# Information Literacy "Unplugged": Teaching Information Literacy Without Technology

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**Abstract**

The link between poverty and illiteracy has motivated educators to work diligently to improve the reading and writing skills of economically disadvantaged students and advance them along the continuum from functional literacy to digital information literacy. The immediate literacy needs of the "have-nots" in the world have made it impractical and unfair for them to wait for information literacy and its attendant digital technologies to trickle down to them. Instructional design methods offer practical and affordable teaching models for increasing the information literacy of those who seek to immediately improve their lives while preparing themselves for the opportunities of the 21st century where knowledge and information are pathways to economic and personal self-improvement and fulfillment.

## 1. INTRODUCTION

Recently, an indigenous chieftain who had walked through the South American jungle to a medical missionary station for treatment marveled at the world outside his remote village. He remarked to the nurse treating him, “In my village, I am a rich man because I have everything I need. But, when I come here I understand how poor my people and I are compared to others.” His observation sums up one dilemma of the digital age: as travel to distant lands becomes easier, as industries explore remote regions for untapped natural resources, and as the poor leave their villages to seek the economic benefits of the larger society, the divide between the “haves” and the “have-nots” becomes more painfully apparent.

Communication technologies and travel innovations have allowed adventurers, entrepreneurs, relief workers, educators, missionaries, and many others to visit even the most remote villages either in person or virtually. As the poor in developing nations capture glimpses of the economic riches of industrialized societies, they have come to understand the unnecessary hardships of their own poverty. Their concept of having “everything they need” changes as they realize how their economic poverty denies them their full potential for personal fulfillment.

Literacy education for the poorest of the poor is one strategy that allows disadvantaged peoples to reach their full human potential.

> Everyone has the right to freedom of opinion and expression; this right includes freedom to hold opinions without interference and to seek, receive, and impart information and ideas through any media and regardless of frontiers.
> —United Nations Universal Declaration of Human Rights, Article 19

Making literacy instruction available to all people is just one campaign in the war against poverty, social and political injustice, and the violation of human rights. All people have the fundamental right to an education that teaches them the literacy skills they need to shape their own lives, work to better themselves, and contribute to their own communities and society as a whole.

Because alphabetic literacy and information literacy have become the currency of the new world economy, educators play an important role in preparing people to reach their full economic, social, and personal potential. Teaching information literacy skills is an effective strategy for freeing people from tyranny; providing opportunities, and moving them out of poverty. Literacy and liberty are linked as one empowers the other.

Frederick Douglass, an American slave in the mid-1800s, understood the power that his illiteracy had to keep him enslaved (Douglass, 1982). As a result, he risked his life to learn to read and write. His autobiography detailed his personal journey from economic poverty and illiteracy to freedom and economic opportunity. Douglass’ widely read narrative helped to abolish slavery in the United States because the author offered a first person accounting of the hopelessness and despair of slaves and powerfully demonstrated

the intellectual, social, and spiritual potential of people for whom reading and writing were illegal activities.

Douglass called slavery the "graveyard of the mind" (Douglass, 1982, p.85). Literacy liberated him and other slaves and literacy continues to have that same potential today. The formula for freedom, self-determination, and human rights has not changed in the last one hundred and fifty years since Douglass wrote his autobiography: to escape poverty and repression, people must improve their alphabetic, social, and now their information literacy skills. To prosper in the Digital Age, people must be masters of information. "The illiterate of the 21st century will not be those who cannot read and write, but those who cannot learn, unlearn, and relearn" (Toffler as cited in Rosenberg, 2001, p. 3). Simply put, people must be educated to be information literate, lifelong learners.

Those who understand the promise and challenge of the future are searching for effective strategies to integrate systematic and cumulative literacy and information literacy instruction into school curricula in every corner of the world.

## 2. DEFINING LITERACY

"Experience teaches us not to assume that the obvious is clearly understood" (Freire, 1970, p.207). Such is the case with "literacy." Scholars continue to debate the various definitions of literacy and research the relationship between reading, social, information, and digital literacy.

