Models of Instructional Delivery Systems

SUBJECT: Assignment #3: Models of Instructional Delivery Systems

COURSE: MCTE 661 — Advanced Instructional Delivery Systems

Textbooks:
- Beyond Calculation: The Next Fifty Years of Computing
  Denning & Metcalfe (1997)
- Learning Networks: A Field Guide to
  Teaching and Learning Online
  Harisim, Hiltz, Teles & Turoff (HHiTT) (1995)

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Abstract

This summary paper addresses some of the models of instructional, or learning, delivery systems. Moreover, it explores some of the reasons for the reluctance of many, when it comes to advances in technology and the massive effect those advances have on populations. It hopefully will give some insight into the importance of *change* as the overlying factor of our New Media, and the necessity we have of not only staying current but also being open to laying aside older tools to receive the new. Delivery systems and every other aspect of the burgeoning technology create new daily stresses, from the educator to the student to the general populace. In the face of the vast amount of information that the new systems deliver, this paper will also look into the information "glut," and how it affects learning. Finally, this writing will ponder the importance of the theories concerning "calm technology," *ubiquitous computing*, and the function of bringing information. In defining their relationship to learning, just *how* do such seemingly oppositional partners fit together? In a word: Internet (or, what the Internet and its expanded links will become).

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Delivery Systems: What People Currently And Moderately Believe

The worlds of academia and economics both have ways of not just attaching pertinent words to an item in order to describe it, but they also have a very convincing way of attaching just the *correct* words, in order to *sell* it. The entire globe is sitting on the threshold of the greatest conglomerate tool -- for learning, for delivery -- of all time. New doors to unparalleled information open every day, and this marvelous delivery system, like a child's "twisty slide" on the playground, spirals the data swiftly into our eager eyes.

In many ways, the arenas of academics are received in the same hyped swirl of color and activity as the economic merchandising of advertising. Indeed, every encounter with the Internet is an opportunity to become "sold" on one idea or another -- whether it is history, or whiz-bang greeting cards, electronic flowers or a gadget with 200 functions. This marvelous tool is also the means for "selling itself" along with its offerings. Who are we to doubt when the delivered message tells us that:

> "Seven models or learning approaches are common in educational computer networks. Electure, ask-an-expert, mentorship, and tutor support require online resource persons, such as instructors, mentors, and experts to support student work. Access to relevant information, peer interaction, and structured group activity are student centered." (Harasim et al., 126).

It's clear even to the common observer that all of this is true. Since the mode of delivery is so very serious and academic-like, it further adds to our comprehension that these words are the truth. When we think about delivery systems -- if we think about delivery systems at all -- descriptions such as this example very much embody the common thinking concerning the learning environment of today's new media. It is the opinion of this writer that the words above

are NOT true. They were true back a few paces in history, but things have changed. It is the purpose of this writing to prove that the very books that we read are instantly outdated long before we purchase them. The things that we read *here* have already undergone major convolutions before the printer's ink has dried, or another reader's eyes have met this paper. That makes this paper as outdated as the example given. At some point this writer will be as vulnerable to having someone claim that these words are not true, or are only a portion of the picture. There is a lesson to be learned: The only consistent thing that is dependable in the new Information Age is that things *will change* . . . usually, very rapidly.

There are certainly more than seven models or learning approaches available in educational computer networks, at this writing. Perhaps some of them are offshoots of the list we have here. More likely than that, we will find progeny of one of these seven, and probably they were inspired or born as twins, triplets, or more! For example, take the Electure. Recent technical advances have given us many sub-categories of the Electure. Does this mean the Professor will type his lecture by Telnet -- the tried and true mode for a couple of decades? Or, does this mean the class will receive his words via the new voicing functions, whereby the computer will read his lecture to us in a robotic voice of our choosing? Will this mean a live or recorded video of his lecture, delivered by the yet-wavering images of streaming audio and video? Might we meet in a Lecture/Chat Hall, and read his words in real-time? Interestingly, the chat arena would even allow for private conversations with class clowns cutting up in the back of the E-Hall. Possibly the Professor would then ask to "see" them after the lecture, whereby their admonishment would arrive in this same "chatty" way.

