New Roads in Appalachia:

The Role of Appalachian Colleges in the Region's Promise

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July 2004

Appalachian History

Lessons from the Swiss

That there are challenges in Appalachia is no secret. A study by the Appalachian Regional Commission found that "wages are about 10 percent lower in Appalachia than in the United States."[1] Another Appalachian Regional Commission report[2] notes that the per capita income in the region, as of 1999 (the last year for which data is available), is 81.9 percent of the U.S. average. In central rural Appalachia (the region served by the Appalachian College Association[3]), the poverty rate is nearly 27 percent, substantially higher than the national average of 13 percent. Central Appalachians, aged 25 and above, are nine percent less likely to be high school graduates (68.4 percent attainment compared to a 75.2 percent national average). In short, Appalachia is at the wrong end of the curve for just about every economic and educational measurement scale that might be used.

Yet Appalachia is not without its strengths. The same geography that tended to isolate and consequently hinder the region's economic development also provided an incubator for a culture that is ruggedly independent, not afraid of hard work, fiercely devoted to family, and staunch in its faith and values. That same geography provides an idyllic scenic backdrop for a place to live and work and raise a family. Appalachians, while challenged with missing out on some of the advantages enjoyed by the rest of the country, are blessed with natural beauty and a culture that is strong, even envied by those outside the region.

One way to look at Appalachian history is through the eyes of the past. The geography of the region traps and condemns its citizens to a life less than that of the rest of the country. A different view would note that this isolation has allowed the region to develop some very positive, though intangible, attributes. This paper proposes a third view: that Appalachia is poised to have the best of both worlds.

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[1] Appalachian Regional Commission, "The Appalachian Economy, Establishment and Employment Dynamics, 1982-1997: Evidence from the Longitudinal Business Database," http://www.arc.gov/index.do?nodeId=2085.

[2] Appalachian Regional Commission, "Appalachian Region Economic Overview," http://www.arc.gov/index.do?nodeId=26.

[3] The Appalachian College Association is a consortium of 35 small, private, liberal arts colleges in central Appalachia. For more information, see http://www.acaweb.org.

With careful effort, we can preserve the very positive aspects of living in Appalachia, while, through new capabilities made possible by technology, we can overcome the challenges of the past.

One of the presidents of a small Appalachian College[4] noted, "Our area is still recovering from the decision in the 1960's not to have the interstate highway come through our county. We want to make sure we are not also bypassed by the information highway." This paper examines the promise of the information highway and technology for the Appalachian region, with a particular emphasis on the role of the small colleges of the region. As a preamble, however, it would be instructive to learn from something that happened in Switzerland over 35 years ago.

If you had asked anyone in 1968 what nation could be expected to dominate the world of watch making into the 21st century, there would have been only one answer: Switzerland[5]. The Swiss were world known for making the best watches. If you wanted an accurate, state of the art watch, purchase a Swiss one. Swiss watches were constantly being improved: the minute hand and second hand were Swiss improvements, as were improvements in manufacturing techniques that produced better and more accurate gears and bearings. Self-winding watches were a Swiss innovation. By 1968, Switzerland had 65 percent of the watch market, and over 80 percent of the profit. They were the acknowledged world leaders in the watch industry. No one else even came close.

Yet, by 1980, the Swiss market share had plummeted to less than 10 percent. Profits had fallen from 80 percent to 20 percent. Between 1979 and 1981, fifty thousand of the sixty-two thousand watchmakers lost their jobs. The once word dominators were unceremoniously defeated, with disastrous economic consequences.

What happened to the Swiss watch-making industry? A new technology arrived on the scene, and that new technology put everyone back to square one. The rules were rewritten, so that the old paradigms of watch making no longer applied. The new technology was the electronic quartz movement. It was, ironically, invented by the Swiss themselves, in their research institute in Neuchâtel. The new technology was presented to the Swiss manufacturers in 1967, but was rejected. The technology wasn't even patented. The tragedy of this story is that the future of watch making was staring the old masters in the face, yet they couldn't see it. They were stuck in their view of the world, their paradigm, that didn't allow for the new rules of the game as defined by the new technology. Seiko of Japan did see the new rules. Today, Japan enjoys a 33 percent market share; a significant change from the one percent share they had in 1968.

