eラーニング・ファンダメンタル
eLearning Fundamental

Chapter 12: e-Learning and Information Society

Learning Objectives:

Be able to explain what it is to reform industrial-style schools to improve learning environments toward information society via the use of e-Learning.
Be able to explain how case examples of reforming views of learning at universities, teacher training, and corporate training can be applied when designing e-Learning.

Summary of this Chapter

- The "information education" promoted by the Ministry of Education, Culture, Sports, Science and Technology (MEXT), which raises the objective of fostering information utilization skills began in 1992. If the aim of e-Learning is to reform learning environments, then it is necessary to reexamine the conventional wisdom behind the industrial-style school education that we received when we were children. Mizukoshi's "two knives," Branson's information technology model for schools, and Toffler's "hidden curriculum" constitute a framework for considering this idea.
- The chapter introduces practices which seek to reform the view of education and attempts that strive to experientially convey the new views of learning created by the Internet in the form of approaches to changing teaching methods at a university.
- The methodology of teacher training must be reappraised in order to change the coursework in school education. The fact that teacher training has a superior-subordinate style of communication makes it difficult to conceive of a new style of teaching. The chapter introduces an endeavor to reform teacher training.
- The fact that the author had been advised that school-style educational methods have a strong influence on corporate training is introduced along with cases in which attempts to break free of this have been made.
- A way of creating learning for information society via e-Learning is sought from the abovementioned cases.

Section 1 Principles for the Design of Learning Environments in the Future

The Committee on Developments in Science of Learning (2002) compiled the following four principles which should be applied to learning environment design (Figure 12-1). These fundamental rules apply to not only child learning, but also adult learning as well. They posit that there is a particular need to apply these principles to training for teachers that have been entrusted with child learning.

Figure 12-1: Design Principles for Learning Environments
(Committee on Developments in Science of Learning, 2002)

Principle 1	Learner-centered	Teachers must pay close attention to the knowledge, skills, and attitudes that learners bring into the classroom. Cultural differences can affect students' comfort level in working collaboratively versus individually. Students who think that intelligence is a fixed entity are more likely to be performance oriented than learning oriented. Learner-centered teachers present students with "just manageable difficulties"—that is, challenging enough to maintain engagement, but not so difficult as to lead to discouragement.
Principle 2	Knowledge-centered	Attention must be given to what is taught (information, subject matter), why it is taught (understanding), and what competence or mastery looks like. The knowledge-centered environment provides the necessary depth of study, assessing student understanding rather than factual memory. There are important differences between tasks and projects that encourage hands-on doing and those that encourage doing with understanding.
Principle 3	Assessment-centered	Formative assessments—ongoing assessments designed to make students' thinking visible to both teachers and students—help both teachers and students monitor progress.. These assessments should provide students with opportunities to revise and imp rove their thinking and help teachers identify problems that need to be remedied (problems that may not be visible without the assessments). The exercise is less a test than an indicator of where inquiry and instruction should focus.
Principle 4	Community-centered	A community-centered approach requires the development of norms for the classroom and school, as well as connections to the outside world, that support core learning values. Instead of a social norm of “don't get caught not knowing something.” norm of the classroom should be encouraged academic risk-taking and opportunities to make mistakes, obtain feedback, and revise. If students are to reveal their preconceptions about a subject matter, their questions, and their progress toward understanding, the norms of the school must support their doing so.

Source: Compiled into a table from text (pp. 23-25) by the Committee on Developments in Science of Learning (2002).

A perspective of designing learning environments for the future is required for the design of e-Learning systems and e-Learning courses. But how do the learning environments of the previous “industrial society” differ from those of the “information society” of the future? And even if it can be understood that the four principles of learner-centered, knowledge-centered, assessment-centered, and community-centered are required, why is that the case? To which future demands is this intended to respond to?

This chapter will consider points that should form the groundwork when making e-Learning into a learning environment suitable for education for working adults and higher education, as well as when making lifelong learning programs that are appropriate for the information society. We will begin by taking a look at characteristics of learning environments that we unquestioningly accept as prior assumptions. It has been claimed that no other industrial society has been as successful with school education as Japan has. Yet would this not serve as impediment to creating learning environments for an information society, as opposed to an industrial society? We will begin by first reflecting back on the industrial society style of

learning that has become ingrained into our personalities.

Section 2 Computerization of Schools and Fostering Information Utilization Skills

12-2-1 Schools that Foster Information Utilization Skills

Attempts to transform schools into learning venues suitable to the information society have elicited a variety of responses. New national curriculum standards (Note: these are curriculum standards established by MEXT which are legally binding) were launched in 2002 for elementary and secondary schools (2003 for high schools). These new standards for the first time established the "period for integrated study" as three hours per week in each year during the school year from third grade in elementary school until one reaches high school (equivalent of a total of three hours per week over three years in high schools). Alternately, class time was reduced to a five-day week (with schools closed on Saturdays), and the content taught in each subject was cut by 30%. This has stirred up public opinion that was worried about a decline in fundamental academic abilities, resulting in controversy. Upon hearing public opinion on the decline in fundamental academic ability, MEXT declared a virtual policy reversal by arguing that the national curriculum standards were "minimum baseline standards," which did not preclude schools from teaching more advanced content over and above them. This in turn has produced still further controversy.

Such reform started with the former national curriculum standards (enacted in 1992), which preceded the 2002 reform. At the time, the area of information basics was organized under middle school technology and home economics as a school selected area of study (an area which could be introduced at the discretion of the school principal), and computer classrooms where first fully outfitted in middle schools in order to put this into practice. In addition, "selective subjects" were established at middle schools to serve as a time to foster the "ability for students to make plans and study on their own" by selecting content suited to their own personal interests. The goal came to be information education which had the objective of having students come into contact, familiarize themselves with, and grow accustomed to computers from the elementary school stage within the classes of various subjects. The (former) Ministry of Education, Science and Culture issued a report on this entitled *Procedures on Information Education* in 1990.

The policies of this era have been expansively passed down to the present. The *Procedures on Information Education* defines information utilization skills as one of the emphases that should hereafter be cultivated by schools. It states that this does not refer to information processing abilities which allow one to quickly learn large quantities of information, but rather to the "ability to independently search for, process, and create information on one's own." But if schools are essentially seen as places for acquiring the knowledge needed to head out into society and venues for providing information, then are they really capable of fostering such abilities? "It is best to utilize information on one's own based on the basic knowledge acquired at school. It is crucial that students begin by soundly internalizing this basic knowledge." Such reactions cannot be ignored.