The point of breaking down current offerings of the lecture delivered by current electronic means is that things have changed at least two-fold. First, we have to realize that ONE title for this Electure offering is no longer valid. Was this indeed a lecture, or was it an archived message to present and future learners? Was it a media presentation as well as a lecture? The videos of John F. Kennedy were lectures or speeches of a sort, but because of the then-current media, they quickly became historical archives, backgrounds for creative presentations, elements

for entertainment, and most definitely a form of Art. The forms of delivery that have become available in the past few years, and which are being developed at an accelerating and alarming rates in this very moment, will undoubtedly give today's Electure even more "hats to wear." We can no longer look at this ONE mode of delivery -- Electure -- as *just one mode.* It has become much more than that.

This leads to the second aspect that has changed in grand proportion, for the area of delivery systems. Because the definition of just one item became different literally overnight, we MUST look to history -- at least the history of the new media -- to prepare ourselves for the next item that will sneak quietly up to surprise us. In this two-fold manner, it is essential to watch for the changes. It is also imperative to learn to become flexible enough to not only implement the new hybrid tools as they arrive, but have the courage to lay it down and take up its successor.

The authors cited above, of Learning Networks: A Field Guide to Teaching and Learning Online, appear to have an awareness of the magnitude of the new tools. They state, "Conditions are changing with a declining public school-aged population in many areas and reduced budgets for operating costs, yet the demands on the education system are increasing. Learning networks *can* form the basis for reformulating educational services and *can* [emphases by this writer] assist in creating new options for education." (241-242). It is this author's opinion that their assessment is too steeped in academic tradition, and their statement is far too weak. It isn't that learning networks CAN form the basis for reformulating educational services, or that they CAN assist in creating new options for education. The truth of the matter is that the delivery systems ARE doing all of this. In fact, much of it *has been done or is currently in the works.* The world of education, as we've known it, has stumbled. The ivy walls are falling down around their very ears. The final results of the New Media changes simply have occurred so swiftly and silently that our school system hasn't had a chance to "catch up with their reading" long enough to realize that it has happened before their very eyes -- literally. *On the monitor screen.*

A new paradigm in learning has arrived. It is awesome, and it is alarming. What is even more alarming are the uses or abuses being made of the new modes. In an effort to include

computers in the academic lives of its students, a private school in Evansville, Indiana has installed computers in the classrooms, including a music lab with computer-integrated keyboards and course offerings such as digital synthesis of electronic music. Most students are fluent with Internet technology and each has an Email account. The school offers courses in programming for the Web and a Survey of Programming Languages. It also publishes student grades on the Internet -- one of the first secondary schools in the U.S. to do so. The grade reports are extensive and often contain pages of handwritten assessment from each teacher. The school states that placing this information online is one way to offer strong communication with parents. (CNN & Associated Press, 1998). It's also a way to make young learners feel that the computer is not an ally and a tool, but something resembling an Orwellian "1984" instrument, designed for enveloping them.

It seems a sad waste that the excellent and improved literary, scientific and artistic works of these students, empowered with elements of new technology, aren't the focus of such an effective system of delivery! With the focus of attention centered on the needs of the parents, it seems that the monies spent on high-tech in Indiana have less bearing on the future of children. The state-of-the-art delivery system's capacities for delivering superior instructional services have been usurped and channeled into what amounts to only a hyped and contrived daily journal -- for the benefit of teachers and parents.

Tweaking The Systems: Behold! Students Begin Functioning Beyond Their Years

Perhaps it is too simple to find fault with those who haven't arrived at an equal awareness of the tremendous learning environments that unfold around us every day. Educators have always been in a demanding career arena. They often take the brunt of criticism that more likely belongs to the enlarged social system than just to the set responsible for teaching our children. To their already demanding jobs, New Technology has attached additional demands on the teacher. To the educator, the Information Technology (IT) worker shortage is a screaming testimonial to the ages'-old question of how to prepare your students adequately for the needs of

industry. More than ever, the skills in demand are constantly changing. Educators must tweak the system in order to find ways -- and time! -- to keep their own skills up-to-date. They also must find ways to keep their resources and equipment current. (Knowlton, 1998). This wired rat race has given the educational world -- not to mention all the rest of us -- cause to pause and think about "keeping up with the Joneses" . . . at least the "E-Joneses," who are involved in producing the next melieu of electronic learning!

Some models of excellence in delivery systems have had long roots in producing effective results, utilizing current technologies as they arrive. The Computer Supported Intentional Learning Environment (CSILE), in the Ontario Institute for Studies in Education, has such a reputation. They, unlike the Indiana school just mentioned, are primarily focused on the progressive nature of the building of knowledge, in a communal database. (Harasim et al., 49). Conversely, it would seem they aren't as focused on the archiving of other people's opinions of the achievements or behavior of students. It IS possible, with new methods of learning, to achieve perhaps the most important learning factor of all -- the understanding of learning, itself. (50).

