

The interface between experiential learning and the Internet

Ways for improving learning productivity

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Abstract *This paper addresses the persisting problem of stagnant productivity in the education sector and its contribution to escalating costs. An approach to improving learning productivity is proposed which emphasizes the integration of ICT, service learning, experiential learning, and cooperative learning. Thus, the fundamental theme of this paper is to link these four learning domains as a basic strategy to improve the quality and productivity of education and at the same time to reduce costs or limit cost increases. The advances in ICT and the concomitant "death of distance" greatly strengthen the potential for teachers to become facilitators to organize creative autonomous learning in diverse settings. Concrete examples are described from diverse cultural settings such as South Africa, Cambodia, Costa Rica, Chile, Japan, Laos, Vietnam, Thailand and Oregon. The paper concludes by offering a number of specific recommendations to improve learning productivity.*

Yes, you may well doubt, you may well be uncertain . . . Do not accept anything because it is the authoritative tradition, because it is often said, because of rumor or hearsay, because it is found in the scriptures, because it agrees with a theory of which one is already convinced, because of the reputation of an individual, or because a teacher said it is thus and thus . . . But experience it for yourself (Mahamakut Rajavidyalaya Press, 1975).

Productivity gains from that source [IT] will be limited, for instance, by the view that learning occurs only when students and teachers are together in a classroom (Brinkman, 1992, p. 29).

Are students jugs to be filled or candles to be lit? (BBC and RM Arts, 1985).

Background

Reflective of the basic orientation of this paper, I would like to share the basic mottoes articulated on the Web site of the Global ICT Department of the International Finance Corporation:

- Enabling the poor with information.
- Connectivity for the poor.
- The portal for development.
- Knowledge for all.
- Networking for a better future

As a metaphor reflecting the basic assumptions underlying this paper, I would like to use the conductor of a symphony as representing the teacher of the new millennium. As the conductor orchestrates the use of a variety of instruments, the new teacher draws on a wide range of multiple methods in providing her/his students with a most dynamic learning environment which extends well beyond the traditional physical classroom.

In the literature on education there is a vast amount of material on the area of experiential learning starting with the seminal work of John Dewey. As indicated by the quotation above, Buddhist epistemology actually several millennia



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earlier emphasized both critical thinking and experiential learning. In more recent decades there has also been extensive research on service learning, though such research has been largely based on anecdotal evidence (see Shumer, 1999, 1993). A third area in which there is also much literature is cooperative learning (see Johnson *et al.*, 2000). In each of these three areas, there are large numbers of educators deeply committed to promoting the value of and effectiveness of these approaches to education. Finally there is a rapidly growing literature on ICT and its relevance to improving education and classroom learning. A major theme of this field has been to advocate distance learning. These four major genres of learning are shown in the tetrahedron of Figure 1, from the field of physics which is useful for visually showing complex interdependent interaction among four factors.

In preparing this paper, I was quite surprised to find that there appears to be little interface among the educators and researchers in these four domains, perhaps reflective of the extreme specialization valued and encouraged by the academy. Thus, the fundamental theme of this paper is to link these four learning domains as a basic strategy to improve the quality and productivity of education and at the same time to reduce costs or limit cost increases. Also all four of these domains are responsive to a more student-centered pedagogy being called for in many educational reform initiatives around the world.

Crisis and challenges facing education: “the cost disease”

As we move into a new decade, century, and millennium, education in general and higher education in particular are at a major crossroads. In some respects the current status of

education represents a “tale of two cities”. On the one hand, graduate education has played a major role in developing the technologies that have contributed to rapid productivity improvements in the 1990s and what Cairncross (1997) calls “the death of distance” (see also Friedman, 2000). The new information and communication technologies now available open up unlimited possibilities for improving educational quality and productivity and fundamentally transforming the nature of teacher and learning processes to move toward what Arthur Harkins, terms “performance base learning” (Harkins, 2001a, b, c; Harkins and Kubik, 2001).