UNESCO has long been a proponent of all forms of literacy education because it understands the link between literacy and poverty. The politics of funding required that the agency define literacy to benchmark the progress that educational campaigns had made in developing countries (Lind and Johnston, 1986). In 1950, UNESCO began its work by defining literacy as the ability of a person to "read and write a short, simple statement on everyday life" (Newton and Beaverton, 1990, p. 32). By 1962, the agency adapted a less alphabetic and more social definition of literacy by describing it as "skills and knowledge" that allow one to function effectively in a community in the realms of reading, writing and arithmetic. As its field research advanced, UNESCO found it easier to define illiteracy than to describe literacy (Newton and Beaverton, 1990, p. 34). The reality is that literacy remains a complex concept, especially now that digital technologies have reshaped how people read, write, and manage information.

UNESCO has continued to be diligent in defining and advocating literacy because the agency clearly understands the direct cause/effect relationship between literacy and poverty. The spectrum of literacy includes:

- **Alphabetic literacy** which, in its most basic form, refers to a person being able to write his or her own name;

- **Functional reading and writing literacy** that allows a person to read or write on the most elementary and basic levels of everyday life;
- **Social literacy** that empowers one to read, write and communicate effectively using the cultural language of a particular community (e.g. awareness of linguistic social norms and practices, language dialects, body language as communication, unspoken communication customs, etc.);
- **Information literacy**, which requires people to use critical thinking skills to "locate, evaluate, and use information in order to become independent learners" (www.ala.org/acrl/ilcomstan.html).
- **Digital information literacy, which** refers to a person's ability to use information literacy skills in electronic environments such as the Internet or digital databases. Included in digital information literacy are emerging literacies such as computer, network, software, visual, multimedia, audio, tool, and Internet literacy.

It is important to distinguish between the various forms or levels of literacy because each requires different skills and tools for teaching and offers different attendant costs and benefits. Yet, the truth remains that education, especially literacy education helps people lift themselves from poverty.

## 3. INFORMATION LITERACY "UNPLUGGED"

United Nations' Secretary General Kofi Annan observed in his acceptance speech for the Nobel Peace Prize in 2001 that "[p]overty begins when even one child is denied his or her fundamental right to education" (Annan, 2001). Most people would agree that every person should be functionally literate and to be able at least to write his or her own name. The problem arises is defining the point along the continuum from basic literacy to digital information literacy that distinguishes fundamental, basic education from advanced education. With the wealth of digital information available, many would argue that digital information literacy is a minimal requirement of an educated person. The reality is that many children still are not taught functional alphabetic literacy, which is a foundational skill to any form of information literacy.

Even though basic education is a fundamental right, is not universally available because education costs money. Society must calculate the return on investment in education by considering the cost of having a portion of the world's population be illiterate.

### 3.1. The Costs and Benefits of Education in the Information Age

Digital information literacy is expensive to teach because it requires an investment in technology and the instructional design that supports computer-based learning. While the Internet does provide free access to a wealth of information, the cost of the technology to make the connection between user and information is still prohibitively expensive for many countries and peoples.

Hawkins (2001) argues for the benefit and long-term affordability of bringing computer technologies to developing nations by pointing out that,

> ...because knowledge and information have become the most important currency for productivity, competitiveness, and increased wealth and prosperity, nations have placed greater priority on developing their human capital. Governments around the world are thus focusing on strategies to increase access to and improve the quality of education. (p. 38)

The World Links for Development Program (2000) Hawkins describes has had great success in bringing computer technologies to developing nations. However, for every person the World Links program helps, many other people do not have access to suitable schools, qualified teachers, or adequate learning resources such as libraries. While waiting to join the ranks of digital learners, students can acquire information literacy skills that lay a solid foundation for using digital tools when they became available.

