Brazil: Rapid Experiential Learning Program

An Integrated Approach to Teacher Preparation

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The Challenge

Countries, states, provinces, cities, schools and donors are investing millions of dollars in projects that seek to improve education by providing schools with computers and Internet connectivity. Even though the process of purchasing and installing computers and Internet access at schools is complex and expensive it is only a small part of the challenge facing education planners and principals regarding the enabling and empowering of teachers to integrate these technologies into their routine classroom teaching and learning. The harsh truth about school computer programs is that if teachers are not effectively prepared and given the confidence, time and resources to make routine use of these expensive tools in effective leaning activities, then these investments in technology will have little if any impact on education.

Unfortunately, it is all too common for education technology projects to spend most of their budgets on purchasing and installing equipment, software and connectivity, and building the supporting infrastructure. Once this work is complete, teachers may receive a few days worth of in-service training through workshops and lectures. Rarely are teachers provided with essential ongoing support and learning opportunities to help them learn how to use these tools and, more importantly, to integrate them into the curriculum and to use them to enrich and accelerate learning. The reasons often cited for not providing teachers with adequate and quality professional development in the educational use of technology are usually linked to a lack of funds and time.

Taking teachers from their classrooms for long professional development workshops, even those lasting only one week, is often not possible. School systems, especially poorer ones, usually cannot afford substitute teachers, the cost of transporting teachers to workshops, or to cover their hotel and meal expenses. This typically deprives most schools in developing countries from providing teachers with the skills and experience needed to effectively use computer and Internet technologies. Furthermore, planners and principals also commonly assume that, since the teachers are trained and experienced educators they will be able to figure out how to effectively integrate computers into routine teaching and learning once they are trained in the basic "how to" skills of using a computer and the Internet. The combination of a lack of funds and this flawed assumption consistently results in a failure of school technology projects to meet expectations and make a significant difference in the quality of teaching and learning.

These challenges are made even more difficult in many programs that are seeking to not only introduce computer and Internet technologies into education but also to bring about reforms in basic approaches to education and teaching practices. Under such situations, teachers are not just being asked to integrate the use of technology into routine teaching but to learn to teach in a new way while trying to figure out how to integrate technology into these new approaches as they are learning them. This combination can cause teachers to fail at both reform activities. Achieving success requires the use of highly effective approaches to professional development that enable educators to make use of computer and Internet technologies as an integral means of learning new educational approaches.

Along with the problems of insufficient training and the near absence of on-going support and supplemental learning opportunities, there are also often problems surrounding the training curriculum and the approach taken to prepare teachers to effectively use computer and Internet technologies in classroom teaching. Technology training programs for teachers are often divided into two broad categories. One common style of training that teachers often receive first focuses on building "how to" skills with using computers, software applications and the Internet. Such training is often composed of a linear series of mind numbing modules on ***how to*** use the computer, ***how to*** use Windows or Apple OS, ***how to*** use Paint, ***how to*** use Microsoft Word or WordPerfect, ***how to*** use a spreadsheet, ***how to*** use PowerPoint, ***how to*** use the Internet, etc. etc. etc. Under such training pro-

grams, learning to use the Internet is often the last step because it is considered more difficult to learn or that it requires the previous ***how to*** skills.

Then, if teachers are lucky they may receive the second category of training, which seeks to focus on pedagogical aspects of using computers and the Internet in education. This second category often starts with lectures on the potential of computer and Internet technologies to improve education and includes workshops where generic strategies for using these technologies in the classroom are presented. Then teachers are sent back to their schools where they are expected to change how they have been teaching and figure out how to creatively integrate a set of tools that they just learned how to use as independent applications into the different grade levels and subjects and to create collaborative project based learning activities. It is not surprising that few teachers ever do more with computers than have students carry out "research" on line, type their papers, play "educational games" and do home work assignments. These are important uses; however, they are a woefully inadequate educational return on the costly investment of bringing these technologies to the school.