Admittedly, if one is serious in their intent to foster information utilization skills, then this means that teachers must refrain from "directly providing information." But does it really constitute coursework if no information of any type is provided? This is a preposterous

self-contradiction. Coursework which fosters information utilization skills by simply listening to someone else talk or some such means is unheard of, because information that has been already provided by a teacher cannot be sought out on one's own. But perhaps this is taking it too far.The contradiction between providing information and fostering information utilization skills is one that has been faced by school education overall since back then, as well as today. In his book *Teachers Utilizing Media*, Mizukoshi (1990) raises questions over the modality of a teacher-centered style of coursework through the metaphor that teachers must carry at least two knives in order to develop coursework. Just as a professional chef selects the proper knife from among several according to the food they are preparing, teachers must also carry a "knife for situations in group instruction to convey and help the students understand the amassed information," and a separate "knife for providing students with the correct methods of inquiry and study when they are going in circles with their inquiries." This is an indication that the (relatively unused) second knife is preferable to instructional methods conducive to fostering information utilization skills.

If traditional coursework is assumed to have been used mainly as the first knife within this example, then the fostering of information utilization skills through this would NOT be plausible. What is open to contradiction here is the view of learning which regards those sending information as "authoritative sources of information" in the form of teachers, while regarding children as the receivers who accept this in an orderly fashion. Simply put, if one is serious in their intent to foster information utilization skills, then the modalities for schools as they currently stand must unavoidably be reevaluated. But taking the essential role of schools to be the conveyance of information and the acquisition of basic knowledge, this would mean that fostering information utilization skills concurrent with this would be almost impossible. Or perhaps what is really being questioned here is how one goes about balancing the two knives.

12-2-2 Industrial-Style Schools that Foster Excellent Workers

The approach of sociologists who search for the reasons why schools have come to emphasize the transmission of information the way they currently do in the historical backdrop of the age is a persuasive one. According to Alvin Toffler, who is all too famous for his book *The Third Wave* (1980), contemporary schools are a product of the industrial revolution (the second wave), and the workings of schools reflect the requirement of fostering factory workers. Schools teach fundamental reading, writing, and arithmetic, while at the same time, "A far more important hidden curriculum has been concealed beneath this. It is made up of three items, and is upheld by industrialist countries still today. These are enforcement of time, obedience, and mechanically repetitive work … It cannot be denied that the second wave has trained countless generations of young people as obedient and collectivized human beings that are required for electromechanical and assembly line work (pp. 50-51)."

The truth is that it is difficult to refute the indication that "excellent workers" have heretofore been fostered by Japanese schools most successfully in the world, which has built the foundations for Japan's postwar prosperity. However, this fact hardly serves as a rationale for continuing in the same manner hereafter, because (again, according to the explanations of sociologists) the historical backdrop is changing and what society expects of schools, or what schools can contribute to the society, is not the same as before. Societal changes are reflected in the form of external pressure on schools within the policies worked out by MEXT. This is perceived through the challenge that one thing that schools must do in response to this external pressure is cultivate information utilization skills.

Toffler' notion of three waves can be used as a handy tool, thinking in terms of applying mankind to the three periods of revolution indicated as agricultural revolution (first wave), industrial revolution (second wave), and information revolution (third wave). In positioning television broadcasts, for which wave would these be regarded as the major media? The advent of the computerized age has come about in tandem with television, and so the natural inclination is to regard television broadcasts as a medium of the information society. But on the other hand, the television broadcasts are also an industrial society-type medium which stands out as a characteristic of second wave societies. According to Toffler, industrial-type societies since the industrial revolution have developed in accordance with the six general principles: standardization, synchronization, maximization, specialization, concentration, and centralization. Television broadcasts have also been used to provide new information from a centralized position to the entire nation all at once through the agency of experts in a manner that conforms with these second-wave principles. This is the intrinsic, epochal characteristic of the media carried by broadcasts. It is reasonable to assume that information society has progressed in a true sense through the spread of the Internet. Here we are seeing the rise of a world centered around communication that is not centralized, but decentralized and asynchronous.

With respect to the current school system, Toffler claims that it is an industrial-type system that was set in place in a manner befitting the creation of a basic, shared cultural foundation for industrial workers. When one looks at the fact that the six general principles mentioned above apply so well to contemporary schools, one cannot help but think that "this is naturally the way it is." While reviews of school regulations (standardization) have recently been brought up, education is still carried out by gathering everyone together at a school (concentration), and having them learn the same things at once (synchronization) from teachers with different areas of expertise (specialization) based on a curriculum that has been centrally determined (centralization). This school configuration has not changed for a long time. It is no wonder then that those of us who spent our childhood years immersed in this kind of learning environment have the tendency to define "studying as something done by taking classes like those at a school," or "to feel comfortable when studying together with everyone else."

As a product of the Internet, e-Learning strives to alter our learning environment at its roots. It is natural to think that this reform indicates a transformation from the industrial-type society to the information society model indicated by Toffler. Slogans such as creating organizations for learning and promoting self-directed learning make us consciously aware once again of the industrial-style study habits being subconsciously ingrained in ourselves. It may be difficult to realize such ideas without appealing to our subconscious. It has been claimed that schools as organizations have, at a dimension separate from the intentions of the teachers, compelled obedience with the school system in order to perpetuate themselves. It can be regarded that breaking free of this curse should be the goal of e-Learning.

12-2-3 School Reform Movements and the Information Technology Model for Schools

In the United States the winds of school reform began to blow, starting with the "America 2000" project that was begun under the Bush Administration. The groundbreaking announcement was made that modalities for schools in an information technology society would be specifically provided and the federal government would publicly offer projects that would implement these on a trial basis, with enormous research funding to be provided upon

selection as well. Following this, the various state governments began to provide support on their own for similar projects. The educational technology community was particularly energized by this. For those involved with educational technology, corporate training was the major professional area until then. It was easy to realize that something would have to be done about the current state of school education, they were alight with the realization that they were to be the ones to take charge.

