

# Web Based Learning

@ *Developing Countries*



Web-based instruction will revolutionize learning in developing countries. Its impact is likely to be greater than the introduction of printed books. This article will explain how the web can facilitate learning in developing countries, its main advantages and disadvantages, and its costs.

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## What Is the Web?

The Web (short for the World Wide Web) is a global network of thousands of "server" computers connected by telecommunications. Together, the server computers store four types of resources that are particularly useful for learning. They contain the largest **library** in the world, with a huge collection of text, data, graphics, audio recordings, video, and computer software, which can be viewed and transferred to the user's own computer. They have thousands of **search tools** such as indexes, directories, "search engines," and "hotlinks" to help users find what they want on the web and even off the web. They run **interactive software** that permits users to practice complex tasks with simulations and take quizzes that automatically report the score and debrief the learner. Finally, the servers allow **direct communication** between web users, by means of "bulletin board" discussions, simultaneous "chat" exchanges, and "video conferencing" that allows distant users to see and hear each other as they interact.

## How Can the Web Facilitate Learning in Developing Countries?

The following are some of the ways:

- Soon many of the world's journals and books will be "downloadable" in less than an hour, translated into any of the major languages.
- Elementary students can now travel by the web to other lands, seeing and talking with other children, sharing customs and hopes for the

future.

- High school and college students everywhere soon could have access to advanced mathematics, science, and technology courses even if the local teachers and professors are not adequately trained.
- Promising young government officials can earn masters and doctoral degrees from some of the best universities in the world without leaving their jobs.
- Business people, seated in their offices, can study worldwide market opportunities and soon will be able to take language instruction that perfects their pronunciation and grammar.
- Technicians can keep up with rapidly changing technology and get almost instant help with complex problems from suppliers.
- Doctors will soon learn the latest life-saving procedures at their local hospitals.

## What Are the Advantages of Web-Based Learning?

Web-based instruction combines the capabilities of books, filmstrips, radio, television, and instructional software. It also adds access to the vast resources stored on thousands of servers, sophisticated search tools, and communication among two or more people located at great distances. For most purposes, the user can use the web at whatever time is convenient for him or her, without regard for time zone differences. Each can proceed at his or her own pace. For several, but not all purposes, it is much less expensive than other options available to developing countries.

### What Are the Limitations of Web-Based Learning?

Reliable electric and telephone services are currently required, but they may not be in another few years. There is a great deal of high quality information and instruction available on the web, but there is also much false information, dangerous information, and poor instruction available, and learners often have difficulty judging the quality.

Many people find it fascinating to explore the web and some waste much time doing so without learning much. Most of the text is in English, although there are now web-based translators for several major languages. Overwhelmingly, the content currently represents western culture and thinking. The costs of web-based instruction are currently too high for widespread use in elementary and secondary education, but may be justified to supplement the curriculum in high priority areas for which there are not enough qualified teachers.

### When Will This Be Available in Developing Countries?

Several of the above-indicated examples are already on the web and the others are likely to be available within two years. Web access is already common in the ministry offices, large companies, and universities of developing countries. All that is needed is a personal computer (a "PC" or "Mac" desktop or laptop computer), browser software such as Netscape or Internet Explorer, electrical service, a telephone line free of background noises, and an "Internet Service Provider" (ISP). Within a few years, satellite communication will provide access to most remote parts of the globe, and will operate with small batteries that can be recharged by solar electric panels.

### What Does It Cost?

An adequate desktop computer with the needed browser software now costs about \$1,200, and prices are dropping. A printer costs about \$200 more. The equipment uses about 100-200 watts of electricity. The costs of telephone service and Internet service vary considerably from country to country.

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Four other "hidden costs" should be considered. First, there is the **cost of training staff** to use the computers and to access the web. Minimum training requires only 1-2 days, and is available in books and tutorials provided with many computers. To be moderately expert in accessing the web will require 4-5 days of study and practice. Second, there is the **cost of repairs** after the warrantee period (which is usually 1 year). Malfunctions are most commonly experienced during the first year, but during each of the following four years about 1/10 of the equipment will need some repair. Third, there is the cost resulting from computer and web **technology changing** so rapidly that today's state of the art computers probably will not be suitable for accessing the web five years from now. Finally, although most web sites can be accessed at no charge, some charge **access fees** and some charge fees for particular services such as training or university degree programs offered at a distance through the web.

The base-costs are substantial expenses for developing countries, but should be judged in consideration of the following. First, for any computer with web connection that is not being used full-time, the base cost for additional use is usually only a few dollars a month. Second, several people can rotate using one computer for

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learning. Third, web-based learning will usually be far less expensive than sending local people abroad for education or training, or for bringing outside experts into the country. Finally, the modern history of both computers and telecommunications is one of continually increasing capabilities and declining costs. Five years from now, the costs are likely to be half of what they are today.

### More on Web-Based Learning

In the coming issues of TechKnowLogia we will have a series of articles on various forms of web-based learning in developing countries. These will include graduate degree programs offered at a distance by major universities, learning resources to help ministry officials with their job responsibilities, skill upgrade opportunities for technical and professional workers, supplementation of the elementary and secondary school curriculums, and resources to aid business persons. If there are other applications of web-based education that you would like covered, please inform us.