“Education is a sector of the economy which has failed to improve its productivity”

Despite such dramatic successes, education and higher education also face a major crisis. The crisis relates primarily to escalating costs, the complex and controversial issue of relevance, and basic teaching methods, all of which are interrelated. That the costs of education in general and higher education in particular have dramatically increased in recent decades should not be surprising, given the basic laws and principles of economics (see Table I). Education is a sector of the economy which has failed to improve its productivity. It is called a “stagnant industry” by Levin (1991, p. 243). There are frequent complaints by consumers of higher education in the USA of having “to pay more and getting less” (Clotfelter, 1996, p. 7). The basic mode of operation in education, a person teaching directly a small or large group of students in a classroom, has been the basic model for decades, if not centuries. If we were to compare society in 1900 and the year 2000, the area with the least change might perhaps be in the basic mode of teaching students (chalk and talk).

Costs will escalate in sectors in which productivity is stagnant. This basic law of economics was articulated several decades ago by the Princeton economist Baumol (Baumol, 1967; Baumol *et al.*, 1985). Baumol terms this the “cost disease” and he has been a pioneer in analyzing the special nature of the economics of the information and other service sectors of the economy. His argument related to the “cost disease” can be simply stated. In economies or sectors of an economy in which there are important productivity improvements through the substitution of capital for labor, better utilization of capital and labor, and the use of technological and technical innovations, wages in those economies are sectors will increase significantly.

Since schools and educational institutions hire from general labor markets, their labor costs will thus increase significantly. Since personnel costs normally account for 70

Figure 1 — Tetrahedron showing major genres of learning

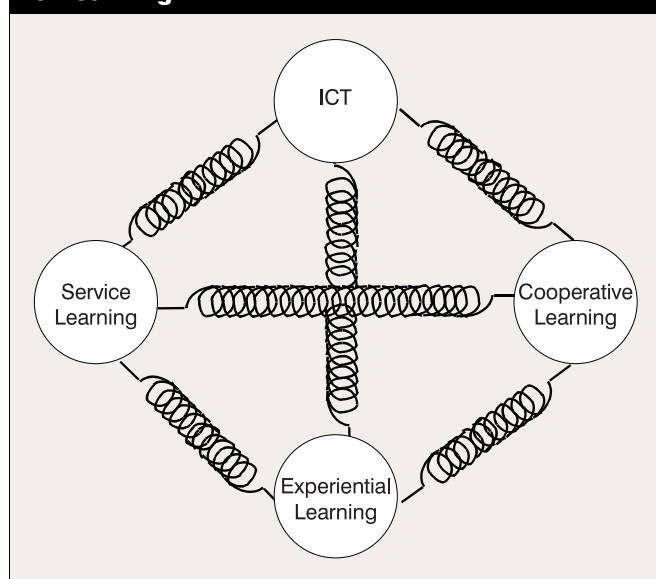


Table I — Escalating costs of education in the USA by type of education (in constant 1998-1999 dollars)

Year	Total expenditures, all levels	Total for public and private K-12	Public, K-12	Private, K-12 (est.)	Total for higher education	Public higher education	Private higher education (est.)
Percent increase, 1960-1999. in expend	362.97	297.36	293.67	349.68	516.40	604.94	409.83
Percent increase in enrollment 1965-1999	25.19	9.79	12.02	-5.24	151.33	192.24	68.07
Ratio of X increase/enrollment increase	14.41	30.37	24.43	na	3.41	3.15	6.02

Source: Adapted from raw data in US National Center for Education Statistics (2000, p. 15)

to 80 percent of the costs of education, educational costs will tend to accelerate, since it is a labor-intensive sector in which it is difficult to change the basic nature of the activities involved. Levin (1991, p. 245) states that “progress in innovating in many instructional areas such as curriculum, classroom services, and instruction seems to proceed at a snail-like pace relative to that in other sectors of the economy”.