Professor Robert. K. Branson of Florida State University was representative of the school reform project in the state of Florida. He was one researcher who adopted the stance that unless the structure of schools was changed, then no improvements over and above the current status could be expected. According to Branson, problems are piling up for contemporary schools despite the fact that teachers, superintendents, and administrators are working up to the limits of their respective abilities. This is a result of the fact that the structure of schools which had worked well for many years has become outdated falling behind the changing society. Branson has advocated the "Upper Limit Hypothesis," the main gist of which is that schools have already achieved 97% of the results which are achievable through their structures as they currently stand.

Branson opposed simply introducing information technology into schools, and has posed question as follow. It is quite alright to substitute "Internet" or "e-Learning" in for the word "computer" when reading this: "If one were to keep asking 'How can we best go about having teachers use computers in the classroom?' then not much in the way of progress can be expected. The question that should be asked is 'How can we best go about utilizing information technology to achieve dramatic improvements in school education?' When doing so, the prospects for development while taking an absolute view of the current transmission model via teachers are slim (p. 10)."

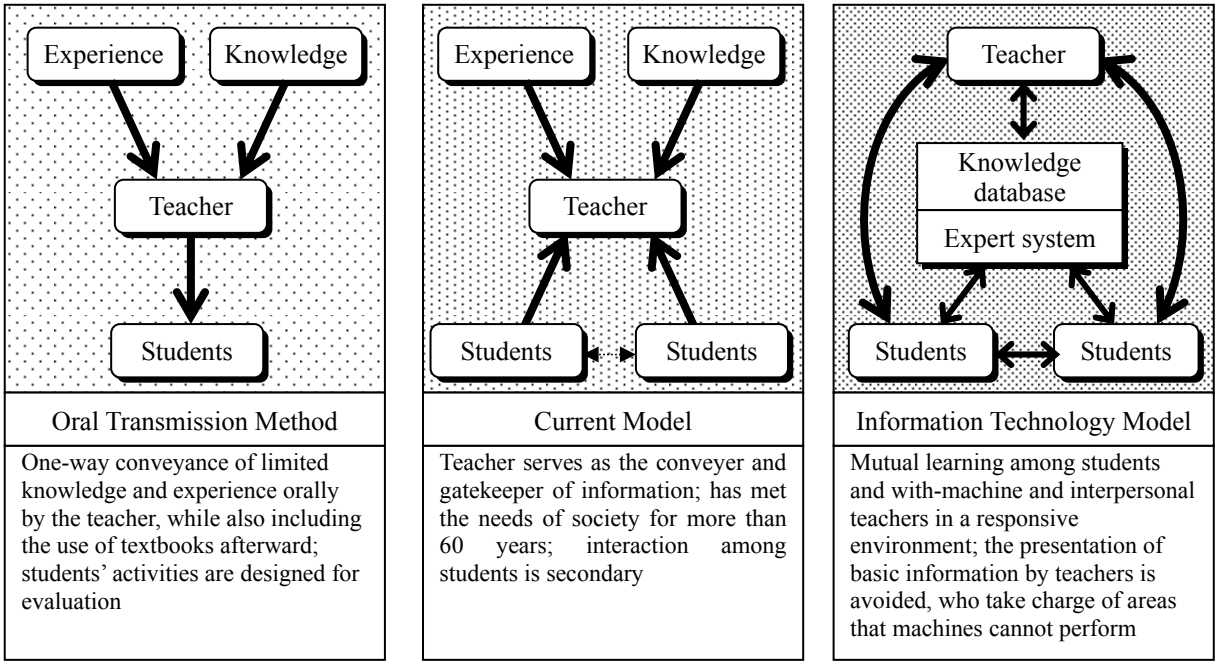

Figure 12-2 Information Technology Model for School Education Proposed (Branson, 1990)

The new school structure that Branson proposes is the information technology model for schools (Figure 12-2). This removes the role of teachers as central "information control towers" found in the current school model. In place of this, it depicts a vision in which children and teachers gather around "knowledge databases" realized by information technology, as well as various "expert systems" realized by computers. Concerning the tasks established by teachers, children receive advice on the information that they personally requested for "experts," and process and produce their own information as they search through "databases" on their own or with their companions. As such, what he is depicting is schools which are mainly capable of conducting dynamic classes that lead to fostering information utilization skills, exactly in the same way that Mizukoshi (1990) positioned it as the second knife.

Branson's model may be nothing more than a pipe dream. In particular, it does not seem like it would be realized in Japan all that quickly when you take the cultural background into consideration. However, Branson's next assertion deserves some attention. This is because it hints at what should be shouldered in cases where attempts to assist teachers are made through information technology. "Schools in the information technology model provide children with the experience of first learning from machine systems to the extent possible. Teachers stand by in order to deal with exceptions and problems, rather than repeatedly providing the content of courses over and over again. Methods which compel them to lecture all day throughout the year using a blackboard and chalk cannot be considered as utilizing the teacher's creativity to the full extent (p. 10)." The part about "machine systems" is not restricted to any particular type of machinery. Any sort of option other than being taught by a teacher is applicable (such as learning at a library or from a textbook, for example). The teachers do not personally act as sources of information, and are freed from the task of "repeatedly providing the content of courses over and over again." The assertion is that time would be ensured to execute tasks that it appears only a flesh and blood human being can accomplish.

This suggestion may most particularly sound painful for university professors to hear. Or perhaps this will resonate as a desire for change among departments that are providing corporate training of the old fashioned school-like variety. For the future, the greatest demand placed upon education will be none other than information utilization skills on the part of the professionals in charge of education themselves. The driving force for turning the sought after information society learning environments into a reality should first be instilled in those involved with education by means of exploring the introduction of e-Learning. We need to be prepared for the change ourselves, and for making the change ourselves.

Section 3 Cases of University Teaching that Challenged Common Assumption on Learning

In this section I would like to introduce a practical case example of university course that the author undertook in the past. I have learned instructional design and asserted that "schools must be changed;" yet be that as it may, unless my own teaching practice is consistent with this assertion then its authenticity will be called into question. In order to stave off the accusation that I fail to practice what I preach to others, I have attempted to undertake a variety of innovations in my own teaching. But were such innovations effective? What did the members of the course learn from it and what did they feel? Or what thoughts did they harbor regarding the educational content as well as the educational methods adopted in the course? These and other questions are ones which I could not comment on with any degree of certainty unless I went to the task of asking my own students (based on the principle of learner verification). As such, I would like to present some concrete examples by introducing the teaching practice at a university and of in-service training for school teachers.