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[4] Dr. Ken Hannah, President of Bryan College in Dayton, Tennessee.

[5] See Joel Barker's wonderful book, Paradigms, The Business of Discovering the Future, from which much of this information is taken, and his video "The Business of Paradigms" for more on the story of the Swiss watch making industry.

What can Appalachia learn from the history of watch making? Quite a bit! First, it shows us that technology can completely rewrite the rules, and even give the underdogs an equal chance at success. Second, it reminds us that we must be prepared to see the future when it stares us in the face, and not accept the blinders that come from paradigms that have been invalidated by the new technology.

Changing Times

Technology Resets Everyone to Zero

Examples of how technology rewrites the rules are all around us. The U. S. Postal Service had to scramble to meet the technology orchestrated by Federal Express. When letters could "absolutely, positively" be delivered overnight, the old paradigm of the post office was in danger. The post office responded by moving into the express mail business themselves, and by becoming more of a bulk mail carrier. They also had to raise the price of stamps[6]. Meanwhile, Federal Express has been threatened by the explosion of e-mail. Documents that were once sent via FedEx for delivery the following morning are now sent as attachments to e-mail and arrive virtually instantaneously, and for essentially no cost.

Thomas J. Watson, chairman of IBM, apparently said, in 1943, "I think there is a world market for about five computers." Ken Olsen, the president of Digital Equipment Corporation, is reported to have said, in 1977, "There is no reason for any individual to have a computer in their home."[7] There isn't a corner on the market for technology blindness.

Consider what digital photography has done to picture developing and publishing. What before would have taken a darkroom, wet chemicals, and patient enlarging can now go from a squeeze of the shutter to publication to the world via the Internet in a few short minutes.

Looking more closely in our own back yards, the Internet has made substantial changes in Appalachia. Where once the purchase of a book meant a long trek over two-lane roads, now books can be read on-line. Where once employment required living near the place of employment, it is now possible to do many kinds of work from home. Distance education is no longer an experiment, but is moving into the mainstream.

Culture has been changed as well. With Instant Messenger applications, students are never out of touch. Many students leave their IM sessions up 24/7, giving rise to

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[6] The price of a first class stamp has increased from 8¢ in 1973 (the year Federal Express began operations) to 37¢ today, a 362 percent increase. See http://www.prc.gov/ for more information.

[7] Cerf, Christopher and Victor Navasky, The Experts Speak: The Definitive Compendium of Authoritative Misinformation, Villard Books, 1998 (updated from 1984).

the "always on generation" label. They chat with friends down the hall in the dorm, or across the world. Add to this the ubiquitous availability of cell phones, and the limitations of geography no longer apply. Where Swiss watchmakers couldn't see the future when it was invented in their own labs, are we in Appalachia in danger of assuming that our history and geography will continue to limit us? Or are we ready to look at the future through a different lens?

Future View

Appalachia Through New Lenses

When the post-Maoist era came to China, there were very few telephones in the rural parts of the country. Rather than invest in a huge wired infrastructure, the country has been building cellular telephone capabilities. As a result, China is leapfrogging over the "wired phone" era and is going directly to a wireless world[8]. Is it possible for Appalachia to do a similar leapfrog maneuver?

As the Appalachian region has struggled to bring in the traditional elements of an industry-based economy – roads, manufacturing satellite plants, infrastructure – another economy is growing up around us, an economy growing from within, leveraging the power of technology to leapfrog over the industrial age to go straight to the information age. This new economy is based on entrepreneurship and the opportunities presented by the Internet and a global economy. The Appalachian Regional Commission has recognized this trend, funding a $17.6 million entrepreneurship initiative. "Such an approach helps strengthen and diversify the region's economic base through a strategy of 'building from within' and stimulating growth of indigenous industries. It builds upon Appalachia's unique strengths by nurturing homegrown firms, encouraging innovation and risk-taking, and fostering an environment conducive to new business formation."[9]

By being a bit behind, Appalachia, like China, has an opportunity to select a newer technology with which to fuel its economy, rather than continuing to build with older technology. Of course, an economy that leapfrogs the industrial age will rely heavily on the Internet and availability of the single most important resource – the information highway. Thus, while we may be able to avoid the cost of some road construction, bringing connectivity into every "holler" is a must. Fiber optics has replaced asphalt and concrete as the medium of choice for fueling economic growth.

