Distance education can succeed by not repeating the mistakes of correspondence education

Learning from the Past

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Educational institutions plead with their faculty to institute new distance education programs every academic year. Faculty are bombarded with prophecies about the glorious future confronting distance education programs. New bureaucracies have sprung up of computer technicians offering to assist in preparing these programs. If distance education has such a promising future, why the faculty hesitation?

One explanation could be that faculty are uncomfortable with the new technology required to implement a distance education course. But with the plethora of IS personnel poised and ready to assist, this doesn't seem likely. Another answer might be that faculty believe they aren't adequately compensated for the developmental time necessary to produce these courses. However, even in universities where the compensation offered is equal to that offered for the development of traditional courses, few faculty seem eager to participate.

We believe that the real reason for the failure of faculty to embrace distance education is their suspicion that it will follow the same path as did correspondence education in the 20th century. If this happens, distance education will experience the same negative outcome and fail to achieve all that it promises.

Recall that early in the 20th century correspondence study programs also promised an anywhere, any time educational experience. The first response in the educational marketplace was exceedingly positive. The enthusiasm for correspondence education soon waned, however, as people came to perceive its programs as second rate. It's important to understand why this view came to dominate the academic perception of correspondence education. Otherwise, the same perception of poor quality may come to hamper distance education, despite the educational marketplace's initially positive response.

Any decline in respect will arise from the failure of course developers

to fully comprehend, and consequently embrace, the role mediation plays in higher education. That's what happened with correspondence courses (as discussed in the next section). All too often the educational process is viewed as placing a subject-matter expert in contact with a group of students to transmit knowledge. However, students today can access subject matter through multiple sources without relying on an instructor.[1] It's essential to have the instructor mediate between the subject matter and the students attempting to master it.

The Mediation Process

During mediation the instructor of a course ascertains "the way the student learns." As the instructor exposes students to the subject matter, they frequently reveal an inability to grasp the concepts presented. Examples of such a failure include the inability to understand a term used,[2] the lack of any experience with the concept being studied,[3] and a lack of understanding of the logic being employed or knowledge about the mathematical or statistical technique used.[4]

Good teaching involves encouraging enthusiasm in students for the subject matter and perceiving why students fail to grasp the relevant concepts. With an understanding of *the intelligence of the mistake* — where the student has erred and why — the instructor can create new and powerful ways of thinking for students. These are all essential elements of the mediation process.

In the traditional classroom, mediation is a *demand side* process. Demand side means the instructor responds to the perceived source of the mistake and the reason why the students don't grasp the concept. This is probably why most of us who teach decided to enter the profession. First we expose our students to a given body of knowledge. Then, responding either to what we sense in questions from, or in answer to questions asked of, the class, we guide them in mastering the subject matter.[5]

Lester Thurow expressed this process when he stated, "I know I can make a traditional classroom sing."[6] But Thurow also expressed skepticism about his ability to apply his gifted mediation techniques if detached from his audience, for example in a distance educational setting.

In a traditional classroom environment where the instructor can respond to the class as a living entity, the demand-side mediation process works. However, in correspondence education cost implications prevented the implementation of demand side mediation. Correspondence courses were designed to have frequent interaction between the instructor and the student in an attempt to create a forum similar to the traditional classroom. Following every correspondence lesson, the student wrote an essay for submission to the instructor. The instructor would then read each submission, write a critique, and communicate these comments back to the student.

Such interaction required an exorbitant time commitment from the instructor. Few, if any, instructors were willing to commit that much time without ample remuneration, and administrators were unwilling to fund such a labor-intensive process. As a result, it became necessary to recruit a labor pool that would undertake the task of critiquing the written submissions at marginal wages.

Underqualified and low-paid graduate and undergraduate students provided just such a labor pool. Although willing to perform the task for monetary rewards, they remained loyal primarily to their own careers. This meant they placed the highest priority on their own class studies rather than devoting the time necessary to ensure that the interactive portion of the correspondence course would deliver a value-added experience for the students. The outcome was an increasing deterioration in the quality of correspondence education due to the inability of demand side mediation to function effectively in this environment. This decline quickly became apparent to the educational marketplace.

Distance education programs today show tendencies to follow the same path to mediocrity. For example, consider the use of FAQs (frequently asked questions). In an environment where customers increasingly demand products specialized to their needs, simply providing answers to the anticipated questions of the average student smacks of mass production and standardization. Even if the general category of the question can be ascertained, each student will probably have a unique approach to the question.

Our concern is not that FAQs lack value, but that FAQs cannot replace the needed relationship between the instructor and the student. This relationship is essential to truly understand the intelligence of the question being asked or the mistake being made. Nonetheless, the thinking process behind FAQs leads to a type of mediation that has the promise of wide applicability. We call it *supply side mediation*.

Supply side mediation, as contrasted with demand side mediation, uses an anticipatory (developmental) technique with which many faculty are already acquainted. For example, in formulating multiple-choice examination questions, faculty develop intelligent foils. These foils anticipate where a student would likely make a mistake. Continuing the same methodology integrates supply side mediation into the course design. In other words, the instructor anticipates the questions and develops responses that fit likely mistakes and the aspect of the mistake unique to each student. The classroom changes from reactive to proactive.

