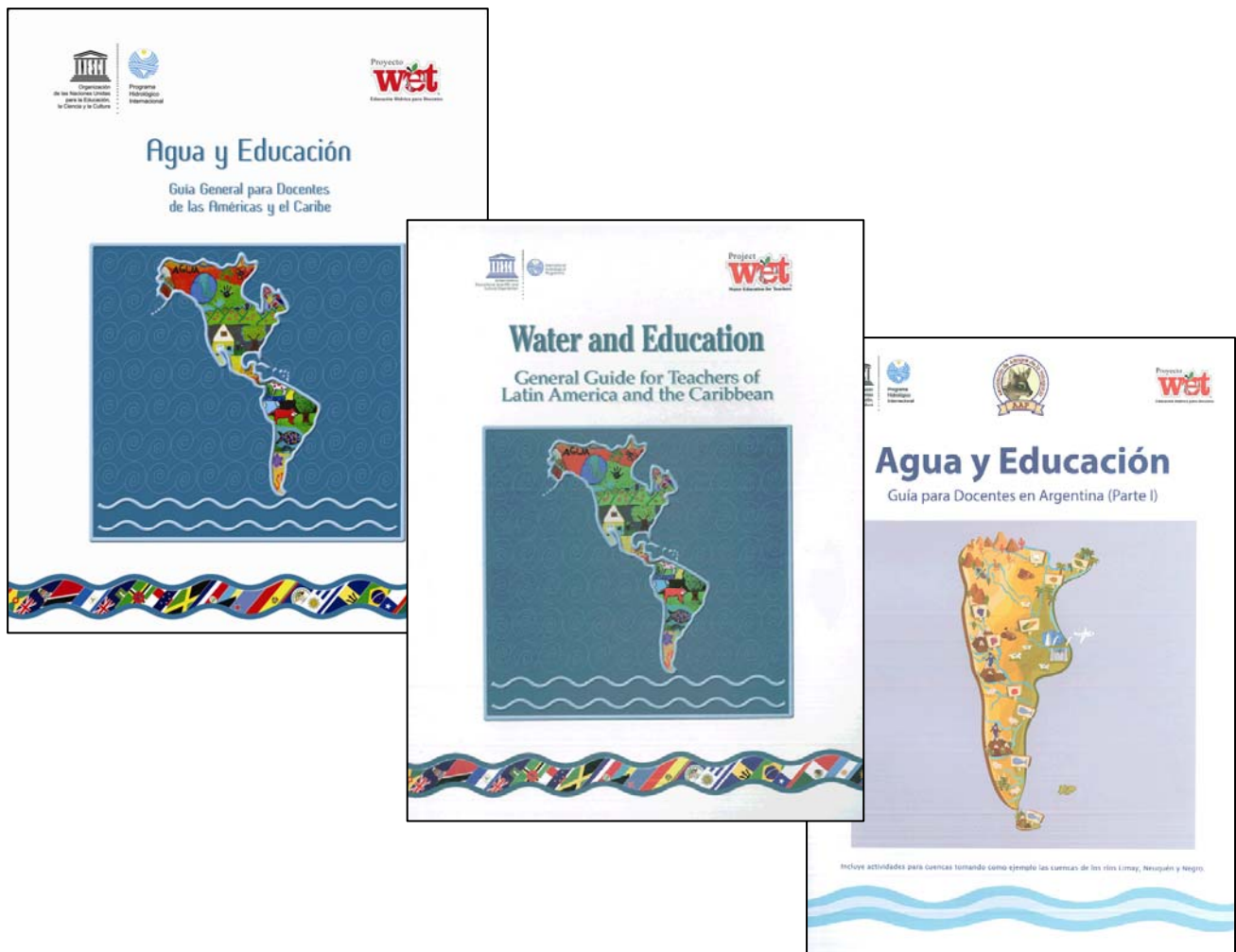
**Project WET programs around the world**

Since the program's inception in North Dakota in 1984, it has trained over 400,000 educators to use Project WET with students. If we make the assumption that each teacher trained has used the materials with 30 students each year since they were trained, then we can calculate that over the life of the program, more than 40 million students have been reached through Project WET.