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[8] Between 1998 and 2003, the number of land telephone subscribers in China went from 6.9 to 20.9 per 100 inhabitants, while, at the same time, the number of cell phone subscribers rose from 1.8 to 21.4. Source: International Telecommunications Union, http://www.itu.int/ITU-D/ict/statistics/.

[9] Appalachian Regional Commission, "Evaluation of the Early Stages of the Appalachian Regional Commission's Entrepreneurship Initiative," http://www.arc.gov/index.do?nodeId=584.

An even more important resource, however, is the people of Appalachia. The raw materials – the independence, the work ethic, the dedication to principles – are here in abundance. But this diamond in the rough needs to be shaped and honed if the potential for Appalachia stepping onto the world stage is to be realized. Translation: learning, education, and training have become even more important to Appalachians.

A College Education

The Role of Regional Institutions in Shaping the Future

What should a college education mean in the 21st century? Are the liberal arts more important than ever, or should they be abandoned in favor of a more technical education? What is the purpose of education? Has this purpose changed because the world has changed, or does it remain constant in face of the flux around us? Can, and should, a college education make a difference for students from Appalachia?

Most of these are difficult questions, and ones that deserve deep discussion. The final question, however, is not so difficult. Emphatically yes, a college education should make a difference in the lives of students from Appalachia. If the promise of Appalachia, made possible through technology, is to be unleashed, it will be unleashed through the minds and energy of the youth from the region who have been prepared for new and exciting roles as citizens, mothers and fathers, employees, entrepreneurs and leaders of the next generation. Who better to prepare these young people for this future than the colleges of the region?

Large mega-universities may be poorly positioned to take advantage of the new paradigm unleashed by technology. Where the hugely successful Swiss were not able to see the future of watch making in front of them, the Ivy Leagues and large universities may not be able to move nimbly into the new role that institutions of higher education must play to release the potential of the new technologies in underserved areas of the country. And few of them will have more than passing interest in the Appalachian region. Those that do may also lack a deep understanding of the idiosyncrasies of the region that institutions that have worked in Appalachia for a century or more have in abundance.

Small, private liberal arts colleges, such as the 35 represented by the Appalachian College Association, are uniquely positioned to be the fulcrum upon which the region's future turns. The challenge will be seeing the new paradigms brought about by technology. Business as usual won't cut it any more – we have already seen the closure of one member institution, and several others are barely holding on. We need to think carefully and creatively about how Appalachian colleges can change to serve students, the future entrepreneurs who will provide the creative fuel for Appalachia's future, now that the rules have changed and technology has leveled the playing field.

Changing Paradigms

Five New Views

If Appalachian colleges are to train tomorrow's leaders in Appalachia, it may be necessary to challenge some traditional assumptions about the role of colleges and how they function. Following are five paradigm shifts that may be radical, but that are necessary if Appalachian colleges are to fulfill their promise to the region, its students and its future.

Paradigm 1: From Content Providers to Facilitating Acquisition

Before the advent of technologies that enabled distance learning, the distinctions between content origination and content acquisition were blurry, if not non-existent (see Figure 1). Traditionally, a professor would discourse on what he or she knows, and students would take notes. The professor was responsible for coming up with the content; the students would take notes. If we think in terms of modern technology, the professor would develop the content, then "encode" the content by organizing it into notes and delivering a lecture. The medium of delivery was the sound waves traveling through the air. On the receiving end, the students "decoded" the content by listening and taking notes. The ultimate acquisition of the content was done, at least initially, aurally.