Again, a music metaphor may be useful. Let us consider the case of a string quartet. It is impossible to improve the productivity of this quartet by dropping a member. However, assuming a high quality musical production by this quartet, we could record it and distribute it globally. This illustrates how ICT can dramatically improve productivity and how the new information economy is quite different from the traditional industrial economy. For example, we cannot reproduce cars or other material goods in such a simple fashion. You and I can both have the same music CD but not the same car.

There is also a bizarre paradox associated with Baumol’s “cost disease” pointed out by Levin (1991, p. 244), which I term the “boomerang effect”. If the educational sector is highly effective in providing its citizens with skills to enable them to improve their productivity, then it will contribute to increasing levels of compensation for professionals, which in turn will raise education costs and contribute to escalating costs in a labor-intensive educational sector. Thus, the education sector will be “punished” for doing its job well. This complex relationship between education and the economy is addressed in a recent book by Wolfe (2002) in which she is highly critical of unproductive educational initiatives in Britain targeting those over age 16.

A major problem area for education relates to pedagogy and modes of learning and teaching. Much teaching and learning is still teacher-centered and the teacher remains a superior authority figure who dominates the teaching learning process. Freire (1998a, b) and Hooks (1994) have been critical of the traditional banking approach to education and learning. Hooks calls for an engaged pedagogy and “teaching and learning without limits”.

Some concrete examples of innovative approaches involving ICT

One example in the area of English language teaching at the primary school level is the development of a CD-ROM called Alphaplanet, created by Professor Ken O’Connell of the University of Oregon, his students in animation, and the English Conversation College, a private school in Osaka, Japan (DePoe, 1997). The software, which teaches the English alphabet, numbers, colors and phonics using a cast of frogs, monkeys, chickens and other animals, has been extremely popular in Japan. This easily used software involves an animation approach to teaching basic English in terms of communicative competence. Using this software, students think in English from the very beginning and are exposed to “perfect grammar and pronunciation”. It also makes learning English what the Thais term *sanuk* (enjoyable). Now Professor O’Connell is negotiating with the program’s Japanese owners for distribution rights in the USA and other countries. The extensive and careful use of such software could dramatically improve the quality of English teaching in many places, not only Japan.

A second example is the Rung Arun private school in Thonburi, Thailand, which emphasizes experiential, naturalistic learning under the dynamic leadership of Dr Prapat Niyom, a former architecture professor at Chulalongkorn University. Middle school children there are producing a high quality research-oriented newsletter reporting on school activities using the latest desk-publishing software. These students are developing impressive inquiry skills and proficiency in writing Thai (see <http://www.geocities.com/siliconvalley/bridge/6341/profile.html>).

A third example is Jefferson Middle School in Eugene, Oregon in the USA. Students there were also at the middle school level. The former principal of that school, Dr Bob Bolden, emphasized a project in which students, drawing primarily upon the Internet for their research data, did extensive research on river systems and related environmental issues in mainland Southeast Asia. This project was supported by the Asia Society. This was an extremely empowering learning experience for students. Students from this same school were later to meet President

Aquino of the Philippines, another powerful experience for them connected to their earlier learning. These last two examples also involve considerable cooperative learning as students work in teams to do these projects involving the use of ICT.

A fourth example is from the remote Cambodian village of Rohib in Preah Vihear (see Plate 1), which is connected to the Internet via satellite. This village has a remarkable Web site (www.villageleap.com). Children in the village school have gained impressive computer skills having been taught by young former orphans from the capital of Phnom Penh (Sovichet, 2000). The village is also using the Internet for e-commerce to market local Cambodian products with impressive aesthetic qualities for which Cambodia is known and to improve local health conditions. A key question is the extent to which this type of innovation is sustainable or replicable without substantial external assistance.

Another exciting new initiative is Greenstar, the mission of which is to use solar energy as a means to serve non-wired communities in remote areas of countries such as South Africa. Previously Myeka High School in a remote part of South Africa, deep in the Valley of a Thousand Hills, had no electricity and its students had access to few learning materials. As the result of the introduction of solar energy by Greenstar, students at Myeka gained access to both Internet learning materials and the Learning Channel. Graduation rates increased to 70 percent from 30 percent (Lipschultz, 2001).

