

# RiverWalk-Brazil

## Virtual Journey, Real Learning

Arati Singh,<sup>1</sup> Dr. Eric Rusten,<sup>2</sup> and Vera Suguri<sup>3</sup>

### Overview

International educational technology initiatives are beginning to produce exciting stories demonstrating the impact of computers and the Internet on student learning. A key element to the RiverWalk-Brazil “success story” featured here is an equitable partnership between actors in Brazil and the United States. The essential players from Brazil include teachers and students in eleven schools and Vera Suguri, a pedagogical coordinator with the Ministry of Education. Key partners in the United States include Eduardo Junqueira and colleagues involved in the RiverWalk initiative at University of Michigan’s Interactive Communications & Simulations group (ICS) and Eric Rusten, who directs the U.S./Brazil Learning Technologies Network (LTNet) project at the Academy for Educational Development (AED). This partnership forms the scaffold for RiverWalk-Brazil, an interdisciplinary project that enables Brazilian schoolchildren and teachers to become scientists, activists, and reporters on their physical environment. Described below are the two main thrusts of the project: The RiverWalk online publishing and planning forum for students (developed by ICS), and an online professional development and collaborative learning environment for Brazilian teachers involved in RiverWalk (developed by Vera Suguri and Eric Rusten on LTNet).

### Evolution of RiverWalk-Brazil

Imagine...Naoko, a twelve-year old girl in Japan, wanders through the Internet and stumbles upon an online account from a group of Brazilian youth trying to save their local river. As Naoko explores the digital photos and journal-like text that the children published, she gets a glimpse of the cultural, economic, and ecological issues that their town faces. She learns about washerwomen who unintentionally pollute the river with their detergent, and about how the children attempt to solve the problem by publishing river education booklets and encouraging the city council to build a public laundry. Naoko begins thinking about the river that flows by her own neighborhood...

### RiverWalk: Making a Splash at the University of Michigan

The RiverWalk Project is a collaborative activity in which students and teachers from six countries—including the group of Brazilian students mentioned above—research and share information about rivers in their communities. The project was born out of a desire of Japan’s Ministry of Land, Infrastructure, and Transport to develop an international education program on rivers. This Ministry asked the Interactive Communications & Simulations (ICS) group at the University of Michigan’s College of Education to develop an online program to foster education about world rivers. With Japanese government funding and support from the University of Michigan, Jeff Kupperman and his colleagues from the ICS group launched the RiverWalk project in November 2000.

Visiting the multilingual RiverWalk website<sup>4</sup> allows one to access the results of project and problem-based learning, as well as an integrated set of easy-to-use tools for publishing work and carrying out discussions. The website features student-published *tours* (mini-websites) presenting projects about their local rivers, accompanying discussion boards, *virtual backpacks* that allow participants to take and synthesize material from each other’s online tours, online mentoring from staff at the University of Michigan, and a downloadable manual. Currently, funding from Japan makes it possible for schools to participate free of charge. While many web tours are publicly accessible, some portions are password protected.

Some of the big questions RiverWalk students are encouraged to explore include:

- What does it mean for a river to be “clean” or “polluted?”
- What happens when countries or communities compete for limited water sources?
- What needs to be done to gain benefits from rivers while preventing their destruction?

One RiverWalk partner, Vera Suguri, captures the project’s potential impact with the following observation:

