

Chapter 2

PROBLEMS AND VISIONS OF LEARNING

In a passage from Lewis Carroll, Alice is seeking directions from a cat.

‘Would you tell me please, which way I ought to go from here?’ ‘That depends a great deal on where you want to go to.’ said the Cat. ‘I don’t much care where.’ said Alice. ‘Then it doesn’t matter which way you go.’ said the Cat.

Alice in Wonderland
1960, page 62

Alice's situation, not knowing where she wants to go, and so not having any reasonable choice of how to start out, is common in education today. It is a major problem in planning for the future of education. We need to know our direction for learning. This chapter attempts to give the 'educational Alice' some direction to head toward, a vision for the future.

The question we ask is “What do we want learning to accomplish, both for the individual and the world?” Having such a vision for the beginning of a new millennium is critical, since we need a new direction.

We first begin with some problems in learning today. Then we will look at some visions for the future of learning, based on our consideration of these problems.

It should be obvious at this point that we need a completely new plan and vision for worldwide access to education at all levels, if the next century is to see a quantum leap in educational opportunities everywhere. Obviously this is a great challenge and no easy task.

Theodore Hesburgh
Looking Forward, ed. John Templeton
HarperCollins New York 1993

2.1 The problems of education today

Learning has many major problems. In this section we discuss the major factors that we think are important.

2.1.1 Too many people

Perhaps the major problem for humans is that the world population has increased from two billion in 1927 to six billion people in 1999. Population is still increasing. We have too many people on earth. The *World Population Profile: 1999* (United States Census Bureau) estimates that we will have over nine billion people on earth in 2050.

This large population brings us many problems. Our concern in this book is with learning problems. We have far more people to educate today than we have ever had.

Many of the other problems mentioned are affected by the large number of people who need to learn. Our existing systems will not handle such numbers. They were developed for far fewer people than we have now. Life long learning has also grown dramatically. Although the population would not grow at the same rate it has, the number of learners will.

2.1.2 Many students do not learn

In the developed countries many people do not learn, as seen by our grading systems; grades other than the highest grade indicate incomplete learning. In the poor parts of the world, only limited education is available for most people. All too often no learning is available, except that gained by daily living.

Schools in developing countries face problems of relatively low school participation in terms of enrollments of eligible age groups, low levels of school completion, even at the primary level, and low levels of achievement . . . their lack of effectiveness is not a mystery, for resources sufficient to provide even the most rudimentary conditions for success often are lacking.

Marlaine E Lockheed and Henry M Levin
Effective Schools in Developing Countries
Falmer Press, London, UK, 1993.
Copyright by The World Bank

We have a billion illiterate adults in the world, two thirds of them women. This is intolerable; reading is often the key to other learning. Further, this learning shortage is a major handicap in trying to solve the major problems of our earth, such as population, water, violence, and poverty. Although these are often considered to be economic or technological problems, learning is a major ingredient in seeking solutions.

2.1.3 Learning is seldom individualized

A major flaw in lecture-textbook courses, the common strategy found in schools and universities, is that students are mostly treated in the same way, with only minor attempts at individualization. Learning proceeds in lock-step fashion, with all students moving at the same rate and with little attempt to accommodate students who need more time, perhaps to pick up background they are missing or for many other reasons. Most students use the same learning approaches, even if it is ineffective for some students.

Students seldom get much individual attention. This is not surprising, given the numbers of students in the courses and the teaching strategies involved, usually lectures, video, or textbooks.

Often large university introductory course lectures are not taught by the tenure-track faculty, but either partially or totally, by graduate students or by lecturers brought in especially for the courses. As universities continue to lose financial resources, or increase numbers without adequate additional funding, this situation grows worse.

Schools and training have the same problems. The numbers in classes assure that students receive little individual attention to their

learning problems. We have come in the United States a long way from the little red schoolhouses, where each student worked at an individualized pace and on material unique to the student. The pressure of large numbers of students is one factor responsible for this change.

2.1.4 Most learning is not active learning

Another major problem with contemporary educational approaches is that a large amount of learning is passive for most students. Listening to a lecture, or reading from a book, or watching video, is an active experience only for students who have either special training or aptitude. Students mostly are not engaged. Learning remains passive.

The current media available in classes bore students. Many students fall asleep in lectures or while reading. Most of their lives students today spend more time watching television than reading; classrooms are not interesting to many of these students. In the United States, many students do not purchase textbooks for the courses they take, and often do not retain what is learned for long periods after cramming for tests.

2.1.5 Lack of creation of knowledge

Discovery learning is important for retention. Students learn better if they construct their own knowledge.