The nation of Costa Rica also provides a fascinating example of a strong commitment to ICT for enhancing both formal and informal education. Costa Rica, under the dynamic leadership of former President José María Figueres (see Friedman, 2000, pp. 200, 234), pushed adaptations to the Information Revolution. Costa Rica is implementing a plan to give every high school student access to the Internet. It is estimated that 30 percent of all Costa Rican homes now have a computer, an amazing accomplishment for a developing nation. In a comparative study of the use of

computers in schools in Costa Rica and Chile, researchers found that the use of ICT also contributed both to more cooperative learning and student-center learning (Alvarez *et al.*, 1998). Friedman (2000) argues that countries such as Costa Rica with such a high commitment to IT will have a decided advantage in the long-term future in an increasingly information era. Among Latin American countries, Costa Rica and Chile seem to stand out as nations deeply committed to preparing their citizens appropriately for the age of informatique. Chile has designated the “information society” as the 2001 theme for the Rio Group. The Bill and Melinda Gates Foundation recently donated \$5 million to help give the more than 300 public libraries in Chile computers, Internet access, and related training (*Financial Express*, 2001).

Another interesting initiative is Schools Online, the mission of which “is to help ensure that all schools have effective access to the communications and information resources of the Internet”. Silicon Valley entrepreneur, Kamran Elahian, started this pioneering effort to provide access to the Internet to Native American, Appalachian, inner city, and rural schools lacking access to the Internet. Ultimately, 5,600 schools and 8,000 teachers were served. By the year 2000, this operation had expanded to an additional 200 schools in 18 countries.

Schools Online is now receiving support from a new organization called the Technology Empower Network (TEN). It was unveiled at the January 30, 2001 meeting of the World Economic Forum in Davos, Switzerland. The mission of TEN is to support initiatives that use technology to improve health, education, and economic growth in economically disadvantaged communities.

Some concrete examples of service learning

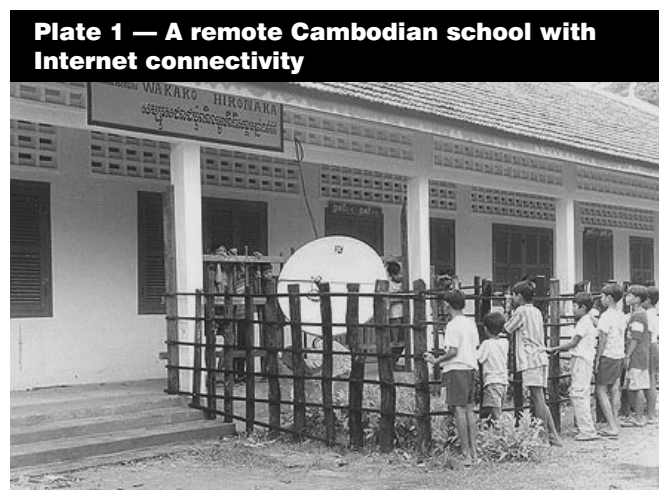
Harvard professor Robert Coles over time has become a strong advocate of the great importance of service learning as reflected by two quotations from his book, *The Call of Service: A Witness to Idealism*:

Our institutions of higher learning might certainly take heed, not only by encouraging students to do such service, but helping them stop and mull over, through books and discussions, what they heard and seen. This is the purpose, after all of colleges and universities – to help one generation after another grow intellectually and morally through study and the self-scrutiny such study can sometimes prompt (Coles, 1993, p. 148).

... One day I was sitting outside a rural school near León, Nicaragua, talking to a Georgetown University student who was working with a Jesuit-sponsored project that built and staffed schools in Third World countries. He said, “I’ve got four more months here, and when I leave, that’s when I’ll be starting to figure out what this has all meant! Probably for the rest of my life I’ll be influenced by what happened to me here – I think differently.” (Coles, 1993, p. xxi).