Making Mediation Work

A number of new methods support this approach to course design. We suggest that opportunities for further insights into these new methodologies are limitless. Illustrations of three such methods demonstrate how to include the mediation process in course design.

Intelligent Feedback

The first method resembles the intelligent foils we commonly use when creating multiple-choice exams. For example, assume the course aims to teach a student how to value an asset on a balance sheet. The concept being taught is

that the correct value to assign to an asset is the cost of acquiring the asset (that is, the total of all the costs foreseeable at time of purchase). The student sees the following question:

> A firm purchases an asset, incurring the following costs: purchase price = $100,000, transportation costs = $2,000, installation costs = $1,000, and breakage during installation = $1,500. What is the value of the asset?

If the student selects a wrong answer, say $100,000, the software has been programmed to give a response based on the anticipated intelligence of the mistake. The program might ask, "Are there any other costs that could have been foreseen at the time of purchase that should be included in the cost of acquiring the asset?" This leads the student to reexamine transportation and installation costs as foreseeable. If, however, the student now answers $104,500, the program would respond, "Do you think breakage during installation is a cost that could have been foreseen?" Although we've oversimplified here, it should be apparent how instructors can enrich the software to include intelligent feedback whenever an error in thinking has occurred.

Intelligent Paragraphs

Another method employs the "intelligent paragraph." Assume, for example, a problem where a leader must select which course to follow when confronted with conflicting information and under conditions of uncertainty. The student reads a story of the march south from Canada into the American colonies by a British army under the command of General Burgoyne during the American Revolutionary War.

Lacking information about the forces that might be lying in wait for him, General Burgoyne dispatched two reconnaissance parties. One party, composed of troops under his command, had no knowledge of the environment through which they marched. The other party consisted of local colonists he had hired based on their knowledge of the surrounding countryside. The British party reported sighting a number of colonial "irregulars" who were gathering ahead and seemed to be in a rather foul mood. The party of locals reported seeing no large force that might endanger the British advance.

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At this point in the story, the student is asked to choose between these two conflicting pieces of information to act upon. Before deciding, the student is asked to determine which of the two conflicting pieces of information comes from the most competent source.

If the student selects the party composed of British troops as the most competent source, the program would respond with something like, "Why would you determine that a scouting party comprised of people unfamiliar with the surrounding countryside has superior competency to a party comprised of people who are familiar with the area?"

Having determined which source should be considered more competent, the student moves to the next question, which would ask which source of information could be considered to possess superior integrity. In this case, there exists no information to determine which source could be considered to possess a greater degree of integrity, and the student would be led to that conclusion.

Finally, the student would be questioned as to which source could be considered to have a bias unfavorable to British interests (a question about the independence of the source). In other words, which source would be most likely to present information that would be harmful to the British? If the student answered the British party, up would come a question such as, "Why would a group of British troops who might fall into a trap in which there is a likelihood of being killed be considered less reliable as a source of potential danger than a group of colonists who might be sympathetic to the American cause?"

The student then might have to determine whether competence is more or less important (in this case) than independence in choosing which source of information to follow. After making the choice, the student would learn of General Burgoyne's choice. He opted for competence, believing the information given him by the colonists, and marched into an American army waiting for him. He suffered a crushing defeat at the Battle of Saratoga.

Timelines

The third method uses the timeline. Here, the student goes through a step-by-step procedure, following a timeline of how the event would unfold.

For example, timelines used in law enforcement help identify involvement in a crime. Consider the situation when a suspect in a financial investigation admits knowing information prior to it becoming public. In this case a timeline helps in determining whether that person has been engaged in insider trading.

Traditional Faculty Can Change

The key to supply side mediation lies not in the methods available, but in the distance course designer's experience. Someone who possesses a wealth of experience in the classroom can usually anticipate the mediation required with a given subject. Recall that we asserted that skilled instructors anticipate possible mistakes when formulating the wrong choices in a multiple-choice exam. Faculty skilled in these types of techniques must design the distance educational programs if schools are to avoid duplicating the experience of correspondence education.

This assertion doesn't mean that the contribution of someone well versed in computer software or technology isn't valuable. Certainly experts in the area of information systems have a role to play

in the formation of a high-quality distance education program. We argue that, unless much of the mediation is incorporated in the design of the course, the distance education program will fail to maintain a quality standard equivalent to traditional educational programs. As a result, we see a necessity to place distance courses in the hands of those who can adapt to a supply-side mediation process. This ability, we would argue, lies with those who, through experience, have become trained in mediation and can convert from demand- to supply-side mediation.

Unfortunately, not many faculty seem both willing and able to make this adjustment. This shortfall arises from the unwillingness of faculty and administrators alike to bear the tremendous up-front costs. How, then, can faculty be persuaded to commit themselves to making the adjustment?

Transition Looks Expensive

Shifting effort to development time, as opposed to in-class time, at first appears expensive. However, early studies indicate that the total commitment to supply side mediation resembles traditional class demands. John Bourne calculated the up-front costs of a distance education course in "Strategies for On-Campus and Off-Campus Network-Enabled Learning." He determined that development time added 100 hours to the delivery of the first year of a distance course as compared to a traditional course.[7] However, the instructor recovered this added cost in the second and third years.