12-3-1 Lessons Learned from "Media Studies"

I would like to begin by having you read a written response from one of the students who took the author's course "Media Studies." This is part of a personal report for a course for second year students that I had prepared and put into practice via a shoestring operation during my first year after moving to my teaching position at Iwate Prefectural University.

- The misgivings I harbored for a long time have turned to certainties. (Ryosuke)

  This year already marks my 14th year of receiving education. Over the long period in which I have had to take courses and lectures I have harbored doubts about them the entire time. While a lecturer or teacher would stand in front of a blackboard and go on about this or that, I wondered how many of the students understood it, digested it, and developed further from it. By no means did I think that it was a complete waste. But, there had to be a more enjoyable, effective, and practical way of teaching. While I don't know how many of the students that showed up in the class were thinking the same thing, there must have been a few people like me. And it's not out of the ordinary for some of these people to become teachers, lecturers, and professors. But why was it that everyone only conveyed things to me in a perfunctory manner?

  The other day I found out that Professor Suzuki had been thinking the same thing, and I learned that people in teaching positions also harbor doubts as well. Therefore, a mood came over me to think that maybe these doubts could be alleviated, even if only slightly. To overstate the case somewhat, I believe that a person's individual nature is determined by the education they receive from an early age. I also think that there are many redundant areas in said education. And so coming to the sense that I would like to strive to eliminate such redundant areas was very important for me personally.

The college where I taught was specialized in software engineering and information systems. "Media Studies" was not a course that dealt with the educational use of media in particular. The course intermixed images and footage to introduce how the information produced by the mass media is "compiled." It also demonstrated and discussed the possibilities for expressing information in a network society and the mediazation of human beings themselves.

Under the pretext that schools and universities are one type of "media," at times that ventured into my field of specialty (educational technology), I raised questions on continuing with learning in the form of aimless "lectures" in this age of excessive information. Sometimes I would print out and distribute notes and massive amounts of materials, then turn around and say, "Today's lecture isn't going to be given orally. You must read these materials, answer the questions written on the handouts, and then hand them in. You can do it in this room, or you are free to go outside and do it. Just answer the questions." Furthermore, reports were assigned in place of a final test, which the students researched on their own, compiled the resources on the Web, and then posted to the discussion board to notify others. One of the submitted reports included the written text found at the outset of this section.

Out of the 80 students that attended the lecture, nearly 20 offered comments which reflected back on their learning experience through this course, in addition to their comments related to the contents of the course. I was extremely pleased by the fact that the students were reexamining their view of learning (common assumptions about learning) which had been nurtured over many years through going to schools. I would also like you to read a sample from another student.

- Beginning to understand things is fun!! (Hiromi)

  At first, confronting problems that seem difficult was boring. But while you were investigating them you began to understand and the problems started to become enjoyable. While searching for keywords during a recent assignment the terminology seemed difficult on the surface, but as I searched for the meaning, the assignment became interesting. I feel that the fact that it "turned me interested" is important. This is because embarking on scholarship is essentially premised on first taking an interest in something. The magnitude can be small in terms of taking an interest in something. I feel that an attitude of learning on one's own is important. I think that I still have a lot to learn, and I would like to continue learning because of the interest I take in it.

…Yes, each of you are capable of steadily advancing with your studies on your own without relying on university professors in any way. Most things have been written down in books, you can search the Internet, and there are so many people around you who can teach you many things. But, if you cannot still figure it out by yourself, come to me and ask me. I won't tell you the answer, but I will lend you a book.

My role is not to give a boring talk as I spit saliva, but rather to give you "something to do," to give you the motivation to learn, and to watch over you gently (or strictly). Rather than flaunting my own knowledge and depriving students of the "joy of learning," my role is to firmly restrain my desire to give you all answers to play the part of the "kind old man." Rather, it is to play devil's advocate while also serving as someone who can appreciate what the students have accomplished on their own ability together with them.

Brave souls such as this one below were also among the students who attended the course. It is somewhat bitter-sweet to come across reports such as this one.

- Did Professor Suzuki act the part of an information-manipulating fiend? (Takuya)

> If you adopt a Media Studies-like take, then the style of learning at
> universities in the form of lectures is pre-modern (following omitted).

Professor Suzuki conducted typical "university lecture"-type lectures while making comments like the one above. He is (in my opinion) a provocative person who continues to conduct grandiloquently average lectures while gaining the sympathy of the students by saying things like "I personally dislike the lecture style." The fact is that the hapless students of the Faculty of Software and Information Sciences at Iwate Prefectural University are manipulated through the power of such language from Professor Suzuki. In a sense, I can't help but wonder if Professor Suzuki's message to us students regarding this lecture format as a whole was "This is what information manipulation is all about. You'd have to be a moron to not pick up on that right away." Is that right? Or am I over-thinking it? Well at any rate the content of the course was such that you can't blame me for interpreting it like this.

…Looks like I've been found out. But still, I'm very pleased with this.

12-3-2 Attempts to Teach Internet Basics: Aiming to Break Free from Trickle-Down Lectures

While I was at a private university in Sendai, before going to Iwate, I designed and implemented an integrated course called "Internet and Research" in a liberal arts college. The intent was to carry out lectures on the Internet from the perspective of various different research fields. As such, professors were put in charge of lectures for their respective specialties, including the technical foundations of the Internet, natural science research and networks, databases for cultural studies research and thesis writing support, the sociology of networks, the psychology of cyberspace, and the ethics of networked society.

As the course's coordinator, I would take charge of opening the course, teaching basic matters to students who did not know the first thing about the Internet. To show you what I taught and in what manner, I would like to ask that you accompany me by briefly returning to your university student days. Following this, I would like to expand upon your image with regard to the aim of putting university education into practice through e-Learning. The key concept is breaking free from the "trickle-down lectures" which are the forte of universities.

First Class: Two homework assignments right off the bat

The first class for the intensive course "Internet and Research" was started by assembling just under 100 juniors who were studying a variety of specialized fields in the liberal arts college. I gave a preview of the kind of content that each faculty member in charge of the lectures would discuss and provided a self-introduction of myself. I then revealed the schedule for the

year and explained that the students would be evaluated through attendance and reports without having to take any exams. Then I gave out two homework assignments right off the bat.