The following are some important examples of service learning:

- Volunteers in Asia (Stanford University).
- Princeton in Asia.



- IE3 Global Internships (International Education, Experience, Employment) (formerly Global Graduates).
- Harvard Teach.
- Teach for America.
- Hong Kong International School Service Learning Program.
- Village Volunteers Program of Thammasat University (initiated by Dr Puey Ungphakorn, see Sulak *et al.*, 2002).

Unfortunately, because of space limitations, it is not possible to describe in detail each of these programs emphasizing service learning, often in international/intercultural contexts. However, central to all of them is autonomous and natural learning supervised from afar, greatly facilitated by the Internet and the related “death of distance”.

Example of experiential learning: the Vietnam Field School

A dynamic field school was established by the University of Oregon in Vietnam which enables faculty and students to engage in research and praxis working closely with Vietnamese counterparts. Through participation in this field school students have had many opportunities to develop their language and cultural skills and to develop a much better understanding of Vietnam and its history, economy, and society. Initially, the field school as operated was extremely labor-intensive requiring the presence of a full-time faculty member to supervise and facilitate student learning activities. Now with the ease of access to the Internet in Hanoi, this type of intense learning opportunity could be largely supervised via the Internet, greatly reducing instructional costs, with students increasingly learning on their own.

Example of cooperative learning in an international/intercultural context

I have collaborated with Asian counterparts in developing an innovative international cooperative learning project involving universities from Japan, Thailand, the Lao PDR, Cambodia, and Vietnam (Tomita *et al.*, 2000). Students of some 20 different cultures have been involved in this intensive intercultural project. Several collaborators in this project developed close friendships via the Internet long before meeting each other in person. The project involved intense transformative learning. A project of this complexity would have been difficult to imagine without the powerful communications made possible by the information revolution. The Internet has also enabled program alumnae to continue to network effectively and facilitated the completion of a tracer study to assess the impact of the program on former participants. Outcomes of this project support the confirmation of the contact theory recently assessed in a thorough meta analysis by Pettigrew (2001).

How the interface among ICT, experiential learning, service learning, and cooperative learning can improve educational productivity and quality

Two of the major costs of education at all levels are physical infrastructure and personnel (teaching and administrative). In much experiential, service and cooperative learning students are encouraged to learn in the field in natural settings. Fewer classrooms and infrastructure are needed to the extent that these forms of learning, including ICT, are utilized. Thailand's largest university, Sukhothai Thammathirat Open Distance University (STOU) has by far the least physical infrastructure of any Thai university.

At nearly all levels of education, there is serious concern about the administrative costs of education and how much is being spent on this aspect of education rather than on direct learning and learning improvements. This is a burning issue nearly everywhere. Although it is not the focus of this paper, certainly ICT can be effectively utilized in streamlining administrative systems and raising the productivity and efficiency of such systems, and freeing up funds to support learning improvements.

Teachers supervising and directing independent study of students in the field in naturalistic settings become catalysts to arrange and promote active and challenging learning experiences. What was the cost to my university when I had seven students doing independent field study in Cambodia? They were learning almost totally from their natural environment. Their learning was certainly far more intense than if they had been in my classroom. My efforts in teaching them were minimal and that was primarily in the form of occasional Internet communications and assessing their final written work. At the higher educational level, most universities in the USA have very strict rules which actually limit the amount of independent study which students can undertake, thus, limiting dramatically the potential of this option. As part of an innovative new graduate program in Regional Studies at Chiang Mai University, Professor Seksin places a strong emphasis on his Thai students doing fieldwork in areas such as Yunnan, Cambodia, Vietnam, the Lao PDR and Myanmar. His approach is extremely progressive in this regard and recognizes the great value of direct experiential learning. Several years ago I had an undergraduate student who spent half of one summer in a village in Vietnam and half of the summer in a village in Laos and then did a long 90 page comparing the two villages. At little cost to her institution of higher education, she learned a tremendous amount. As a faculty member interested in rural Vietnam and Laos, I also learned from her work and she subsequently gave an excellent “faculty” seminar on her comparative fieldwork. Coles (1993, p. 177) at Harvard in his book on service learning emphasizes learning from students.