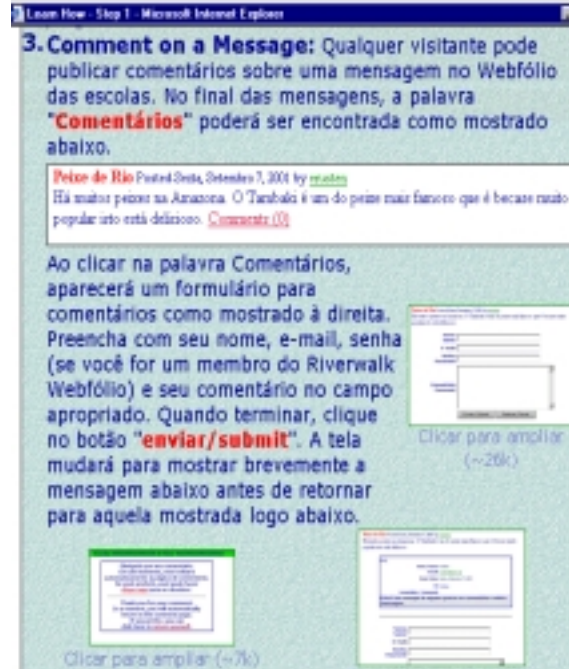
*For students to learn about conservation, it isn't enough to talk about the problem, show the situation via TV and videos, or by providing information in a traditional manner. Working with projects like RiverWalk, the students become active participants. Teachers and students decide together about what river to study and how to study it... In one school, students took a field trip and interviewed local fishermen who had lived on the river's banks for over two decades. The reality of river dependence was seen and felt. After viewing other schools' projects, our students realized the extent of river problems in our country as well as others.*

### Brazil Dives In with Something New

Students from Japan, Taiwan, the U.S., Canada, and Israel were already participating in RiverWalk when Eduardo Junqueira, a Brazilian journalist studying<sup>5</sup> at the University of Michigan, began recruiting schools from his homeland to join the project. Junqueira asked Vera Suguri from the Pro-Info program<sup>6</sup> in Brazil's Ministry of Education to help identify and encourage teachers from fourteen public schools to join the RiverWalk project. The fourteen schools were strategically selected to represent the diverse economic, geographic, and cultural diversity of the country and to ensure the inclusion of Brazil's major rivers. The common thread among the selected sites is that each has a highly motivated teacher leader and access to Internet technology in the school or at a local computer resource lab (NTE) developed under the ProInfo program.

With RiverWalk, Suguri saw an opportunity not only to get Brazil's schoolchildren and teachers involved in an international, cross-curricular educational technology project, but also to develop a meaningful, web-enabled form of professional development for the teachers within and outside the project. To enable this professional development, Suguri brought in the U.S./Brazil Learning Technologies Network (LTNet), part of the U. S. Agency for International Development-funded LearnLink project at AED, to help develop a web-based collaborative learning environment (AAC - *Ambiente de Aprendizagem Colaborativa*).

The AAC in the LTNet website,<sup>7</sup> while separate from the RiverWalk website, advances RiverWalk's goals by providing an environment for professional development tailored for the Brazilian teachers involved in RiverWalk. The additional benefit of the AAC is that it is completely accessible to anyone, whether or not they are officially involved in RiverWalk. ProInfo's Suguri sees this feature as a way to model good professional practice and to help teachers who are just beginning to use technology learn to develop and participate in collaborative projects. Moreover, the site is accessible to researchers and environmental specialists to allow them to



### *Step-by-step instructions for teachers participating in the professional development RiverWalk community developed by LTNet and Pro-Info*

contribute to the schools during the learning process. Regarding this feature, Suguri comments, "It is not usual for teachers and students to accept contributions from outsiders during the learning and teaching process. I think that this aspect is very innovative. Through the AAC, this collaboration is achieving a larger return on the investment of the work of the eleven<sup>8</sup> participating Brazilian schools than would be possible without the AAC."

A visit to the teachers' collaborative AAC gives one a taste of the sometimes messy process involved in adopting new learning technologies. The AAC's webfolio offers four questions to guide teachers as they plan activities and share the project's process:<sup>9</sup>

- What do we know?
- What do we want to learn?
- What did we learn?
- How did we do it?

To help teachers explore these questions, the AAC also provides the following technologies: a listserv, chat rooms, a photo gallery, and a user-friendly webfolio where teachers upload text and graphics. Teacher trainers from two of the schools, Lourdes Matos of Montes Claros and Noara Resende of Belo Horizonte were selected by Suguri to be *madrinhas* (literally, *godmothers*) or activity coordinators for

the teachers in the other sites. The *madrinhas* were trained, mostly online, to use the technologies in the collaborative learning environment by LTNet staff in the U. S. and by Suguri in Brazil. They in turn trained the rest of the participating teachers to use their environment.