Students in classes today seldom create their knowledge. Discovery methods are very difficult in the lecture environment at all levels of learning. Curricula that have depended on discovery, such as the elementary science material developed at Berkeley, have not been successful in typical school environments. Again, the numbers of students, and their need for individualized help, is the barrier. Even science laboratories, often mentioned for their hands-on approach, are mostly cookbook, with little student creation.

2.1.6 Our courses are old

Many courses at all levels have old content. We can see this clearly in textbooks. Thus beginning United States physics texts have changed little in 40 years, except that they have become steadily longer. Although many experts believe that 'less is more' should apply to learning as well as architecture, our learning activities do not show this happening.

Recently Project 2061 of the American Association for the Advancement of Science has conducted several projects examining science and mathematics texts for secondary school. The results are depressing, particularly because so many courses at this level are highly dependent on these texts.

An aspect of old content is the focus on many facts and student memory, rather than on more important intellectual skills. This focus is pointed out in the 2061 studies. Another aspect is the problem of political control that has no place in schools. The poor showing for teaching evolution illustrates this.

2.1.7 Learning systems in the world are mostly fixed-paced

As mentioned often, our current approaches to learning mostly keep the times fixed, and vary the amount of learning. But this is not a rational approach. It has been imposed for the convenience of teachers and administrators, before computers were commonly available.

People are different and may require different times for learning. We want everyone to learn everything, even if some learn faster and some learn slower. We should hold learning fixed and vary time.

2.1.8 Inadequate assessment is typical

Current courses assess student learning infrequently and in modes that do not assist student learning, such as multiple choice. Testing also leads to negative student attitudes toward learning. We have known many students that are afraid of exams and do not perform at a level indicating their level of learning. Exams are often used as threats, a poor form of motivation, a stick rather than a carrot.

2.1.9 Few students enjoy learning

Many students today do not like to learn. It is not uncommon to hear students in the United States refer to schools as prisons. University students are often only there to get degrees, and have little interest in learning. This not only negatively influences current learning, but also restricts the possibilities and interest in future learning, important today. People spend as little time as possible in activities they do not like.

2.1.10 We do not have enough good teachers and professors

Our learning systems are based on teachers and buildings, both in schools and in universities. But the supply of teachers is inadequate, and likely to continue to be so.

In the United States we need hundreds of thousands of schoolteachers in the near future, and we are not currently producing enough teachers to meet that demand.

Similar situations exist elsewhere. Further, many people leave teaching for other occupations that are more pleasant and pay more. The buildings are often not there either. The situation is much worse in the developing areas, as already noted.

The same situation exists at the university level. Sir John Daniel, Vice Chancellor of the United Kingdom Open University, has forcefully pointed this out.

In the last seven days, somewhere in the world, a new university campus should have opened its gates to students. Next week, in a different location, another new university ought to begin operations.

At the end of the millennium in which the idea of the university has blossomed, population growth is outpacing the world's capability to give people access to universities.

There are similar problems at other levels of learning.

Mega-Universities and Knowledge Media –
Technological strategies for Higher Education Kogan Page,
London, UK, 1996.

2.1.11 Learning is too expensive

We have always had examples of excellent learning. But in most cases, even in the wealthy communities, good learning is too expensive for either individuals or societies. Governments talk about improving education, but are reluctant to spend the money needed to improve the current educational institutions. In poor countries very little education is affordable.

If you do not change your direction,
you are likely to end up where you are headed.

Ancient Chinese Proverb

2.2 The visions

Education is . . . the key to . . . development that is both sustainable and humane, and to peace founded on mutual respect and social judgement. Indeed in a world in which creativity and knowledge play an ever greater role, the right to education is nothing less than the right to participate in the life of the modern world.

Education for all, UNESCO, Amman, Jordan, 1996.

. . . education is an essential human right, a force for social change - and the single most vital element in combating poverty, empowering woman, safeguarding children from exploitative and hazardous labour and sexual exploitation, promoting human rights and democracy, protecting the environment and controlling population growth. Education is a path toward international peace and security.

130 million children in the developing world are denied this right [education] - - almost two thirds of them girls. Nearly 1 billion people are illiterate - - the majority of them women.

Kofi Annan
Secretary General of the United Nations
The State of the World's Children 1999

The problems just reviewed and the importance of learning for our future suggest a set of visions for learning, the other side of the coin to the problems. These visions should provide us with the direction that Alice did not have.

2.2.1 Everyone should learn

The first goal for learning proposed is that EVERYONE SHOULD LEARN to full capacity and desire. It implies that the poor of the world have learning opportunities as good as the wealthy of the world. It implies that learning availability should not depend on gender, race, economic factors, age, previous learning, or any of the other items that

distinguish one human from another. It implies that learning is available in all subject areas, from birth to old age.