An Alternative Approach to Teacher Preparation

The following describes an approach for helping prepare teachers to integrate the use of computers and the Internet into routine teaching and learning. It is called Rapid Experiential Learning (REL), [3] and was developed in Brazil within the ProInfo program. ProInfo is a national school computerization and change program developed and sponsored by the Federal Ministry of Education in partnership with state and municipal secretaries of education. Under this program, a network of more than 240 teacher training and technology resource centers, called NTEs, have been established around the country that are staffed with five to ten computer and education specialists, called Multipliers, who received about 360 hours of training. At the same time, several thousand schools have received computer labs with about 20 to 25-networked computers. ProInfo has three main objectives.

- To initiate school computer and education change programs into state and municipal education systems on which the schools, states and municipalities will expand.
- To reduce the digital divide in Brazil by providing public school students with access to computers and Internet connectivity.
- To use the introduction of computer and Internet technologies to enable a more student centered approach to teaching through project-based learning.

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By achieving these three objectives, ProInfo seeks to improve the quality of education in Brazilian public schools.

The REL approach for helping prepare teachers to integrate technology into routine teaching and learning was developed to achieve five main objectives.

1. Address the severe logistical and financial constraints, faced by local school systems, in carrying out teacher professional development workshops.
2. Provide teachers with experience-based learning opportunities during which they learn to use computer and Internet technologies, often for the first time, in ways that are directly useful in their teaching.
3. Provide teachers with new skills, strategies and techniques for using computers and the Internet that support the transition from conventional teacher centered teaching to more student centered project based learning.
4. Provide ways for teachers to become active participants in a national and international learning network and become members of a virtual community of educators.
5. Provide participants with their own virtual leaning environment that they can use to support continued professional development and to train others.

The last objective is proving to be one of the most important. Unlike many other training approaches, in the REL approach when the training is over, participants can return to their schools and continue using the on-line learning environment to reinforce new skills and to replicate the training experience with colleagues. The environment also allows participants to immediately start developing collaborative projects and to share with others their achievements.

This approach to teacher preparation was developed organically through a gradual process of trying to figure out how best to respond to the educational needs of teachers with re-

spect to using technology in teaching and learning within the harsh logistical and financial constraints of Brazilian schools. Time after time the authors observed that teachers would often not change their approach to teaching or integrate computer and Internet technologies into routine teaching after participating in conventional training workshops. It was becoming increasingly clear that conventional "how to" workshops were not meeting teachers' needs. At the same time, most municipal and state programs could not afford to allow teachers to leave their classrooms to participate in training programs for more than one or two days. Furthermore, school systems could rarely afford the logistical expenses of training activities that lasted more than three days.

Elements of Brazil's REL Approach

The REL workshop approach was developed within the context of Brazilian education and the ProInfo program. It was also developed to leverage existing resources created by local and national ProInfo programs especially the teacher trainers, or Multipliers, working NTEs or technology training centers. The REL approach has the following four integrated characteristics:

1. REL workshops are ***rapid***, usually lasting only one to three days depending on objectives and available time and resources. These rapid workshops are often very intense events starting at 8:00 in the morning and ending at 10:00 at night with a few, short breaks for coffee and lunch. If the number of participant is large and time and resources are available, REL workshops can be organized to train a core team of trainers that can then replicate the training with a larger number of participants under the support and guidance of coordinators. This strategy not only helps give new trainers confidence in their skills but also allows training to be provided quickly and effectively to thousands of participants.
2. REL workshops provide educators, both principals and teachers, with ***customized practical experience*** with using computer and Internet technologies within the context of their real world educational needs. During REL workshops, educators are usually not directly trained ***how to*** use specific computer or Internet applications. Rather, they learn to use these tools in an educational context, often quite indirectly, while carrying out classroom relevant learning activities.
3. REL workshops use web-based ***collaborative learning environments***[4] that are customized to meet the needs of each group of educators. Each collaborative learning environment is comprised of an integrated set of collaborative and communication tools and resources that enable participants to experience first-hand how complimentary sets of tools can be used to achieve specific learning objectives. Learning activities are made as concrete as possible and little time is spent on memorizing abstract step-wise processes to use a specific software application. Also, as participants progress through the leaning process, each new skill and tool reinforces skills learned earlier. Supplemental resources are available on paper, on the web and via the Multipliers at the NTE to make it possible for the teachers to refine their skills through self-managed learning.
4. REL workshops provide teachers with opportunities, resources and mechanisms for ***on-going support and project-based activities*** to enable participants to continue using their new skills and their school computer labs in collaborative learning projects. It is unrealistic to expect teachers to transform the way they teach and start using computer and Internet resources in a routine way after only one learning experience with using and integrating computer and Internet technology into education. Achieving this transformation and enabling the routine and effective use of technology in education requires much more than one workshop no matter how well organized, long or intense. A mix of resources, services and organized activities are used to encourage and enable teachers to continue using their new skills in integrated learning projects. These include the web-based collaborative learning environments, national and local listservs, local multipliers at NTEs, and a national pedagogical coordinator to organize special projects and to provide on-going advice and support.