The culture of the AAC is marked by teacher autonomy in decision-making, while maintaining a highly cooperative work environment. According to Suguri, teachers

*weren't obliged to follow any pre-determined structure. They decided what river to study, number, grade and level of participants, who would be interviewed, what places or institutions to visit, the size and feature of their own project, etc. How-*

*ever, it is not uncommon for teachers with higher computing skills to assist those with less experience, for teachers to send encouraging e-mails to each other, or to bounce ideas off of colleagues online.*

### Rowing Together

According to one project developer, the dynamic learning that RiverWalk nurtures requires “many actors.” It was reported that without a balanced human and technical infrastructure, the project would have suffered. **Table 1** delineates the roles of each of the partners in the RiverWalk-Brazil project.

Table 1: Roles of Partners

Partner	Roles
Teachers and students at the eleven participating schools in Brazil and their related resource labs (NTE's)	<ul style="list-style-type: none"> <li>Collaborate and publish work on the RiverWalk website and the teachers' collaborative learning environment (AAC).</li> <li>Organize educational activities and field trips to explore their rivers.</li> <li>The teacher trainer/coordinators at the ProInfo NTEs provide technical and logistical support to the schools.</li> </ul>
RiverWalk-Brazil coordinator Eduardo Junqueira and staff at ICS at the University of Michigan's College of Education	<ul style="list-style-type: none"> <li>Developed the RiverWalk framework and website (<a href="http://www.riversproject.org">http://www.riversproject.org</a>).</li> <li>Provide a common space for Brazilian schools to present their work in an international forum.</li> <li>Facilitate and coordinate day to day communications.</li> <li>Build trust with Brazilian teachers.</li> </ul>
Vera Suguri, a pedagogical coordinator at ProInfo in Brazil's Ministry of Education.	<ul style="list-style-type: none"> <li>Used ProInfo's network of NTE's and participating schools to identify participants for the project.</li> <li>Facilitates communication among teachers, encourages active participation and coordinates project efforts.</li> <li>Brings innovation and pedagogical input into the project, including co-designing the teachers' AAC.</li> <li>Gives a national presence to the project by presenting it at conferences and building relationships with important national and local stakeholders.</li> </ul>
Eric Rusten, Director of the U.S./Brazil Learning Technologies Network (LTNet), part of Learn-Link at AED	<ul style="list-style-type: none"> <li>Developed and maintains the AAC where teachers collaborate as they implement the RiverWalk project (<a href="http://www.ltnet.org/SchoolLinks/VEE/RiverWalk/P-AAC-RW-Base.htm">http://www.ltnet.org/SchoolLinks/VEE/RiverWalk/P-AAC-RW-Base.htm</a>).</li> <li>Brings technical and pedagogical innovation to the project.</li> <li>Acts as a strong equitable partner with Brazil's Ministry of Education.</li> </ul>
Local Brazilian communities	<ul style="list-style-type: none"> <li>Companies, forestry organizations, museums, families, and non-governmental agencies lend support to the project in a variety of ways—from making lunches for student field trips to serving as subject matter experts for students and teachers.</li> </ul>

## A Strong Pedagogical Current

### “REAL” Rivers

Grabinger (1996) presented a Framework of Rich Environments for Active Learning (*REALs*). It can be used to evaluate the educational elements of the RiverWalk project. RE-

ALs emphasize the social components of learning, as well as the authenticity of the context in which this learning takes place. Analyzing both components of RiverWalk-Brazil in the REAL framework helps show why this particular project has more pedagogical muscle than many similar endeavors. **Table 2** shows how RiverWalk-Brazil exemplifies the six attributes of REALs.