Basic information literacy instruction does not require a substantial monetary investment the way that digital information literacy does. What it does demand is a revision of the instructional strategies that teachers use to guide student learning. This is also true for classrooms where computers are being made available to students for the first time. Hawkins (2001) notes,

> One of the key failures of many past programs [to infuse digital technologies into schools in developing nations] was that schools were provided with expensive equipment but with little or no support for teachers' professional development. (p. 39)

An investment needs to be made in educating teachers on how to use current instructional design strategies for teaching critical thinking skills in addition to basic reading and writing skills. Students would be taught "information literacy 'unplugged.'" In other words, they would learn and practice how to find and manage information in intelligent ways even if they do not have access to digital technologies.

## 4. THE AFFORDABILITY OF INFORMATION LITERACY "UNPLUGGED"

It is important to note that information literacy is not dependent on digital tools such as computers nor is it dependent on alphabetic literacy. Information literacy "unplugged"—or information literacy without electronic media—existed and exists in cultures that have only an oral tradition of learning. Literacy, in its most basic sense, is simply a way of finding and recording information, teaching others, and creating new knowledge. Having access to a computer does not make a person information literate any more than owning a pen makes one a writer. Computers and pens are merely literacy tools. Information literacy is what gives a person the intellectual and social skills to use information tools effectively and wisely. Investing in teaching people to be information literate offers the return on investment that people will be equipped to gather the information they need to

improve their own health, economic, political, religious, social well-being, and educational situations.

The Association of College and Research Libraries (ACRL) has been a leader in defining standards, indicators, and outcomes for information literacy. None of the skill sets they list in their definition require digital technologies. According to the standards, an information literate person should be able to:

- Determine that information is needed,
- Find the necessary information,
- Evaluate the quality of the various sources of information,
- Effectively use the information for a specific purpose, and
- Manage the information in a socially acceptable way (ALA/ ACRL, 2000).

Information literacy (IL) skills can be taught in classrooms that do not have walls, chalkboards, books, or computers because IL is simply a strategy for knowledge building, communication, and problem solving that empowers people to be lifelong learners who can continue to find, use, and manage information in productive ways beyond the scope of their formal schooling.

## 5. THE COST OF WAITING FOR DIGITAL INFORMATION TECHNOLOGY

The Aids/HIV infected person, the subsistence farmer fighting drought conditions, the young person being conscripted into a warlords' army, the abused woman who cannot economically support herself or her children, and the distraught refugee cannot afford to wait to receive information and education that will empower them to help themselves. Waiting is a luxury of those who already have the basic provisions of food, shelter, medical care, political stability, and societal support to protect them during any waiting.

The world cannot afford to wait while so many people hope for the technology to lift them from despair, repression, and economic instability. Poverty and illiteracy are everyone's problem. Wealthy nations cannot escape the pictures of ragged children huddled shoulder to shoulder in stark classrooms as teachers recite lessons from memory because they do not have teaching materials. Likewise, because television and radio are almost ubiquitous, the poor see and hear about the material wealth that is beyond their reach.

> No one today can claim ignorance of the cost that this divide [between the rich and the poor] imposes on the poor and dispossessed who are no less deserving of human dignity, fundamental freedoms, security, food and education than any of us. The cost, however, is not born by them alone. (Annan, 2001)

Everyone shares the cost of waiting for information literacy to become a universal right.

The evidences of the "connectedness" of humanity were made clear when the consequences of poverty and despair in Afghanistan and elsewhere came to New York City on September 11, 2001. The cost of waiting is also made clear as more nations gain access to nuclear and biological weapons. If the people of all nations have access to and an understanding of the far-reaching devastation that nuclear or biological weapons can have, we would reduce the likelihood of these kinds of war. The citizens of the world are connected now in ways they were not before—whether it be from a drifting cloud of nuclear fallout, the contagious spread of disease, the satellite images of sorrowful image of refugees pushing en masse across borders, or the world-wide fear of terrorism.

The free world cannot afford to have any person wait for an education or wait to be taught the information literacy skills needed to protect human rights and promote political and social justice. It is in the best interests of the world that every citizen is educated to find, evaluate, use, and publish information so as to advance knowledge and understanding between nations, groups, and individuals.