- Assignment 1: Students have to buy an introductory book on the Internet. Any book that catches their interest is fine. They then have to write down and submit any impressions they had when reading it.

- Assignment 2: Students have to look at a famous Website as an introduction to the Internet. Anyone who does not know how to do this must consult at the educational technology laboratory room.

Second Class: One week to do the homework assignments

There was a one week break from lectures which helped beginners complete Assignment 2. I partially remodeled my Website at educational technology laboratory so that I had created to offer links like "For Beginners," "Integrated Course: Internet and Research," and "Let's Surf the Net." The Website was created to confirm that students at least knew how to turn the computer's power on, operate the mouse, start up a browser (by double clicking), and taught them things like how best to look around for Websites. While doing some work in the same room I observed the students, and would come see them and offer help if called upon to do so.

Third Class: Confirmation of the homework assignments and watching of a video

To confirm whether or not the students bought an introductory book (Assignment 1) and whether or not they looked at a website (Assignment 2), I had them bring the books that they bought and then fill in a handout with data on the books and the Website that left an impression on them. After this, I showed a video which superbly introduced students to the Internet's historical background, current status, and future directions. If I were to just show the video then some people would fall asleep, so I told them to take down notes on the back of the handout and then write down their impressions once the video had ended.

The video was a Public Broadcast's Sunday Special entitled "The Second Media Revolution: The Information Superhighway" (broadcasted on BS2, April 17, 1994). The video peered into the future through online shopping and videos comprised of still images for things like health care, while also visiting the past where the Internet originated as a communication network for the US military. It inevitably touches on the Internet's history in which Vice President Gore, a son who, having witnessed the creation of prosperity in postwar America brought about by his (US Senator) father's legislation to construct highways, promoted a plan for high-speed information networks. The video introduced leading case examples from the Library of Congress and schools, and explained that the Internet is a network of networks connected via a bucket relay system and successive systems. It also pulled together issues like the sudden explosion of users and the limits on bandwidth, as well as other matters like the future impact on industry such as Internet music (online debut). I wonder just how long it would take to explain all of this if you tried to do it in words.

Fourth Class: A test of common knowledge

I had the students bring and submit written descriptions of their impressions of the introductory books purchased for Assignment 1 to serve as a "testament to what they thought

they read." This was followed by an unannounced test in which I had them respond to 10 common knowledge about the Internet (as shown in Figure 12-3). After affirming which problems they could answer on their own and which they could not answer, they consulted with those around them. I announced that they were to submit them once they could fill them in with complete confidence. I checked the submitted tests on the spot, only announcing where mistakes had been made. About 30% of the students got all of the answers correct on the first try, with some people repeatedly taking up the challenge to get it right after this, and some people who just left it as it was. These were left to do as they pleased. Lastly I discussed the purpose of this eccentric introductory lecture (a lecture without saying a single thing?) and affirmed that those students that had performed the assignments had earned the right to hear the "Sociology of Networks" lecture which was to start from the next class, thus ending my charge of the class.

Figure 12-3: Ten Common Knowledge about the Internet

1) What is the Internet? Explain it in one sentence.
2) What is the meaning of "Inter-" in the word "Internet?" What is meant by "net"?
3) What can the Internet do? List five things that are as different as possible.
4) What are some things that have come to be problems for the Internet? List three important issues.
5) How do the Internet and television differ? List two important ways that they differ.
6) How many estimated users are there on the Internet worldwide as of 1997? Select the closest figure:
   ◇ 700,000 people ◇7 million people ◇ 70 million people
   ◇ 700 million people ◇ 7 billion people
7) What is the email address of Prof. Suzuki at Tohoku Gakuin University's Izumi Campus Information Processing Center (izcc)? Write it down so that email would arrive from all over the world if it the address were used.
8) Tohoku Gakuin University starts by connecting to Tohoku University, so who pays the line fees from Tohoku Gakuin to Tohoku University?
9) What is www an abbreviation of? What meaning does that have in Japanese?
10) What do you actually do when you are "surfing the Net?"

What is meant by learning on one's own

Just what was the purpose of this eccentric introductory lecture in which nothing was said all about? I wanted to have the students experience that the most important thing in the Internet era is an attitude of learning on one's own. If the lecture format is seen as a holdover continuing with the convention of what you would call "verbal dictation" from prior to the advent of printing technology, then this is a configuration of learning that is largely out of character with the Internet era.

In Assignment 1 the students were asked to read any single introductory book of their choosing. This was so that they would "acquire browsing skills." Browsing is not something that applies only to people herding around comic books without paying money for them. It also allows one to select a book on one's own from out of an abundance of diverse and varied books. This is what is meant by browsing skills. There were almost too many introductory books on the Internet, and this allowed the students to make a purchase after assessing which books were worth buying. I feel that this is conducive to making people "experts at browsing"

over the Net.

Assignment 2 was to glance at a Website. This was to be a " voyage of self discovery." I wanted the students to affirm what they personally were interested in and what they were passionate about. Depending on how one uses Websites, they can serve to just kill time. Conversely, if you immerse yourself you can find charms that have been buried inside that are enough to make you forget all about the flow of time. These Websites will not necessarily be interesting to people that have nothing they want to search for no matter how long they look at them. Among the students, there were some that earnestly asked what is so interesting about Websites. I only hope that this is NOT because they have become overly used to just simply digesting whatever they are handed.

The check-up quiz was a "challenge to the trickle-down method." Learning in the multimedia era requires qualities of assertiveness and activeness on the part of the learner to not just listen, but also investigate on one's own and personally confirm what has been obtained. I wanted to confirm that they had the desire to view future lectures with such an attitude. The course did not contain any normal tests, check-up quizzes, or the like. If it did, they should be created on one's own. Tests are not just meant to determine scores for grades. They are an indispensable tool in allowing one to determine the extent to which they have grasped the subject matter, supplement areas which are insufficient, and then attain these one by one.

Essentially it is university students that are the ones capable of carrying this out, but that is not to say that practice for this has been adequately attended to by the end of high school. It's never too late to instill in people the attitude and skills for self-learning. This type of learning is suited to the Internet era. While it is hard to imagine that the style of courses at universities will change drastically, there are any numbers of ways to realize "Internet-like learning" by means of courses. This was an attempt to teach the fundamentals of the Internet by incorporating such notions.