Table 2: Application of REALs to RiverWalk (Technology tools are in bold blue)

Attributes of REALs	Examples from ICS's STUDENT-focused RiverWalk framework	Examples from Pro-Info's/LTNet's TEACHER-focused Collaborative Learning Environment (AAC)
<p>Constructivist influences: People learn by making connections between old and new knowledge, indexing and making generalizations from new knowledge, and developing common understandings of new knowledge through social interaction.</p>	<p>Cross-curricular connections encourage deep learning. For example, measuring the effect of droughts on rivers can include math (e.g., measuring river depth) and social studies (e.g., analyzing economic impact). Easy to use <b>publishing tools</b> and simple <b>moderated discussion boards</b> allow students to focus on content synthesis rather than on technical tasks.</p>	<p>The <b>webfolio</b> allows teachers to instantly publish text and graphics on the Internet to create mini webpages that document the process of the project. The “<b>add a comment</b>” function provides a forum where others can articulate the new connections their colleagues’ webfolio page helps them make.</p>
<p>Authentic learning contexts: Learning that takes place in an authentic, non-simulated context is relevant to students’ lives, can develop richer cognitive connections, and support collaboration.</p>	<p>Students work in <b>virtual workgroups</b> to identify, analyze, and/or resolve river issues in their own communities, much like scientists, government agencies, and concerned citizens do.</p>	<p>The questions and concerns teachers express to each other and to peer trainers (<i>madrinhas</i>) <b>via e-mail discussion lists and chat</b> are based on real, simultaneous classroom experiences.</p>
<p>Student responsibility and initiative: Students participate in intentional, goal-directed learning, reflect on their work, and develop metacognitive skills.</p>	<p>A <b>virtual backpack</b> feature allows students to borrow graphics, sound, and text from others’ web tours to include in or help inform their own web tours.</p>	<p>Analyzing and discussing each other’s <b>webfolios</b> helps teachers reflect on and devise strategies to improve their own learning</p>
<p>Cooperative learning: Students work together to solve problems, and take on multiple roles and work through difficulties.</p>	<p>The <b>workgroup interface, discussion boards, and “virtual backpack”</b> give students multiple ways to lend their expertise and support each other in the learning process.</p>	<p><b>Chat</b> events give teachers the immediate back-and-forth conversation they need, while the <b>listserv</b> provides a convenient way to send questions, share results and schedule other online activities with the group.</p>
<p>Generative learning activities: Students actively use tools to investigate problems and seek solutions to problems. In these situations, students are often co-designers of instruction with teachers.</p>	<p>The Internet allows students to freely search <b>other external online resources</b> in their quest for excavating important river issues.</p>	<p>The site contains a variety of resources, including <b>instant publishing tools</b> that help teachers take ownership of the environment and generate ideas, as well as <b>links</b> to other sites that support their online experimenting and exploring.</p>
<p>Authentic assessment: There is a focus on process as well as product in student learning.</p>	<p>The online medium captures and preserves students’ published <b>web tours</b> as well as their participation in <b>online discussions</b>.</p>	<p>The <b>online medium</b> exposes the teachers’ learning process, thereby making it easier to evaluate their level of participation and professional growth.</p>

### Where the Oar Touches the Water

The following collection of quotations from project participants helps illustrate what it is like to be part of RiverWalk-Brazil.

#### Teacher Growth

Eduardo Junqueira, the coordinator-mentor for RiverWalk-Brazil, said that when the Brazilian teachers were first approached about the RiverWalk project,

*The teachers were very proud to join the project, but very scared that they might not succeed. They asked, 'Are you sure I can do this?' I told them, 'If we don't try, we'll never know.' They slowly started trusting. They had experiences in the past with foreign partners; in some cases they had bad memories. How did I gain their trust? I answered their e-mail, gave feedback, tried solving their problems. Once trust was established, they started their projects.*

One teacher shared her perceptions of her own skill growth during the course of the project:

*When I started participating in the RiverWalk project, I didn't know even to type, and now, I am learning to scan pictures, to navigate in the Internet and many other things in computing.*

One teacher, commenting on the impact of RiverWalk participation on him and his students, states:

*Participation brought great advances in the teaching and learning process and helped develop the ecological consciousness and citizenship in our students...When I showed the RiverWalk project to the city council, they were very embarrassed with the pollution of the River Jaguaribe and tried to justify [overlooking it].*

#### Programmatic Issues

LTNet's Director, Eric Rusten shares some light on critical elements contributing to the effectiveness of the teachers' collaborative learning environment (AAC):

*The AAC used for RiverWalk was not entirely predetermined. Teachers could request changes. Being responsive to participant needs and suggestions builds a strong sense of ownership and helps sustain enthusiasm and project momentum.*