On the whole, CSILE students greatly surpass students in regular classrooms, because they have been allowed to study and comprehend *the nature of the learning process.* Their performance within this model of collective knowledge and collaborative learning has been impressive to all observers, as students start to function beyond their years. They consistently have embarked on constructing knowledge and solving problems at a level that just isn't found in the average school setting. Interestingly, this description fits *all* of the students, regardless of his or her academic and production level at the time of enrollment in CSILE. (Scardamalia and Bereiter, 1994; as cited in Harasim et al., 50). This school has produced, in this writer's opinion, an example of what can be expected of this "new breed" of students -- the ones who are allowed the freedom to explore and utilize the chameleon-like exemplar of new learning systems.

As students of this new frontier in education, we must -- more than ever -- NOT believe everything we read. The authors of Learning Networks continue in their discourse on

instructional delivery systems by saying that "[i]n the future, we believe, networks will not be about reading a document but about exploring the thought process or model of a given individual or group." (252). This indicates they are on the correct track, much in keeping with others who are setting new learning trends. The rest of their thought, however, sheds light on what appears to be a total NON-comprehension of delivery systems or the New Media. They state, "By studying and exploring the *hypertext* [emphasis by this writer] web created by individuals, we will understand the content of the subject and the thought processes that took place on an individual or collective basis to arrive at cognitive relationships expressing the examination of a complex problem." (252).

This author states, in the vernacular of today's youth, "Read my lips -- NOT!" Hypertext, in and of itself, is exactly that: *hyper*, meaning activated or animated, and *text*, meaning . . . text. Just because one reads text on a monitor doesn't make it any different than reading text on the printed page! The authors of Learning Networks appear to have missed the essential message of their very own book! There are thousands of examples of poorly done hypertext, just as there are insufferable examples of the printed word, for imparting deep-founded information.

We will not have arrived at an understanding of the tremendous possibilities of the new learning delivery systems until we first can pinpoint -- NOT the subject's content, and NOT the thought processes of individual or group hypertext authors -- but our own INTIMATE relationship to the potentially cognitive scope of the New Media. It isn't important to understand why another author stresses a cognitive relationship between topics, until we gain a deeper understanding of our own tendencies to link bits of information together. Studying a hyperlinked website will not lead to deeper understanding of the subject matter or especially to the thought processes of the creator of the words, unless we have proceeded far enough to understand our own motivation for seeking a particular bit of knowledge for ourselves. Anything less than understanding *our own reasons* for our search, leaves only the shreds of the same old mind-set of "more is better."

Our new delivery systems have given us the opportunity to leave that way of thinking behind. It isn't a simple act of linking and leaping anymore. MULTImedia has arrived in a huge manner, so we may now link and *experience* that link. Gaining a true understanding of learning, itself, is the theme -- NOT the further accumulation of data that will have no personal use.

Seeking The Calm: A Paradox Is Coming

Words are fascinating, especially to many in this technology. Otherwise, we probably wouldn't "be here" discussing issues of communication, information, and the delivery thereof. We are all in love with our technologies, our *buzzwords*, our acronyms, our gadgetry, our tools, our extensions of our selves. Our cyborg partners. Our computers.

In former years, the term "ubiquitous" brought only visions of God. Therefore, to this writer, is seems wildly ironic that the word has become a catch phrase for the New Media. A word search brings these synonyms to bear: universal, omnipresent, allover, everywhere, entity, **being.** It certainly sounds like a hymn born in Israeli dirt. Every day we hear about the *ubiquitousness* of computing. THEY are everywhere, universal, omnipresent. A wry inner smile won't erase that tiny bit of fear as the imagination conjures up an image of "Computer as God." We do, daily, invoke its magic, its spirit, and sit before it in an apparent mystical trance, faces aglow with an ethereal blue halo of light. We speak to it, cajole it, plead with it, cry, laugh and scream at it, love it and hate it. We treat it like humanity has always treated their god. And, it is the bringer of our enlightenment. The person or persons who initially attached the term *ubiquitous* to the computer had a real insight for the power that the new systems would command. The comparison is correct, and it is awesome -- which are another two terms often given godly overtones. But, we could wander endlessly in this metaphor!