The most important point when it comes to utilizing Internet in education lies in pressing to redefine existing conventional knowledge and assumptions about lectures and learning methods, and the relationship between teachers and students. I think that this more than anything else is the single most amazing aspect of the "Internet and Research."

12-3-3 Changing Concepts of the Term "Education"

I also conducted a "no talking lecture" at a night-time nursing school in Sendai City where I taught pedagogy on a part-time basis. I prepared a print for reading through Minoru Murai's *Promoting a New Pedagogy* (Shogakukan Inc.) one chapter at a time. Each person would read the chapter, exert some part from the chapter trying to answer to the given questions, and summarize their opinions, using the handout as a learning guide. Then I would have everyone view related videos and write their impressions on the back of the handout. The videos covered such topics as Takeji Hayashi's *On Human Beings*, an elementary school student jazz band, telephone answering service that support truant children, the brain as the internal organ that weaves memories, athletic meets which do not have competitions, the Fukumuro Environmental Study Group by elementary pupils, the liberal school Sudbury Valley School from the United States, the practices of Kinokuni Children's Village, and more. My strategy was to each week provide their bodies, which were tired from working during the day, with taxing readings and videos stimulating enough to keep them awake.

In the final week I inquired as to whether their concept of the term "education" had changed. I would like share with you some responses from several students.

> The education that I have received so far is one of disciplinary training and being made to do things. The only things that I have kept in mind are what the teacher has said and what's been written in the textbook. I've realized that I have not received a true education through just that. I feel that failing to be personally interested, think with one's own mind, experience, and act is the same thing as not receiving an education. My thinking with regard to education has changed, although I've been somewhat late in realizing it. (Yuka)

> I thought that "education" = intrusive. Despite thinking this, I thought that not accepting this would make me a poor student, and so I came to be familiar with accepting this. Yet I couldn't help but thinking that there was something strange here. When I would think about how I didn't have the leeway to consider such things it would make me miserable. But having said that, when I would try reading this book (grudgingly) it seemed like just going slowly didn't open up any leeway, but rather seizing upon my own pace would give me some leeway. I learned that it is important to start with what you know and proceed at your own individual pace. Even though I have realized this after all these years, it is impossible to change myself, as someone who has gone along with education up until this point. But at least I will not forget this reasoning, and would like to become a parent who can provide my children with an understanding of who they are. And it is my fervent hope that Japan, which is on the move, will continue to change. (Miki)

> Schools must be "relaxed." While I believe that this is definitely ideal, I think that about half of the students currently attending school don't see it this way. They merely see it as a "duty," which I think is a real shame. If the time ever comes when I want to think more seriously about "education" then I'd like to try reading this book again. Unfortunately, I felt that reading this book was my "duty," so I realize that there hasn't been any major change in my outlook. (Chieko)

Is fostering a self-concept which perceives that "it is impossible to change myself, as someone who has gone along with education up until this point" a byproduct of the school education that Miki has received? It breaks my heart. Moreover, as Chieko's frank account shows, it can also be understood that not everyone attending the lectures was transformed as if they had been manipulated by some charismatic evangelist through my lectures.

Though redundant, I would be pleased if you would notice that one tactic that I commonly use is to "ask the learners reflect upon what happened by writing their impressions." This will provide you with feedback that "confirms while moving forward" in order for both teaching and learning sides to autonomously approach their goals in a gradual manner. I am receiving a great many extremely valuable lecture comments from this course as well. When it is over I want to go back over it again in order to think about what can be done for the next time.

Section 4 Teacher training that Offers a New Style of Learning

Teacher training methods must be reappraised in order to change the way that school classes are carried out. This is something that I have thought about for a considerably long time. Mizukoshi (1990) indicated that one of the reasons for teachers' agitation and resistance in the days when computers first entered schools was that, "Up until then the teachers themselves had no experience with learning by using computers." By coming into contact with new teaching methods, by attending classroom observations, teachers may have been motivated to "give it a try" on their own. But if the classes that the teachers themselves have taken have all been teacher-led group instruction, then attempting to carry out other types of instruction may well be a next to impossible task for them. Up until now, various new types of media have been brought into the classroom, but as a whole these have been incorporated in a manner which conformed with the conventional teaching methods. For all intents and purposes, the method of teacher-led classes has not changed on the whole, even today when various types of media have been incorporated.

From among the training on new types of media that I have witnessed, and that which I have personally taken charge of, I have realized that the methods of teacher training are the very embodiment of instructor-led group instruction! Most of the time for teacher training has so far been spent on classroom lectures, in which the trainees absorb information from the teacher trainers. The teachers who have received such training would return to their schools and carry out "transmission training sessions" designed to convey the content of the training that they had received to their colleagues, endeavoring to spread the knowledge they acquired through training to a greater number of people involved in school education. But this training method of classroom lectures and transmission sessions is the exact same style as that of transmission-style classrooms led by teachers that have been used since long ago.

Even in skills training such as for how to operate computers, you often see scenes in which every member does the same task at the same pace by following the instructor's directions. Teachers with absolutely no experience are moving the work forward regardless of the fact that the content is too advanced and they do not understand what is going on. In the same scenes, you also have bored looking teachers taking part who possibly mastered such skills at home. Exactly the same situation in schools! If it is the aim of learning that utilizes computers and multimedia materials to break away from conventional, transmission-type courses led by instructors, then the style of teacher training must likewise be altered. This is because learning mediated by media serves as the ideal tool for instilling an image of learning for a new era.

With the understanding of the department in charge, I tried an experiment with a "no talking training" and "free practice time" at the audiovisual training (intermediate level) in a summer for teachers in Sendai city. In the "no talking training," I prepared computer-aided instructional materials in advance for matters that I would have liked to discuss in a lecture through the training, and had the teachers each learn at their own pace by using these materials. I also printed out and offered them writings from relevant authors so that they could refer to them as needed. For the "free practice time," the educational technology laboratory was a practice room that simulated an advanced learning information center, furnished with computers connected to the Internet, computers in which teachers could experience various types of multimedia materials, video booths, shelves full of relevant books and publications, and more. I then provided them with a matrix denoting the training objectives and connection with various activities, then tell them that "You are free to spend the afternoon any way you wish."