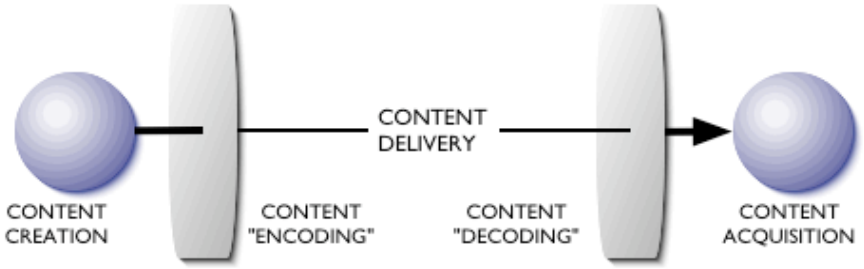

Figure 1

Contrast that with the world that is already upon us. As of 2001, the best minds at MIT can develop content, and a professor in the Philippines can use that content to deliver a greatly enhanced learning experience to his or her students. The project, called OpenCourseWare[10], seeks to make much of MIT's course content available, free of charge, to anyone with an Internet connection and the desire to use it. Stories of entrepreneurial students in Viet Nam and Nashville using the MIT

[10] See http://ocw.mit.edu/index.html for more information about MIT's OpenCourseWare project. Currently, over 700 courses are offered this way, in 33 different academic disciplines.

courses to expand their skills and expand their knowledge, with or without a guiding faculty mentor, are now well documented[11].

The de-coupling of content acquisition from content creation has begun. A textbook was an early example of this de-coupling: the professor who wrote a textbook most probably reached students who were not directly in his or her class. But the advent of the Internet has exploded the notion that content creation and acquisition must be co-located in time and in space. (See Table 1 for some other examples of content delivery methods.)

	Creation Source	Encoding Schema	Delivery Medium	Decoding Schema	Acquisition Process
Lecture	Professor	Verbal, from notes	Air	Hearing	Aural
Lecture with demo	Professor	Verbal, with demo	Air	Hearing, seeing	Aural / visual
Textbook	Textbook Author	Written	Shipped book	Reading	Visual
Laboratory	Lab Designer	Written instructions	Paper, lab equipment	Hands-on	Manipulation
Group Discussion	Discussion Participants	Verbal	Air	Hearing	Aural
Threaded Discussion	Discussion Participants	Keyed text	Internet	Reading	Visual
Live Chat	Discussion Participants	Keyed text	Internet	Reading	Visual
Video Conference	Professor, Participants	Video compression	Internet or similar	Signal decoding	Aural / visual
CD-ROM	Course Designer	Burn to medium	Shipped CD	Computer CD reader	Aural / visual
Internet Course	Course Designer	HTML and similar	Internet	Computer browser	Aural / visual

Table 1

It doesn't seem too difficult to imagine that, with this de-coupling, will come a segregation of roles. There will be those who are the very best at creating good course content. They may not be directly associated with more then a handful of the students they serve. One view of the future suggests that there will be a few mega-universities that create the content that the rest of the world consumes. In that view, some may think there is little role for small, liberal arts colleges such as the ones that are members of the Appalachian College Association.

[11] See, for example, Wired Magazine's coverage of OpenCourseWare in David Diamond's article, "MIT Everyware," Wired Magazine, Issue 11.09, September 2003.

But I would dispute that view. In a world of high-powered content creators, the focus must shift to the content acquirers, the learners. How will students go about assimilating this wealth of content that is now available at the push of a button? I contend that there will be renewed interest and attention placed on the role of faculty who do interact directly with students and that smaller colleges, such as those in the ACA, will find themselves emphasizing, more and more, their ability to handle the direct student contact aspect of content acquisition (read: learning) particularly well. Where, in the past, our colleges might have seen themselves as content creators who also provided content acquisition services, we now have the opportunity to view them as excellent facilitators of the entire acquisition process.