Because the development cost is front-end loaded, the expense will be a fixed cost, not a variable cost as with the demand-side mediation process. In the case of the demand side process, as the number of participants in the course increases, the cost of the mediation process increases.

Consider what happens when a new market appears, for example, a business firm desiring a customized educational program for its employees. For either a traditional or distance education approach, a separate course must be produced and delivered to the new audience. With the supply side model, however, the majority of the costs of the mediation process occur prior to delivery of the course. As the course reaches more and more students, the average cost per student will decrease, while the total cost of the mediation process will increase only marginally. Furthermore, if the mediation process in the course is designed creatively enough, the course can be customized to new markets with reduced effort and expense.

In general, supply-side mediation techniques can be easily modified to customize a course. To illustrate how this customization could take place without diminishing the quality of the course, consider the pedagogy involved with explaining a bond issue. If the course targets accountants, whose basic interest is how to record such an issue, breaking down the transaction is critical. Use of a timeline method could clarify the complexity by revealing relevant pieces of information chronologically. The student would see the whole transaction unfold rather than just getting the result. This resembles watching a painter compose a painting rather than just analyzing the finished product.

If the same course were designed for financial decision makers, then a decision tree approach might be the most appropriate pedagogical device. Decision trees provide pathways to determine an optimal strategy for implementation. Decision makers need to understand the economics of issuing bonds rather than the accounting process.

The mediation technique adopted can easily be customized to the audience. Such customizations can create substantial efficiencies in the continuous development of an academic course.

Necessary Changes

For faculty to adopt a supply-side mediation approach and administrators to fund these endeavors, both parties must change their current way of thinking about the pedagogy of distance education. At present, administrators seem to view distance education in much the same way that their predecessors saw correspondence education — as a new source of vitally needed revenue. Distance education must be seen as a viable opportunity to expand educational options; in other words, to reach students who have not been able, either because of time or location restrictions, to participate in a traditional educational process. Customizing education to individual markets also produces a more interactive educational environment. Viewed in this light, distance education becomes an investment in the future of higher education.

For distance education to succeed, delivery technology must not overwhelm the pedagogy. Experienced classroom teachers are the subject-matter experts in the supply side model and have primary responsibility for the development of the content of a distance education course. Any faculty who believe that they lack the ability to accomplish this should undertake appropriate educational instruction.

Computer experts can create an architecture that facilitates mediation, but faculty must take the lead in developing distance education courses with quality subject matter and supply-side mediation techniques. Only then will administrators become convinced that the funding priority of distance education courses lies in the development of the course, not in its delivery. To produce such a change in administrative thinking will require documentation and empirical studies to validate the concepts presented here. Such research will prove vital in changing administrators' perceptions.

A further barrier must be overcome: the destructive and persistent suspicion between administration and faculty regarding distance education. Faculty all too often believe that administrators aren't committed, long term, to distance education. They have observed that administrators frequently invest early in a promising new educational approach, then transfer the surplus funds such an investment generates to other, usually traditional, areas (such as

research). At the same time, administrators have observed faculty take course development monies for new distance course development, then abandon the course after the initial development. As a result, both sides view it as unproductive to adopt anything but a short-run view of distance education.

The real solution to avoiding the correspondence course trap lies with the faculty themselves. Admittedly, when faculty have participated in an educational model for most of their careers, it's unsettling to confront changing the way we think in order to succeed. However, if faculty do not change, technical experts will take over the development of distance education courses. If this happens, the pedagogy needed in these courses won't appear for one reason — because the content experts chose not to adjust to education's changing environment. We believe the benefits more than justify the effort involved in making this adjustment and including appropriate mediation in distance education courses. *e*

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Endnotes

1. The vast majority of courses offered rely on a textbook or outside readings, for example, to expose the student to the subject matter of the course.
2. One of the authors (Douglas L. Heerema) used the word "salubrious" in his course, which evoked the faces of many, if not all, of the students.
3. A number of students in a leadership seminar could not conceive of any organization being run by anything but a hierarchical command-and-control structure simply because they had never experienced anything else in any organization they had knowledge of, including their families.
4. Students in one of the authors' (Heerema) classes had difficulty understanding why the odds of having a disease that affects less than 1 percent of the population would be less than 10 percent if a test that is 90 percent accurate reveals they have tested positive for the disease.
5. William Wordsworth captured what motivates a teacher when he wrote,

   "Enough if something from our hand hath power

   To move, and act, and shape the future hour

   And if, as toward the silent tomb we go

   Through love and hope and faith's transcendent dower

   We feel we are somehow greater than we know."
6. Remarks spoken at an Indiana University Business Conference on February 20, 1998.
7. J. Bourne, "Strategies for On-Campus and Off-Campus Network-enabled Learning," *Journal of Asynchronous Learning Networks*, 2 (2) (Sept. 1998), 70–88; <http://www.aln.org/alnweb/journal/jaln_vol2issue2.htm#bourne>.

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