### **Adaptation process**

Project WET methodology has been successfully adapted and applied; this was confirmed by educators' evaluations at many international workshops. Many of the curriculum activities do not require adaptation at all. This is the case of activities highlighting physical and chemical characteristics, water and Earth systems, water and life, and water as a natural resource. Nevertheless, some adaptation is required when we talk about water management or water and social and cultural constructs. Some countries, like Canada, decided to use the original guide and added a supplement with country-specific information. Mexico translated and adapted the guide to Mexico's history, issues and teaching methods, added three activities and an appendix about water in Mexico.

Japan translated the guide and is currently adapting it. The Philippines used the original guide for some years while they developed their adapted guide. For countries in Latin America and the Caribbean, the publication, **Water and Education**, adapted from the **Project WET Curriculum and Activity Guide** is available in Spanish and English and has been modified for Argentina.



A compendium of Project WET activities called **Every Drop Counts (Water Conservation)** has been developed and translated for: Vietnam, Lebanon, Hungary, Italy, France, Pakistan, Thailand, UAE (United Arab Emirates) and China (in progress).

### Other water education materials

In addition to the **Project WET Curriculum and Activity Guide**, the Project WET network also uses other publications such as **WOW! The Wonders of Wetlands**, including 50 activities on wetlands; **Healthy Water, Healthy People**, teaching about water quality parameters and issues; and **Discover a Watershed Series** which aims to facilitate and promote the awareness, appreciation, knowledge, stewardship and understanding of watershed topics and issues through materials, training, and network support services. Titles include: **The Everglades**, **The Rio Grande/Rio Bravo (English and Spanish)**, **The Watershed Manager**, **The Missouri**, **The Colorado** (English and Spanish), in addition to the **Mexican Lake of Patzcuaro, Michoacan** (Spanish), developed by the Mexican Institute of Water Technology (IMTA), using Project WET methodology.

The volumes highlighting the Rio Grande/Rio Bravo and Colorado rivers were the result of binational projects developed in partnership with IMTA, the organization that originally coordinated and sponsored Project WET-Mexico. ***Discover a Watershed: The Missouri*** was also a binational project in collaboration with Project WET Canada. All the projects in this series were developed in close collaboration with educators, resource managers and scientists from each region.

### **A final reflection**

The universal need for clean and plentiful water is an opportunity to bring us together as a world community. Governments, private organizations, NGOs, teachers, students, and community and business leaders can play a major role in fostering water education—empowering individuals to take action in their communities to find solutions to local water challenges. Because, as students learn in the Project WET activities, ***Incredible Journey*** and ***Sum of the Parts***, water does not divide, but instead flows through and connects all of us.

### **References**

1. The Watercourse (1999). Project WET Curriculum and Activity Guide. The Watercourse, Montana, USA.
2. IMTA/The Watercourse (2002). ¡Encaucemos el Agua! Currículum y Guía de Actividades para Maestros. The Watercourse / IMTA, Morelos, México.
3. The Watercourse. 2000. *Discover a Watershed: Rio Grande/Rio Bravo*. Bozeman, Montana: The Watercourse. U.S.A.
4. The Watercourse. 2002. *Watershed Manager*. Bozeman, Montana: The Watercourse. U.S.A.
5. The Watercourse.2004. *Discover a Watershed: The Missouri*. Bozeman, Montana: The Watercourse. U.S.A.
6. The Watercourse. 2005. *Discover a Watershed: The Colorado*. Bozeman, Montana: The Watercourse. U.S.A.
7. IMTA. 2005. Descubre una cuenca: el lago de Pátzcuaro. Jiutepec, Morelos: IMTA. México.
8. The Watercourse. 1996. *Discover a Watershed: The Everglades*. Bozeman, Montana: The Watercourse. U.S.A.

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