While many people in the world will have to wait for technology to trickle down to their classrooms and workplaces, the waiting time can be transformed to a time of active preparation for the coming technology**.** However, educators must design a new approach to teaching that will transform passively waiting for digital technologies into a time of active learning how to use existing as well as potential technologies. Instructional design that focuses on teaching information literacy skills should replace traditional recitation-based instruction that uses lecture or rote memorization to drill students on facts rather than teaching student-centered, active learning focused on skill building.

## 6. DESIGNING INSTRUCTION FOR TEACHING INFORMATION LITERACY

Instructional design "refers to the systematic and reflective process of translating principles of learning and instruction into plans for instructional material, activities, information resources, and evaluation"(Smith and Ragan, 1999, p. 2). Instructional designers are educators who have been trained to use systematic development strategies to craft curricula and define teaching resources and activities that:

- Encourage an advocacy of the learner;
- Support effective, efficient and appealing instruction;
- Promote coordination among instructional designers and those who will actually teach the instructional materials;
- Facilitate diffusion/dissemination /adoption of educational products;
- Support development for alternative delivery systems;
- Facilitate congruence among [learning] objectives, activities, and assessment; and,
- Provide a systematic framework for dealing with learning problems (Smith and Ragan, 1999, pp. 8-9).

There are many different models for the instructional design (ID) process, but most of them share a common methodology for creating and organizing curricula and teaching strategies. Effective instructional design, for example, would carefully consider how to teach information literacy concepts in a thoughtful, purposeful, systematic, and cumulative way that is responsive to students' strengths and needs as well as the available teaching resources. The basic stages of instructional design for information literacy curricula would require the designer—whether it is a teacher or educational administrator—to:

### 6.1. Analyze how information literacy instructions fit into the cultural context of a society

Instructional designers would assess the existing interests in alphabetic, social, and information literacy in the target population. This would include an understanding of the receptivity of teachers and learners to new methods of education and their desire to learn new information. Effective instructional design identifies the benefits of the learning as well as its attendant costs and return on investment. This step is especially important when resources are limited and only a portion of the society can be given the benefits of education. This analysis stage would help to identify who can best benefit from the limited instruction that may be available.

To illustrate, I recently attended a poetry reading in a remote, rural Central American village. The poet emotionally announced that this was an historic moment because the farmers, school children, and laborers would be hearing written poetry for the first times in their lives. What he failed to understand was that this particular culture was rich with poetic oral traditions and story telling. He never explained how his written poetry was culturally valuable for his audience, so the beauty and power of abstract poetry was lost on the many people who had come to hear stories and epics tales.

If there is no foundational groundwork of preparing the learner and teachers to receive new information, any plan to change a current educational design will fail. Learners and teachers have to understand that they are important stakeholders in education and that the learning they accomplish has real value in their lives.

### 6.2. Identify and inventory the particular information literacy needs and strengths of the targeted audience

Instructional designers must understand what types of learning would best suit each distinctive culture. In a culture that values questioning, story telling, or apprenticeship as acceptable ways of acquiring information, it would be important to incorporate those teaching/learning strategies into the classroom.

To accomplish this, the classroom must evolve from being teacher-centered to being student-centered. In other words, the students' needs and strengths should shape the design of the instruction. Effective instructional design always begins with the basic questions:

- What does the student already know?
- What does the student need to know?
- What resources are available to close the gap between these two points?

Educating people to be self-guided, lifelong, information literate learners begins with a clear understanding of:

- The most important and immediate educational needs of the targeted learners,
- All the resources and strategies that are currently successful in solving problems and creating opportunities,
- The obstacles to implementing a new learning program either from the individual students, instructors, teaching institution, or society,
- The ability and willingness of the community to collaboratively work toward a common good in consultation with social groups and experts outside their own community.