When explaining why it was important to have a broad spectrum of Brazilian schools involved, Rusten states:

*By enabling different types of schools to participate, more innovation is possible. One teacher, for example, used what we called "scooter net" to enable her students to have their content published in the RiverWalk website. After the students created their narratives and selected images for their tour, the teacher drove her scooter to the NTE in a nearby city and uploaded the files to the website and printed copies so that her students could see the results of their effort. The message is: 'You don't have to be from the capital; you don't have to be rich to be involved.'*

Project *madrinha* Noara Resende, who serves as a trainer and facilitator for teachers, makes an observation on the role of local support for RiverWalk:

*Other important partners are the school directors and the students' parents. Many of the directors reacted positively and got the whole school community involved. Many of the parents have sent me thank you messages, and even want to see some of the student work published on the Internet. Everyone's collaboration makes it easier for teachers and students.*

Project *madrinha* Lourdes Matos comments on the importance of evaluation in RiverWalk-Brazil.

*A final evaluation will assess student learning, and help students and teachers reflect on the process, as both parties are responsible for the knowledge produced during the course of this project.*

#### Student Growth

Junqueira describes students' initial reactions to the project:

*Students said, 'Wow, so now we have the opportunity to interact with students across the country. They can see the results of our work.' The other thing is, they loved the field trip to rivers. There are animals, there are trees, they have each other, they have a picnic. Many are from poor schools, so they don't do this very often.*

One teacher for at-risk students observed that:

*This project had elevated the self-esteem of the kids because they realized that they could do the same work as others. Their pictures and research are on the Internet, so they are "important citi-*

*zens” who are contributing to the future generations.*

Two teachers, Maria Sakete of Campo Grande and Sergio Barreto from Ceara, commented how the project tied in with thematic topics:

*"...the students had raised some questions around the bridges. In this opportunity we studied "volume and proportion" exploring the concept or mass, capacity, extent, size and mass."*

Finally—and perhaps most importantly—are the chat excerpts from participating Brazilian school children themselves, below:

*...Now, we are concerned with pollution issues, and before throwing trash away on the street, we will think first.*

*...If the trash from here goes there, the trash from there comes here. Indirectly, we are helping to preserve Sao Francisco River because our school has collected 10,000 disposable bottles, which surely would have gotten there through Velha's River.*

*It was great to visit the river because it helped us to raise questions and learn more on subjects which before the visit, we didn't really care about.*

## References

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RiverWalk Project website. (2001) [Online] Available: <http://www.riversproject.org>.

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## Conclusion

"Through RiverWalk-Brazil, our schools have opened the windows to the world," states ProInfo's Vera Suguri. This project demonstrates that forming and using partnerships are integral to this type of educational innovation. Many times, information and communications technology can bolster learning environments such as RiverWalk. However, while technology can help learners do things that may have been impossible earlier, technology does not automatically improve learning partnerships. Only people can do that.