I began by having them ask themselves what they wanted to learn and what they would like to become capable of doing by spending the afternoon for the training. This was a venue for "searching for themes," just like that often observed in classes at elementary and middle schools. However, it has long been the style of teacher training that the instructor would select important items and then convey these in a manner that is as easy to understand as possible. So, many, if not all, of the teachers gathered for my training have come to expect it. There were undoubtedly some participants who went home without shaking the image that this course was an extremely unaccommodating, half-baked type of training. But on the other hand, there was no shortage of teachers who left comments like those below. It is my hope that these teachers will go on to create new types of courses.

> "I wanted to see more self-selective, self-determined, and self-responsible courses taught at elementary, middle, and high schools. Because of students coming to universities with little such experience, we are in such trouble today." This line from your introduction has left the greatest impression on me. It was difficult to find themes of training for myself, but doing so inspired ambition more than being given them would have done.

> While it contradicts my desire to be "taught" from you when I came here, it was amazing that I was able to freely see and feel what I was personally searching for. Every day I strive to teach because I have to, but every day I felt that my children were growing more and more distant from myself.

> In my own classes, I oftentimes try to proceed according to the lesson plan rather than my inclination as a teacher, to spend more time listen to my students. But I learned today that discovering your own learning objective makes it possible to learn independently and make efforts in a fairly concentrated manner. This was independent training through and through.

> I have been striving to address classroom practices which would elicit venues for self-selection and self-determination over about the past four years across the school as a whole. But this is the first time that I have actually taken part as a learner, which has enabled me to discover a number of new perspectives on independent learning.

> It was impressive in that it was not a bit like the lecture method. Had I known in advance that it was going to be in such a style, the training could have been made more satisfying by preparing subjects in my own way and obtaining the advice I needed through the process of resolving them.

Naturally, if time for independent training is going to be provided, then the participants must be notified of that fact in advance. If you do this, then their "attitude" or readiness for such a training would have been different. I was able to learn even simple things like this from the valuable comments left for me by the teachers participated in my session.

On another occasion, I designed a computer-related in-service teacher training at national level, with a message that "when learning new things (through training for teachers, and through classes for children), the learners should experience that such ways of learning exist."

The Center for Educational Computing (CEC) undertook "Educational Informatization Promotion Program: Informatization Training Support System Development for Teachers in Collaboration with Librarians, Teachers, SEs, and Others" as a project consigned by the (former) Ministry of Education, Science and Culture. Adopting my proposal, the project incorporated the general principle of self learning without recourse to a live instructor into sessions for within-school teacher training (Figure 12-4). It developed training videos and texts which would allow teachers to form groups and independently carry out training that would design computer integrated curriculum.

Figure 12-4 The Connection between Training Procedures and New Courses

◯ Parroting transmission trainings and teacher-led, information transmission-style classes
- Breaking away from passive training and its transmission = Breaking away from classes that teach textbooks to students

◯ Training that moves teachers and classes that move children
- Moves forward by combining individual training at one's own pace with time for discussions

◯ Training that does not depend on trainers and class that does not depend on teachers
- Independent training under one's own initiative by relying on guiding handouts
- If arrangements for independent training can be made, then an independent learning environment can be set in place at schools as well

◯ Training that requires teachers surpass trainers and classes where teachers can learn from children.
- It is NOT always the case that the instructor knows the correct answers
- Instructors that evaluate the outcome and indicate how to improve even for things that they didn't know

◯ Cross-curricular training and integrated study classes
- Computer as a medium to connect multiple topics over the entire curriculum and multiple grades
- Involvement in other subject matters and other grade levels helps you to see them from the children's perspective

◯ Training that applies results of past training and classes that bequeath information to the next year's students
- Start by refereeing to past examples, then proceed to producing examples of your own
- Amass what has been bequeathed and surpass your superiors

◯ Creating motivating training and appealing classes
- Imbue classes with the sense of achievement resulting from personally experiencing hardship and improving yourself by learning from colleagues

Source: Center for Educational Computing (1998) *Research and Study Report on Modalities for Training Curricula for Practical Coursework Utilizing Computers: With a Focus on In-School Training*. p. 14

The Japan Association for Promotion of Educational Technology (JAPET) has also been working on the Educational Informatization Promotion Program: Training System Development for Fostering Informatization Promotion Coordinators and Leaders. The program developed a collection of five CD-ROMs as instructional materials enabling self learning aimed at training for fostering leaders to promote educational informatization. It was carried out by the sponsorship of the (former) Ministry of Education, Science and Culture and

various boards of education. This training also incorporated a mechanism allowing for independent learning through a format in which the training participants conduct a self-diagnosis of their respective abilities at the start of the training, followed by a self-evaluation of their accomplishments afterwards. The results were positive, and a new style of training was developed (Suzuki, Nanbu, Akahori, 2000). It is the author's belief that in order to change classes, methods for training must first be revised. I am pleased to see that this has gradually begun to take shape little by little.

Section 5 Company N's "Astonishing" Training Program for New Employees

In bringing this chapter to a close, I would lastly like to introduce an example to improve corporate training. This illustration is not an example of e-Learning, but I believe that it is highly thought-provoking for thinking about modalities for training at information companies. This was also the encounter that triggered my becoming deeply involved in the education division (SIGEDU) of the Software Engineers Association (SEA) which appeared in the Preface.

I attended a study group sponsored by SEA's SIGEDU. About 20 participants stayed overnight at a training facility in the Tokyo and presented case examples to one another. A report drew the interest of the participants. It was the veteran director entrusted with newcomer education for SEs hired by the Niigata Branch Division of NEC Soft, Inc. (hereafter Company N). He took quite a plunge by conducting a seven-day training program in the following manner.

Handouts were put to good use in the training. The training schedule provided by the consignee listed the first hour as a 90 minute lecture. After greeting them by saying "Hello, my name is Shinozaki from Tokyo," he then distributed the handouts. And with that, he concluded the first hour's "lecture," which was slated to run 90 minute, in a few minute's worth of remarks. He then waited patiently. Waiting the 30 minutes it took before the first question came was a strain. The handout that he distributed specified what the first assignment was and a checklist of criteria for successfully passing it, and included instructions to "Ask the director if you have any questions." To those new employees who took part with the attitude that they would be spoon-fed instructions, the emergence of an instructor who did not do anything for them was undoubtedly a culture shock. But from that point on, the training brimmed with energy and satisfactorily attained the training results.