This goal also means that learning should include the intellectual skills essential for today, such as creativity, intuition, and problem solving. Learning should include experiencing the great creative products of the human mind, Beethoven's music, Shakespeare's plays, Newton's Laws of Motion, Henry Moore's sculpture, among many others.

It implies that everyone should want to learn and that learning should be enjoyable for all. This is democracy in education, giving equal opportunities to all.

Some of these ideas will be expanded further in the next sections. Note that we emphasize learning over teaching and instruction.

2.2.2 Individualized Learning

Educational psychologists have long pointed out that students are different, in many different ways. They have, at any point in learning in a subject, different backgrounds of previous learning and different interests. They have different learning styles, although we still have much to learn in this area. An effective educational system should treat each student as a unique person. We will discuss this issue again later in more detail.

A learning sequence that is effective for one person may not be effective with another. So in an individualized learning environment providing several approaches to learning a given topic may be essential. We may eventually be able to pick the most effective learning approach for a given individual, but this is beyond our present capabilities.

We can also expect better retention. The learning sequences can occasionally check on previous learning, and give additional help if necessary. So learners will know more after a long time.

2.2.3 Individualized learning time

Another factor in individualization is that students learn at different rates, perhaps differing from subject to subject, and differing with changing interests outside of school or other learning locations. Thus someone might be ready for advanced mathematics at an earlier age than another student. Many students in an individualized learning environment, tailored to the needs of each student, might finish a

subject much earlier than is typical today. We expect that most students will progress much faster in an individualized system, shortening the time for learning.

We envision a good future educational system as allowing all students to move at different rates through learning, each progressing as natural for this individual student. This implies that the concept of grade-level will vanish in our future systems. Further, students will probably be at different learning levels in different subjects.

These last two considerations imply that realization of our goals requires a continuing way to evaluate students, almost moment by moment, to know when a different approach is needed, and to know when it is time to proceed to the next learning sequence. This is critical.

2.2.4 All students should succeed in learning

Success is important in learning. This implies that all learners should master fully each lesson, each subject, even though it may take different times and different learning material. Mastery can be achieved through treating each learner as a unique learner and continuing to work on a subject until mastery is attained, as measured by the evaluation approach just mentioned. Learning activities should focus on learning, not time, as already suggested.

2.2.5 Learning should be enjoyable

It is important that learning be a pleasant activity for all students. Continual success in learning is important in this regard.

A critical factor in learning is the amount of quality time devoted to learning. So we want students to stay at learning, even difficult learning, for long periods of time. A major factor in encouraging this is that students should enjoy learning.

Another factor that should be considered is that we want to encourage future learning, our next topic. If people have enjoyed learning in the past, they are more likely to consider it in the future.

2.2.6 Learning should be lifelong

We live in a rapidly changing world, and people live longer. The median age is rising.

At the moment the median age of the world's population is about 26 years. If the trajectory anticipated by the current United Nations low-variant projections were to come to pass, this figure would rise to 44 years.

Nicholas Eberstadt
World Depopulation
The Milken Institute Review, First quarter 2000

A person may have several different jobs and avocations during a long lifetime. Schools and universities are not enough. Learning needs to be a continuous activity from birth to death for everyone, perhaps with intervals where learning is at a low level because the person is engaged in other absorbing and important activities. One science fiction novel, *The Troika Incident*, by James Cooke Brown, mentioned in more detail in chapter 4, portrays a community in which learning almost stops while people are raising their children, for example.

2.2.7 Learning should be affordable

The individual and the world must be able to afford learning, everywhere, for everyone, and at all levels. A future learning system must be economically possible.

The critical factor is the cost for an hour of student learning, considering all costs. It is very important to include every cost associated with learning in making this calculation of costs.

2.3 Need for a new approach to learning

These goals cannot be attained with our current systems of either traditional or distance learning. We need a new form of learning to reach our goals.

We will explore such a form in this book. This new form of learning has great potential for realistically reaching the visions just described. But as we will mention frequently we need much more experience and research with this new proposed approach.

Our present educational institutions are at the service of the teacher's goals. The relational structures we need are those which will enable each man to define himself by learning and by contributing to the learning of others.

Ivan Illich
Deschooling Society
Harper and Row 1971

Tutorial Distance Learning
Rebuilding Our Educational System
Bork, A.; Gunnarsdottir, S.
2001, XII, 192 p. 4 illus., Softcover
ISBN: 978-0-306-46644-1