The REL Approach in Action

Over the last three years (since 1999) one or both of the authors have carried out numerous professional development workshops using the REL approach. Even though these workshops all had the broad goal of helping educators gain practical experience-based skills with using technology to enhance education, none of these workshops are the same. One example, **the REL Workshop for Principals, Campo Grande,** will be described to illustrate how the different characteristics of the REL approach are integrated.

The secretary of education in the municipality of Campo Grande manages 83 (81 attended the workshop) primary schools and has one NTE with about 8 Multipliers. Both André Puccinelli, the Mayor of Campo Grande and Maria Nilene Badeca da Costa, his education secretary, are promoting the use of computer and Internet technologies in education. They have built on the investments made by ProInfo[5] by establishing computer labs for each primary school in the municipality and providing Internet connectivity to most of these labs. The Campo Grande NTE and Secretary of Education requested that ProInfo and LTNet organize and carry out an REL workshop for all 81 principals of the Municipality. They wanted this workshop because they recognized that the effective integration of technology into routine teaching and learning is enhanced when principals learn to use these

technologies in their work and understand what is needed to enable and empower their teachers to use them in their teaching. They were specifically interested in having the principals learn to use the Internet for communication and to enhance classroom teaching. Unfortunately, because schools were in session, the principals could not be away from school for more than one day.

Two-Part Workshop

The workshop was divided into two parts. The first part involved taking eight Multipliers from the NTE and two computer lab coordinators from two of the schools through a one-day intense training session on the REL approach. During this session they used all the tools in the collaborative learning environment in the same way that the principals would use these tools. The trainers were also asked to prepare experiential learning exercises and support materials for the principals to use over the next two days. During workshop activities, the principals were asked to adapt and expand these learning exercises to be more appropriate to their situations. The goal of this part of the workshop was to build the capacity of local trainers by having them go through the same rapid experiential learning process that the principals would go through and to customize the workshop to meet the specific needs of their fellow educators.

Campo Grande's web-based learning environment that was created for this workshop included the following seven collaborative and communication tools:

1. Access to free web-based e-mail accounts that participants subscribe to and practice using.[6]
2. Access to two listservs, one a national list for Brazilian principals and the other set up just for the Campo Grande principals.
3. A private chat room within the environment customized for Campo Grande principals.
4. A web folio tool within their environment that allows the principals to instantly publish information, images, perspectives, experiences, challenges and questions on a web page in their environment for their colleagues and others across Brazil to read and comment on.
5. Access to an interactive "bank of links" specific to the needs of educators in Brazil.
6. Access to a selection of publications on using technology to enhance school management.
7. A gallery of photos from the training activity and for their activities later on.

In addition to these tools, their environment provided space to describe the training program in Campo Grande and efforts in Campo Grande to enhance the use of computer and Internet technologies in elementary education.

Training of Trainers

The training-of-trainers (TOT) workshop took place in one of the two labs of the NTE. The two authors were the trainers and used an LCD projector to display the web site and other materials as participants viewed the same on the screens of their computers. The lab had a DSL Internet connection so connectivity was fairly rapid. Some materials were provided on paper with copies on a diskette for easy and fast viewing and editing by the participants to enable them to customize these resources for their needs. The TOT participants had different levels of technical skills and teacher training experience, and most had only limited experience with using different Internet communication technologies.

The ten TOT participants were divided into two groups with each being responsible for preparing to lead the next day's REL workshop with the principals. As they completed each experiential module, the trainers would work in their small group to prepare customized learning scenarios that would provide a real-world context through which the principals would practice using the tool. The teams of TOT participants worked late into the night finalizing their materials and practicing their new skills.