In preparing students for the real world of work, cooperative learning is extremely important. The head of

Wang Computers in addressing an audience in China warned of the danger of students become addicted to excessively individual engagement with the computer to the neglect of developing their social, interpersonal and intercultural skills. There is much evidence, however, to suggest that ICT and cooperative learning can be mutually supportive (Alvarez et al. 1998), if teachers are adequately conscious of this potential issue and design learning environments to foster cooperative teamwork in the use of ICT.

Conclusions

From these examples and cases a number of conclusions and related policy suggestions emerge:

- *Need to encourage and strengthen mechanisms for autonomous and experiential learning.* To address the issue of stagnant productivity and escalating costs, it is important to emphasize greater opportunities for individualized independent study and learning beyond the formal classroom. With this model, students learn primarily on their own from real world environments, also drawing on the learning resources of the Internet and the WWW. The role of the faculty member becomes a genuine mentor and catalyst to encourage and monitor such independent learning which involves far fewer direct costs. Faculty and teachers can then devote greater energies to promoting creativity and total quality control with regard to the performance of their students.
- *Need to individualize curricular programs to respond to the needs of diverse students and communities.* Each student brings with her/him unique abilities and interests. Overly standardized and structured programs cannot possibly meet the needs of all. Also different students have different learning styles. With increasing numbers of teachers having access to the tremendous knowledge resources of the WWW, the potential for individualizing and customizing education has never been better. Students themselves are also often a grossly underutilized learning resource (see Coles, 1993).
- *Need to provide appropriate incentives to ensure that teachers are committed to engaged and innovative pedagogy that is not teacher-centered.* Faculty need to realize that their job is not to fill jugs, but to light candles and provide their students transformative experiences and interdisciplinary training to prepare them to succeed in diverse and complex professional work situations. Educational administrators must provide adequate incentives to encourage faculty to innovate (Levin 1991).
- *Need for faculty to recognize the importance of students developing multiple intelligences (Gardner, 1999).* Such students need holistic training that goes beyond the narrow, but important cognitive domains. Curricular programs need to be designed to encourage creative

flow, not constrain or limit it (see Csikszentmihalyi, 1990, 1996). Being digital (Negroponte, 1995) and having proficiency in IT is one of these critically needed intelligences.

- *Need to recognize the growing importance students to become international and more cross-culturally sensitive and aware.* An important part of this domain is to develop strong and effective communications skills in both nonverbal communication and multiple languages. It is critically important for them to develop their software of the mind (see Mestenhauser and Ellingboe, 1998; Hofstede, 1997; Paige, 1993). Given the increasingly multicultural nature of many of the world's nations, this is an increasingly important "gift" for students to acquire. With the "death of distance" and the emergence of the WWW, all kinds of possibilities exist for providing students exciting learning opportunities in these arenas. With GIS and diverse map software (for example, that developed by The Buckminster Fuller Institute (1992), students can develop greater geographic literacy and consciousness of important biases in map representation (see Lewis and Wigen, 1997). Fuller's geographic projection derives from his having made the globe into a polyhedron with 20 triangular faces (Allen, 2001, p. 78). Becoming more globally and culturally aware are important dimensions of citizenship education (Cogan and Derricott, 1998, p. 149).

To implement the above suggestions will require a genuine reform of education at all levels. Such reform is essential if education is to serve both students and the larger society and community more effectively. Alternatively, if "more of the same" dominates education, then costs will continue to escalate and public support for education will continue to erode meaning the decline of this important sector. Countries and nations with declining education sectors will lose comparative advantage and will face great difficulties in improving productivity necessary to raise standards of living and quality of life for all. ■

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