For example, a young girl came into a medical clinic in the Caribbean where I was volunteering and complained of a raging infection she had in both her earlobes as a result of unhygienic ear piercing. Her grandmother had told her to solve the problem by tying a red thread tightly around the top of the earlobe. The attending physician gave the patient instructions to remove the thread and apply topical medicine to the infection, but he failed to explain why this strategy was more effective than the one proposed by the grandmother. The young girl refused the medical treatment because she was not given a logical explanation of how it was superior to the folk remedy.

**6.3. Define, model and discuss the practicality and promise of information literacy instruction**

There should be a clear statement of the immediate and long-term value that any particular learning adds to an individual and the community.

For example, I was teaching a workshop on writing to Eastern European students who were preparing to take the entrance exam for college. I gave them lollipops and without any further guidance asked them to write a two-page paper about the candy in their hands. The students were distraught because they did not have strategies in place to independently brainstorm on writing ideas, cull the best topics from a menu of possibilities, organize and develop those topics into a logical patterns, edit their own writing, and complete the assignment in the given time allotment. Having made the point that they would be ill prepared to write an impromptu essay for a college exam, I gave the class a step-by-step process on how to write a short essay. We practiced group brainstorming, proposed some possible essay outlines, discussed how to develop essay ideas using details and examples, and talked about some quick editing strategies such as reading the paper backwards word for word to look for spelling errors. The instruction was aimed at teaching the students skills that were useful in immediate and long-term ways.

### 6.4. Design instruction with clear, meaningful, and practical objectives for each level of instruction

The plan for learning must be presented in a way that demonstrates how students will move from basic to advanced skill levels in a meaningful, systematic, and cumulative way. Information literacy skills can be taught on every level of education from primary / elementary through higher education. Instructional designers would develop student-centered content materials for instruction that encourage students to practice critical thinking and problem-solving skills and allows learners to practice skills such self-motivation, self-assessment, goal setting, and time management all of which are valuable for traditional as well as information literacies.

One activity that demonstrates the power we all have to teach ourselves is ask students about a time when they taught themselves a skill without the assistance of anyone else. A list of the key elements of self-instruction can be drawn from the group discussion that follows the individual assignment. Motivation to learn, inspiration from an outside source, persistence in problem-solving, using available resources and constructing new resources, learning from mistakes, and repeating the process while adjusting for past mistakes and triumphs are just some of the steps that make up student-centered, self-guided learning.

In a workshop I offered for teachers in Mexico, the learners recounted personal stories of how they had taught themselves to sew, dance, build, or play a musical instrument. Once we established the steps they followed in that learning process, the workshop group discussed how those same learning strategies could be taught to students in their own classrooms. The teachers all knew how to self-instruct; however, few had considered how that same process for self-instruction could be formally taught to their own students using examples from the teachers' personal experiences.

### 6.5. Set standards for information literacy assessment and evaluation of progress at the start of the instructional design process

Measuring student performance is very important in designing effective instruction. Educators must always ask what long-term value their teaching adds to student learning. Assessment does not have to take the form of recitation or memory drills. Projects and activities that demonstrate proficiency in real life situations add value to the learning and can be designed to be a fair test of students' abilities and potential. Problem-based learning presents students with a relevant case history that requires them to work as a group to find a reasonable solution. The case history may be as elementary as examining a broken school desk to find ways to improve its design, or it may involve complex social issues such as the ethics of whether sharing information with a fellow student during an academic test is a form of comradeship or cheating.

### 6.6. Provide for a continuum of information literacy learning

Anyone who has ever invested time in learning and then not used that new knowledge on a continuing basis quickly forgets the learning. For example, it would be misguided to teach computer-less societies all the intricacies of computer literacy.

Meaningful learning guides students to create new knowledge by:

- Brainstorming and chunk ideas into groups,
- Creating hierarchies of levels of importance for information, and
- Seeing how clusters of ideas relate ideas to one another (cause / effect, point / counterpoint, inductive / deductive, chronological/ order of choice, etc).

The student thus learns "information architecture." This type of learning creates a scaffolding of understanding and knowledge upon which further learning can be built. Understanding information architecture is a valuable tool for managing any large body of information—both digital and traditional. Teaching students to understand information concepts such as disease contagion, political or social power hierarchies, or the economic chain of industry and agriculture gives them an immediately relevant skill and also prepares them for further learning in any contexts—including digital contexts.