Training of Principals – Day 1

The next day the 81 principals arrived and were divided into two groups and ushered into their respective computer labs. A buzz of anxious excitement and anticipation filled the air as the principals, nearly all of whom were women between 30 and 50 years of age, sat in pairs before the computers. The Secretary of Education and other officials made brief speeches as members of the TV press recorded the start of the event. After the dignitaries left the five-member training teams dove into action.

Since most of the participants had little or no experience with computers, the first few hours of the workshop were chaotic and stressful for the participants. The authors found that this period of chaotic stress is an important part of the REL approach and we feel that it actually accelerates and solidifies the learning of new skills. The exercises start off with the pairs of participants learning and figuring out how to move their mouse, launch the Internet browser and then navigate to their web-based learning environment. In doing this, the principals were forced to quickly learn, much through experimentation, observation, and peer-based collaborative learning, the basics of MS Windows, how to use a mouse, find specific keys on the keyboard, and start learning a whole new vocabulary. One of the trainers was assigned to lead each module while the other four moved around the room providing encouragement, assistance, suggesting different approaches and solving problems. Once each member had succeeded in navigating to their web-based learning environment they were asked to visit a variety of other web sites

and explore different features of the browser. They downloaded and printed a file, copied a picture from one site to their floppy diskette, viewed a PDF file and saved a site's URL as a favorite for later use. By lunch, the tone in the room had changed from chaotic stress and fear to one of excited confidence as the principals actively demonstrated their new skills and vocabulary to each other and the trainers. Small, animated group discussions could be heard as the principals talked about how they could see this resource being useful to their work and to improving teaching and learning.

In REL, participants are introduced to using the computer by learning to use the Internet: navigation, minimizing and maximizing windows, using icons, scrolling up and down, etc. are all quickly learned as educators explore the Internet. Starting training by learning about the Internet has proven to be a good approach because educators can feel that if it was possible and easy to learn to use the Internet, there is no reason to fear learning other computer skills.

After lunch, the trainers had the principals navigate back to their web-based environment and then they launched into a new challenge, registering for a free web-based e-mail account. Each principal, even those few with existing e-mail accounts were asked to register for an e-mail account. As this task was completed, the principals recorded their new address on the board and then started writing messages to each other. The trainers suggested specific school management and education topics for the principals to write about. They were then instructed to send replies and add an attachment to their messages. Many of the participants struggled to find the letters on the keyboard and learn how to add the correct accents. Much of the learning of these new skills was carried out as self-managed and peer-based collaborative learning activities. The trainers focused on orchestrating the learning rather than dictating it and on solving periodic problems and difficulties. After the afternoon coffee break the principals were again directed to navigate to their environment and register for one or both of the listservs. They were given a brief explanation of what a listserv is. But instead of describing this tool, they were given directions to experience the power and facility of a listserv for themselves.

Before sending their first message, the principals were asked to compose a brief thoughtful message using MS-Word (a tool most had never used). Very little instruction was given on how to use MS-Word. Rather, the principals were simply pointed in the right direction and through intense experimentation, observation of what others and the instructors were doing and help from their peers, each principal eventually composed the first listserv message. None of the principals understood what would happen when they e-mailed this message to the list, but they soon discovered the result as a buzz of excitement and personal achievement filled the room. Before the training event, the authors had asked a handful of other educators across Brazil to be prepared to be online during this part of the training so that they would be able to quickly respond to the messages being sent by the principals. As the participants realized that they were sending messages to over a thousand educators around Brazil and were receiving replies to their messages from educators they had never met, an understanding of what a listserv is and how it can be used emerged organically and concretely—not abstractly.

Before leaving the labs the trainers quickly reviewed what the principals had learned and took an oral assessment of how the principals felt about their achievements. There was a unanimous feeling that they could never have guessed that they would have learned and accomplished so much in just one day. Some principles were nearly overwhelmed with emotion as they explained how they had come to the training program with a great deal of fear and trepidation because they had never had any experience with computers or the Internet and had only come because they were forced to be here. And now, after only one day, they had navigated the Internet, created an e-mail account, sent messages to their friends and colleagues, composed a message on MS-Word, subscribed to a listserv and communicated with educators from across Brazil whom they had never met. They were leaving their first day with a strong feeling of achievement and ability to learn new skills and an organic understanding of computers and the Internet based on personal experience.