The importance of realizing that computers are everywhere lies in the deepest understanding of "everywhere": the home, the workplace, the school, the marketplace, all modes of transportation and communication, perhaps even in the dog's house, the clothes we wear, and all locations *East of the Sun and West of the Moon.* It has been said that the crossover point of

ubiquitous computing with personal computing (our current era of the PC) will be around 2005-2020. What this means is this: We will pass from our current mode of sharing personal, business and government computers, to the not-so-distant setting of a host of computers surrounding each of us, sharing US. (IDC, 1995-1996; as cited in Denning & Metcalfe, 77). Like a host of angels, or maybe demons, THAT is when *they* will be everywhere.

Designing computers to "be everywhere" is going to take some very special techniques. People who are "being shared" by a multitude of computing devices will surely want them to be literally invisible. That will be the only way of benefiting from their services, yet still feeling in control and peaceful. (Denning & Metcalfe, 79). We can easily see that the most potentially challenging, absorbing, and penetrating change implicit in the idea of the ubiquitous computing era will be a focus on *calm.* (79). Computing that is literally everywhere will demand a new approach of molding technology into the corners of our lives. Some have begun to call this approach, "calm technology." The most important surges of technological change are those that have intrinsically altered the position of technology in our lives. It is our relationship with technology that matters the most, and not just technology itself. (75).

Usually, designs that both inform and calm aren't seen in unison, yet they both meet two important human needs. More often, information technology is the archenemy of calm. Every day, we are beset by pagers, television, radio or stereo, cellular phones, the daily news, the Internet, various alarm systems to wake us and feed us, and this author's latest bane . . . the Email. We are bombarded. Technology is frenetic, not encalming! (79).

Where can we begin to look to find the answers, for this scenario *will* happen, most likely sooner than later. The authors, Denning and Metcalfe, in Beyond Calculation: The Next Fifty Years of Computing, have this to say about where to look:

> "A calm technology will move easily from the periphery of our attention, to the center, and back . . . [B]y placing things in the periphery we are able to attune to many more things than we could if everything had to be at the center . . . [T]he periphery is

> informing without overburdening . . . We must learn to design for the periphery so that we can most fully command technology without being dominated by it. (80).

They are telling us that, as in today's youth's words, "It's right in your face." Actually, what we strain to see right before our eyes, is actually all that is going on in the sideline areas of our vision. Another way to look at this is that the solutions will be found in the broader picture, and not in minute sections of scrutiny.

When we peer so closely at the problem, the answers cannot be seen. In this author's understanding, it is being required that we approach the design of technology in a much more holistic -- even human -- way. In utter concentration, we lose sight of the totality of the problem. What we deal with in ubiquitous computing is something that is a totality . . . computing that completely envelops our surroundings. If we peer too closely, this will overwhelm us and we will not be able to see it clearly. We must learn to bring the periphery into our center vision and then let it return, keeping everything as a whole unit.

"Can we really look to technology itself for a solution?" (79). This writer agrees with the authors of Beyond Calculation. Of course, this technology is capable of providing the answers. Look at other simpler technologies, such as the evolution of the shoe. As we grow and become comfortable with each new phase of technical wonder, we then find a serenity about it, and begin to look for improving our favorite tools. It's the nature of humanity to seek an answer to a desire or a need. And, it seems likely that, like eager dogs, our computerized surroundings will seek to accommodate the master. Before we can experience that kind of comfort zone, the elements of the New Media must be percolated down, refined, and sweetened. Then we can enjoy, so to speak, the finest cup of java! Empowered, invigorating, setting a calmness for the era!

If our technology is so encalming, how then is it that so many are so overwhelmed?

Can Serenity Even Be Possible? -- Pondering The Calm Before The Storm

Many business executives, scientists, government officials, and physicians feel like they are drinking from a fire hose when they ponder the flood of information cascading over them.

New research tools and high-speed computers that are linked by the Internet are drowning them in an inundation of data that would make Noah's ark float. The National Science Foundation is concerned about these "knowledge storms" overpowering the battalions of research professionals. Yet, only about 7% of that information collected -- at great expense, in corporate databases -- is used . . . the rest just sits idly accumulating digital dust. It isn't just the awesome amount of information coming across the Web that is overpowering, but also that the collective knowledge is cluttered, jumbled and disorganized.