### 6.7. Deliver instruction in a medium that is suitable to the educational purpose and goals

For many teachers, this is the greatest obstacle. Chalkboards, computers, books, and paper are the tools of education, but not every school has access to these resources. Using creativity and ingenuity, master teachers can design instructional mediums that are effective without being expensive. The natural world is a learning lab. Puddles of water teach us about gravity, the clouds hugging a cool mountainside are testaments to the evaporation cycle, and insects provide excellent examples of ergonomics and engineering.

Teaching students the skills of systematic and thoughtful observation does not require microscopes or audio-visual equipment. Oral tradition has taught educators the value of dialogue and question forming to teach critical thinking. Story telling can teach communication skills and the power of imagination. Interpersonal relationships can instruct students in problem-solving strategies. Pencil and paper are the basic tools for teaching information architecture. And where pencil and paper are luxury items, kinesthetic learning that is activity-based can be powerful instruction resources. Teachers, though, will need to be taught how to use the resources of the natural world as learning resources.

This may seem like the most challenging task to accomplish, but many teachers in the poorest nations know how to create learning assignments that challenge students to take command of their own learning. The assignment may be to create a toothbrush from plant material, or explain construction principles based on the observing the way rain falls off plants, or discussing the origins of folk beliefs as a way of understanding a culture. Human learning is not the product of the modern age. Even in the most remote and poor

areas, learning can take place if teachers are trained to use the natural world and human relationships as models for science, the arts, economics, and other academic subjects.

The basics of information literacy and all literacy can be taught in the absence of computers. Great educators such as the Buddha, Socrates, Jesus, Mohammed, and Confucius, taught in the oral tradition by asking questions, telling stories, using examples from the natural environment around them. They taught information literacy in a world without computers, chalk boards, or notebooks.

### 6.8. After instruction has been delivered, evaluate the effectiveness of it based on the stated goals and objectives

Each culture has its own measures of success. It is important that the effectiveness of instruction design be determined in a culturally relevant way. Additionally, learning should be assessed for it value to the individual student and to the larger society. People in information or industrial societies may not always share the same educational values as those in agricultural societies.

Educators also must not underestimate or devalue the importance of native wisdom and customs. The challenge for educators is to separate the folklore and social practices that are obstacles to advancing learning from those that have made learning possible and have preserved the wisdom of past generations.

### 6.9. Revise and repeat the whole cycle of instructional design development to improve on the instruction that was delivered

Education is an ongoing process. There must be a long-term commitment to studying how learning is delivered and how that delivery can be improved. This will require teachers to carefully and honestly examine their own effectiveness and measure it in terms of the learning that takes places in their students.

Replacing the old teaching methods of recitation with newer models of student-centered learning will not solve the problem of illiteracy unless careful attention is paid to what methods of instruction are effective and which ones are not. Teachers must be lifelong learners themselves and model that principle for their students by constantly improving how they teach.

## 7. TEACHING THE TEACHERS

Initiatives to teach teachers how to prepare students to be information literate require a move away from some of the older models of education through memorization and recitation to an activity-based, student-centered approach to instruction. The newer models for learning combine instructional elements of critical thinking, problem-based learning, self-guided learning, and information literacy instruction. Pupils are taught to take responsibility for actively learning new information and encouraged to make

immediate application of that learning in real world settings. Many times this learning requires students to:

1. Consider a real-world problem that is within their intellectual grasp;
2. Ask questions that probe and explore the dimensions of the problem;
3. Collaborate with others to brainstorm and find a menu of possible solutions;
4. Find reliable information that informs a logical decision-making strategy;
5. Draw conclusions about how information relates to proposed solutions;
6. Consider which solution is most feasible, ethical and logical; and then
7. Explore the implications of their conclusions as they apply their learning to real life situations.

In the student-centered classroom, learners can follow the learning model outlined above and be encouraged to look outside the confines of the classroom for real world applications of classroom knowledge.