What surprised me was not the methodology of the training program itself. It was the unanimous litany of comments like "This is a groundbreaking technique" and "I'd like to try this but it would be impossible because of the situation in my company" from the directors in charge of corporate training who had assembled for the study group. Having learned educational technology in the United States, I thought it would be perfectly routine methods that the training objectives and passing criteria were indicated from the beginning and that the trainees could advance their learning in their own manner. I had imagined that an objectives-based training style was routine at companies (let schools be alone) in Japan. So while listening to the example from Company N, I naturally thought "Just as you would expect from corporate training; when they do something, they do it right!" But I never expected that this would be so novel and revolutionary for the directors from other companies. It was not a routine method after all.

Once the passing requirements are presented to the trainees, the instructor cannot needlessly deprive them of time for instruction by revealing personal anecdotes about themselves and similar needless topics under the guise of a "lecture" (or through futile tasks like explaining what is written in texts as has been done all along). Gathering together trainees who differ in terms of their basic knowledge, aptitude, or learning styles at once and compelling them to learn via the same methods and at the same pace is inefficient. Learning must be promoted in such a way that motivated trainees would come up with their own ingenious devices through their preferred method to clear the passing requirements. To make this possible, it must be ensured that there are worthwhile assignments, plenty of time, and a functional learning environment, while teamwork among the trainees themselves must also be facilitated. These should be realized as the duties of the instructor. I was profoundly astonished to find out that this approach is not common among the directors in charge of corporate training.

At the Case Studies Session, the discussions extended to the issue of what obstacles were impeding the promotion of instruction through this method. The problems that were given in response to this included (1) the fact that setting in place a training environment is difficult, (2) there are limits to the number of trainees that can be looked after at one time, and (3) it is hard to obtain the understanding of one's superiors. However, two conclusions were reached over the most difficult points to achieve. The first is creating practical application tasks that would allow the trainees to operate on their own and that could be expected to make them want to do so, and presenting the passing criteria for these in an unambiguous manner. The other is maintaining instructors who can quietly stand by without dominating the instruction time and are capable of providing accurate advice (or retain said advice) when the trainees request it.

To be sure, the veteran instructor who produced this successful case example for Company N had undergone training on objectives-based training techniques as fundamental training for ID practitioner. He also had many years of experience as an instructor and was capable of creating practical assignments and presenting unambiguous passing criteria. Furthermore, this person was also someone who had a clear aim in that, "I wanted to teach the newcomers that nothing would ever get done unless they made the first move themselves," and who was capable of consciously keeping himself in check.

It was good to hear that the employees who underwent training as newcomers the previous year have offered to help with this year's newcomer training, and that this year's training could be carried out smoothly. There was unanimous agreement over the view that those who have experienced such training could adequately serve as instructors, but that this would be difficult for others. The style of learning in which "instructors offer the trainees explanations and the trainees listen and take notes" is pervasive to the point that it is even found in corporate training.

It is clear where this view of learning is fostered: in classes at schools. Subject matter with absolutely no understanding of what parts are interesting is learned all the same as related by the teacher. This is intently memorized in order to receive a passing grade. Studying is monotonous and arduous; it is not something that anyone would stand up and volunteer for on your own. If you were told that this is an era of lifelong learning, rather than conjuring up the notion of a rose-tinted era in which people can continuously improve themselves one after another, it would lead to the gloomy presentiment that such arduousness would continue for one's entire life. It would be a real shame if such a negative image is so commonly shared with regard to learning. It is my strong hope that e-Learning would become rooted in society

and serve as the impetus for discovering a positive meaning that views the act of learning as a process of developing oneself and constituting a self that is capable of contributing to society. I would be pleased if the results of research on instructional design could be of service in accomplishing this.

[Note] Parts of this chapter were based on the previously published works listed below.

Suzuki, K. (1999) *Comprehensive Studies for Utilizing New Media in Learning: The Road to the 'Big Bang of Education'*. "Education Outlook" (Special feature: Comprehensive Learning and Information Education) Vol. 45 No. 9 (October 1999 Issue; Consecutive Vol. 494). Published by the Educational Research Institute, 26-35 [In Japanese]

Suzuki, K. (1995) *Primer on Course Design Using Broadcasts: A Message to Young Teachers*. (Educational Broadcasting Series 23) Japan Association for Educational Broadcasting (Chapter 9: The Schools of the Future and Educational Broadcasting of the Future) [In Japanese]

Suzuki, K., & Ichikawa, H. (1997) *Experiments in Teaching Internet Fundamentals: Aiming to Break Free of Trickle-Down Lectures* "IMETS (Improving Media and Classes)" No. 126, 72-76 [In Japanese]

Reference

Suzuki, K., Nanbu, M., & Akahori, K. (2000) *Development and Evaluation of a Teacher training Program for School Computing Leaders: (2) Analysis of Program Effectiveness*. Report by the Japan Society for Educational Technology (JET2000-3) 75-83 [In Japanese]

Toffler, Alvin (1980) *The Third Wave*. Chuokoron-Shinsha, Inc.

Committee on Developments in Science of Learning, Bransford, J.D., Brown, A., & Cocking, R.R. (Eds.) (Trans. Satoshi, Mori; Teruakitaki, Shiromi (Trans. supervisor)). (2000). *How people learn: Brain, mind, experience, and school* (Expanded Ed.). National Research Council.

Mizukoshi, T. (1990) *Teachers Utilizing Media*. Toshobunka [In Japanese]

Ministry of Education, Science and Culture (1990) *Procedures on Information Education*. Gyosei Corporation [In Japanese]

Branson, R. K. (1990, April). Issues in the design of schooling: Changing the paradigm. *Educational Technology*, 7-10.

	End of chapter report assignment (Chapter 12)	

Write a report on <u>one or more</u> of the following three assignments:

1) Compile any questions or doubts that occurred to you while reading this chapter (Chapter 12), as well as any comments, opinions, impressions, and so on. Including any previous personal anecdotes related to the descriptions in this chapter, added information, or anything that you have examined and the results (affix the name of the source of information) in your consideration will serve to deepen your understanding.

2) Consider one of the case examples introduced in this chapter (Chapter 12) in terms of the pros and cons of its methodology and the possibility of applying it to e-Learning. It is preferred that you analyze the experience in receiving an education at school and in society that you have had so far, as well as educational activities that you have personally conducted, rather than limiting yourself to case examples of e-Learning.