Training of Principals – Day 2

The next day's training activity was divided into two sessions. The first half was used to quickly review the previous day's activities, check and respond to e-mail messages received, reply to new listserv messages and explore new web resources. After the morning coffee break, the principals were taken through the process of registering a user name and password for their environment's chat room. As more and more of the principals entered their chat rooms, they started exploring the different features with little or no instruction. Creating an environment and a positive attitude toward exploration and experimentation is a critical feature and result of the REL approach. Participants who become comfortable with exploratory learning and start developing skills that improve this style of learning can be expected to quickly learn new skills with little or no formal instruction. Developing this self-managed learning skill within the field of education, computers and the Internet are essential for ongoing leaning and integration of skills into routine work. It simply isn't possible to provide formal instruction to all teachers and principals in a country in the vast number of software applications and Internet tools.

Periodically during the workshop, participants were asked to stop what they were doing so that the group could have a

brief discussion on how the new skill or tool could be used in their work and what they could do as principals to help their teachers make better use of these tools to improve teaching and learning. These reflective moments are seen as critical to the ultimate success of the REL approach. Some of the participants were then asked to type up their ideas and distribute them via the listserv. This feature reinforces the importance of sharing ideas among the community of educators.

After lunch, the principals were introduced to their environment's webfolio, the most complex collaborative tool of the training program. Learning to use this tool can be as simple as just registering a user name and password and then typing a message that appears on a web page in their environment. If participants are interested, they can also upload images to illustrate their message, and use simple HTML to format their text by adding color, or making some items bold or italics. Participants were asked to again use MS-Word to carefully compose a message about their training experience and how they plan to use their new skills in their work. By the end of this session, the environment's webfolio was filled with messages, comments and images. Principals were seen moving from computer to computer to see their messages on the Internet. Mobile phones appeared from purses as principals called friends and colleagues to tell them how to reach the environment to read what they have just published on the Internet. Conversations exposed a newfound confidence and pride in what they had achieved, as the fear they felt the day before became a distant memory.

As with the day before, the trainers ended this session by quickly reviewing what was covered and asked the participants about their satisfaction with the workshop. It was clear that the principals were leaving the workshop with a sold set of practiced skills and a strong feeling of achievement and ability to use what they learned and to keep learning. The trainers were also left with a new set of skills and abilities and a confidence in a new approach to organizing and carrying out training workshops. They were both left with a web-based learning environment, owned by the municipal schools of Campo Grande, with tools that they could continue using without fear. They were all members of an active listserv and could participate in on-line chats and publish their ideas on the Internet.

How Applicable?

Even thought the REL approach for helping prepare teachers to integrate the use of computer and Internet technologies into routine teaching and learning was developed within the context of Brazil and the ProInfo program and benefits from the resources of this program, the authors believe that the underlying principles of the REL approach are adaptable and applicable to any national or project situation. At the same time, it is important to note that there is no single type of REL workshop. It is simply an approach that needs to be customized to meet the condition of different environments, address local constraints, and meet the specific needs of the educators being trained.

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[3] The REL approach to teacher professional development was developed by the authors through a collaborative initiative between Brazil's ProInfo program (http://www.proinfo.mec.gov.br/) and the Learning Technologies Network (LTNet) project funded by USAID and administered by the Academy for Educational Development (AED) of Washington, DC.

[4] In Brazil, these customized collaborative learning environments are called *Ambiente de Aprendizagem Colaborativa (AAC).* They are part of the LTNet-Brasil web site (http://www.ltnet.org/) which was initially developed under the USAID-funded Learning Technologies Network project administered by AED.

[5] Campo Grande received computers and other equipment for labs in 5 schools from ProInfo. Based on the success of the ProInfo effort, the Municipal Government then provided funding for computer labs for the remaining 78 schools.

[6] Nearly all of the principals did not have e-mail accounts and had never used e-mail before the workshop. Also, over 50% of the principals had no previous experience with computers or typing.