This educational model is affordable because it does not require investments in expensive equipment or teaching materials. It does require investing in teacher training that guides educators to understand and value information literacy, problem solving, critical thinking, and self-guided learning and how these skills add to a student's ability to be a lifelong learner.

These new teaching strategies can start a "ripple effect" of teaching the critical thinking and problem-solving skills that are foundational to information literacy. One teacher may not be able to provide computers to classrooms in the cloud forests, beam satellite streams of information to distant isolated valleys, wire remote classrooms in the outback to schools in the city, or set up cell phone technologies in the desert to deliver instructional materials to nomads. However, one teacher can teach one teacher who can teach others.

There is not enough money to teach everyone information literacy using high priced technology. In anticipation of a truly World Wide Web of accessible information, educators can prepare students to be independent, lifelong learners who are then able to use computers when that technology becomes available to them. Using sound instructional design strategies that are practical, sustainable, and replicable and affordable, the "have-nots" can have a foundational knowledge up on which to build their own information literacy.

Learning is an interpersonal activity that teaching technologies can supplement but cannot replace. Information literacy and education in general are not dependent on the tools of teaching; they are dependent on the skills of the teacher and the attitudes of the learners. The face-to-face discussions and evaluation of information are what guide students to learn and practice how to blend facts with their own experience and create learning that becomes relevant, meaningful, and lifelong knowledge. Teaching and learning are interactive activities.

We must be patient because learning is a process. Students take information in as a process, not simply a transference or transfusion from someone else. However, there is an urgency to have everyone be information literate. So, we must invest in people as well as technology.

## 8. RECOMMENDATIONS

This past spring I traveled to rural Slovakia to offer workshops for students and teachers. The headmistress of the school and one of the academic department heads confirmed what I had heard teachers say in Kazakhstan, Ukraine, Ecuador, Jamaica, Honduras, Mexico, and the United States. When I asked these teachers what they would do to improve the quality of education that they delivered to students, many their suggestions did not required money for technology. They recommended educational reform that:

- Gives teachers more authority in their own classrooms;
- Provides for collaboration between teachers to widen the perspective on the possibilities of shared expertise;
- Recognizes and addresses the many obstacles to students learning such as hunger, disease, social prejudice, poverty, or apathy;
- Offers teachers the opportunity for continuing education; and
- Provides teachers and students with educational resources that are proportionate to educational goals.

Using the instructional design process to reform education and infuse information literacy into the curriculum is a reasonable goal even for the poorest of school districts. It requires that policy makers set reasonable learning goals and provide resources that match those goals. The reform may have to be limited at first so that it can be achievable. A process for bringing information literacy into the classroom could include:

- Targeting a specific population for the new instruction not only in terms of the students' ability to learn new skills, but also their ability and willingness to, in turn, teach others;
- Comprehensive planning be done to reform the curriculum in ways that are effectively systematic, cumulative, and also realistically affordable;
- Partnerships and collaboration are creatively encouraged so as to expand the possibilities for instructional resources and revenues;
- Creative solutions and reasonable experimentation with teaching methodologies are allowed in an effort to discover promising teaching strategies;
- Teachers be consulted so that the any educational reform plans can be individualized in their own classrooms based on their expertise, resources, and individual students;
- A reasonable and realistic balance be achieved between the goals of instruction and actual student achievement;
- Ongoing support and encouragement is given to students and teachers as they explore the possibilities of information literacy in their own cultural settings;

- The reform is flexible enough to accommodate for lessons learned "along the way"; and that
- There is a clear and demonstrated understanding that learning is a process that takes time.

In summary, providing a 21st century education does not require large economic investments. It requires teachers, administrators, and policy-makers to work together to change their attitudes about how learning can be accomplished. The poverty that denies people of an education is not always economic. It is a poverty of spirit to explore resources, problem-solve, create a vision, and collaborate with others to achieve a common goal, and then share the news of that victory in a way that will inspire, educate, and transform others.

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