The data overload has forced many researchers into narrow little specialties, becoming less able to grasp the broader picture. They are struggling to just keep up in their one structured field of study. According to many in technical industries, fewer and fewer scientists are now able to see clearly, the interconnectedness of things. (Boyd, 1998). Millions of people and their facts have become interconnected. The Internet is profoundly impelling the practice and the business of technology. (Denning & Metcalfe, 77). Scores of specialized technologists who have worked extremely hard to bring New Media efforts to fruition, are the same persons that are being tremendously hampered by its effectiveness, or, better said, its OVER-effectiveness.

This is having dramatic effects on the world of education, also. Academic researchers say they are starting to realize that the challenge for educational technology is to "preserve a central role for the students themselves, lest they be reduced to passivity by the overwhelming amounts of authoritative external information available." (Harasim, et al., 50-51). The reader is requested to re-read this comment.

Again, are we looking at the academic world approaching this problem in exactly the opposite manner that many in industry are starting to believe is essential? They entertain all of the same elements: passivity (calm?), *overwhelmedness*, extreme amount of information. Their answer: preserving a central role. This sounds amazingly like keeping all of this chaos "right in your face." What is the purpose? -- to try and control either the technology or the participant's reaction? Approached in either manner, there does not seem to be a pathway to solutions -- not

for students (the technology leaders of tomorrow), or for the computing environment in which they work.

Instead of only asking if we can look to technology itself for a solution, we need to be pondering to whom we will entrust the teaching of that technology. The solutions are already around us, and we must learn to look into our sideline vision in order to get a rounded picture. The ubiquitous computing already found in our world are things that give us pleasure or ease, or work hard at chores we used to do. These really are a gift of the periphery vision that we so take for granted! These gifts give us, as Denning and Metcalfe point out, a sense of "locatedness." (81).

Technologies increase our knowledge and therefore our capability for taking action. This must increasingly happen without adding to the information overload. The final outcome of calm technology is to make us feel at home, in a well-known place, in tune with innumerable, familiar bits and pieces that make up our world. (80-81). In order to design systems that will deliver this kind of a world, we must be teaching the creative and higher-level thinking skills. Teachers and administrators, however, "find themselves increasingly unable to help socialize and educate their students for life in the twenty-first century." (Harasim et al., 242). It is this writer's opinion that the reason for this is that academics, for too long, has ignored a holistic way of approaching learning. Segmenting knowledge into tight "little boxes" of information is the exact opposite of what is needed. It is, in fact, very similar to the earlier example, where scientists become disabled as their specialty becomes narrower. It is an example of ignoring the periphery, and thereby harming our center vision.

An extremely interesting observation has been emerging over the duration of the research and reading for this paper. It is an observation made by many in technical industries of late, and, to this author, it seems almost like a miracle. It has to do with the blending of technology and Art, the left-brained activities and the right, logic and passion. The edges are getting blurry. Science IS Art, and Art IS Science. Why have we let the academic and sometimes the scientific worlds be so overbearing in the splitting and the severe dichotomy of the two? If nothing else

from the reading of Beyond Calculation remains, there is a passage that has indelibly changed this writer's way of thinking. Author, R. W. Hamming put it this way:

> "I have often used the analogy of novel writing with the writing of a software; in both cases the essence is first clear thinking followed by the straightforward writing of the actual words. To what extent can great writers be taught? Shakespeare and Jane Austen did not take creative writing courses, and most people who take creative writing courses do not end up among the greatest writers. All that programming courses can do, apparently, is to make poor programmers a bit better. Experience, while necessary, seems not to be enough." (68).

It will take the most gifted of the gifted to empower our coming UC (ubiquitous computing) world. It will take a legion of Scientific Artists and artistic Scientists to bring this level of empowerment to bear. Our modes of delivery today are not sufficient, but they are significant. They are the foundation of what is yet to be built. It is inconceivable right now to imagine the power of the instrument that will be the composite ubiquitous computing world, tied together through the auspices of the Internet. We are developing a tremendous gift for the future. Each step toward refining not just the knowledge base, but the delivery systems, brings us closer to a finer and closer tuning with our tools. "And as human beings become increasingly intertwined with the technology and with each other via the technology, old distinctions become more complex.

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Are we living life *on* the screen or life *in* the screen?

To what extent have we become cyborgs,

transgressive mixtures of biology, technology, and code?" (95).

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Whichever way we choose to view this, it is exciting that serendipitous *Time* has allowed us to be a part of this never-ending story.

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