### Brazilian Schools Participating in RiverWalk-Brazil

#### Manaus - Amazonas

E.M. Carlos Gomes

E.M. Armando de Souza Mendes

#### Jaguaribe - Ceará

E.E.F.M. Cornélio Diógenes

#### Brasília - Distrito Federal

PROEM

#### Montes Claros – Minas Gerais

Escola Antônio Canela

E.E. Capelo Gaiyota

#### Campo Grande - Mato Grosso do Sul

E.M. Barão do Rio Branco - Pólo

E.M. Oito de Dezembro - Pólo

#### Campos - Rio de Janeiro

C.E. Dom Otaviano de Albuquerque

#### Tapera-Rio Grande do Sul

E.E Oito de Maio

#### Belo Horizonte - Minas Gerais

E.M. Hilda Rabello Matta

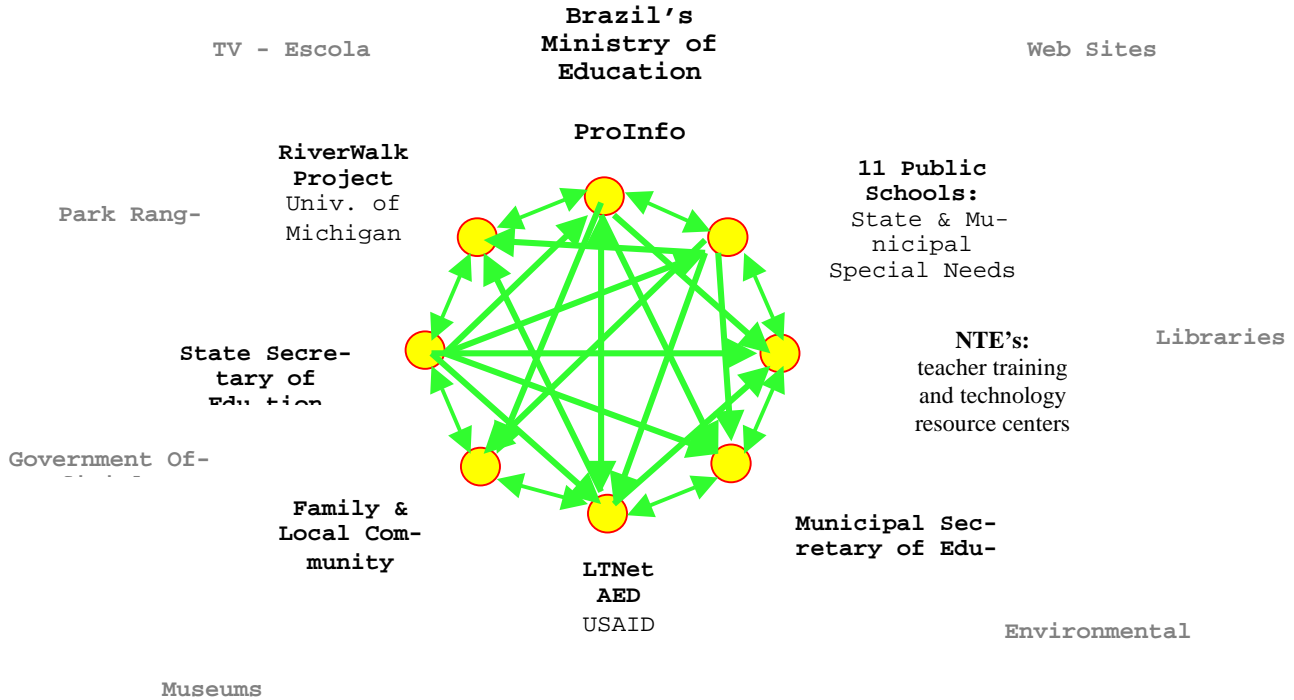
## Notes

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Brazil's ProInfo program is funded by Brazil's Ministry of Education. Local NTEs are funded by local, state, and municipal governments.

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*A graphic representation of all the actors involved in RiverWalk-Brazil.*

<sup>1</sup> Acting Director, Academy for Educational Development Technology Center, AED

<sup>2</sup> Director, US/Brazil Learning Technologies Network, AED

<sup>3</sup> Pedagogical Coordinator, ProInfo, Ministry of Education Brazil

<sup>4</sup> <http://www.riversproject.org>

<sup>5</sup> Junqueira was a visiting student with the University of Michigan Journalism Fellows Program at the time.

<sup>6</sup> ProInfo is a national program, started in 1997, that works in partnership with state and local authorities to establish a network of teacher training and technology resource centers across the country (NTEs), build computer labs in public primary and secondary schools in all states, and train thousands of trainers and teachers to integrate technology into all aspects of the curriculum.

<sup>7</sup> <http://www.ltnet.org/SchoolLinks/VEE/RiverWalk/P-AAC-RW-Base.htm>

<sup>8</sup> Initially, Junqueira and Suguri recruited fourteen Brazilian schools to participate. During the project, three of the schools stopped participating.

<sup>9</sup> The first three questions are based on the KWL technique developed by Professor Donna M. Ogle at National-Louis University. Junqueira had originally asked teachers to answer these questions on paper, and it was later suggested that putting them in a public online format would benefit all teachers in and outside the project.