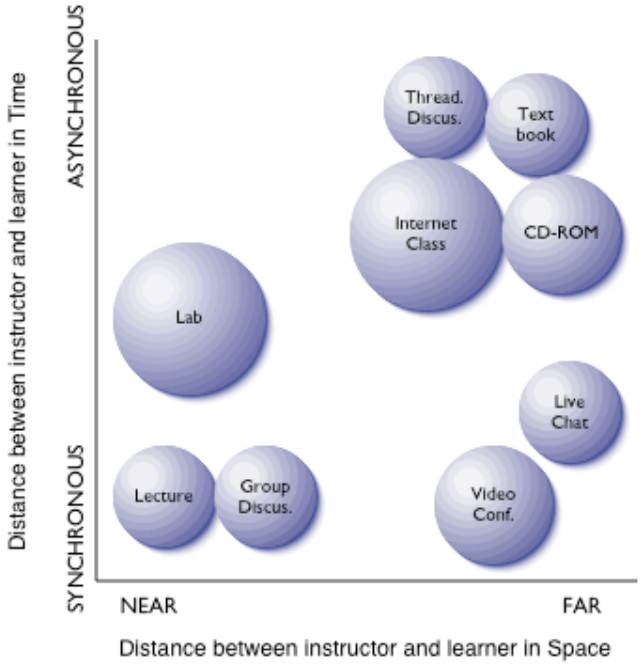

Figure 2

The various content delivery methods of Table 1 are positioned based on the distance between the content originator and the content acquirer in both space and time. The size of the bubble indicates the richness of the experience; larger bubbles provide multiple sensory stimuli, while smaller bubbles provide only one.

If we begin to shift our paradigm from that of content creators to acquisition facilitators, our institutions must become more interested in how to use the de-coupling that technology allows, both in time and in space, and in how to provide the richest, most influential learning experiences possible for our students (see Figure 2). More will be said about how this affects the role of faculty and learning strategies in paradigms 2 and 3.

The rate of the expansion of human knowledge is increasing exponentially. Much of the "content" that is available today comes from outside the academy. Thus, today's

students must feel like they are trying to drink out of a fire hose. They must declare a major and are expected to develop mastery over a body of knowledge. But, in the few short years of their college experience, that content may have turned over, and have turned over again. How are they to cope? By attending college at an institution that emphasizes the acquisition of knowledge, not the dispensing of it.

Thus the traditional view of the college experience will have to change. Perhaps the idea of a major may be suspect. At the very least, small colleges will need to be able to explain to prospective students how their institution is superior at helping students develop strategies for content acquisition. They will also have to convince prospective students of the richness of learning experiences that are available by becoming enrolled. I believe the ACA colleges are actually in a unique position to take advantage of this paradigm shift. We are proud of the low student-teacher ratios on our campuses; we tout the individualized attention each student receives. It is time we explicitly made our campuses places where learning – the facilitation of content acquisition – is emphasized over teaching – the creation and delivery of content.

Paradigm 2: From Classroom Lecturers to Learning Mentors

Because technology allows us availability of content from so many sources, the challenge now is not finding content, it is discerning which content is most accurate, most useful, most enabling. The role of faculty in this new world must change, from spoon-feeding content to students to guiding their search for and acquisition of knowledge. As this paradigm changes, faculty must move, as someone cleverly put it, from being the "sage on the stage" to the "guide on the side."

The Greenwood School[12] in Putney, Vermont, embraces this changing paradigm. The school focuses on boys with dyslexia, recognizing that some skills are "acquired easily by some students and with varying degrees of difficulty by others." Thus the school strives to teach to whole child. The school's academic philosophy notes, "a true education provides students with more than skills. We believe the ability to reason, critique, debate, create, to enjoy a fund of general knowledge, to set personal goals and to persevere in achieving them are essential components of personal, as well as of academic success." The faculty at The Greenwood School help students develops strategies for learning that work for them, based on the particular wiring of their brains and their preferred learning styles.

Students from Appalachia may be no more prone to dyslexia than any other part of the country. Yet faculty at ACA colleges could take a lesson from the faculty at The Greenwood School: the emphasis is on how students learn. Teaching then becomes facilitation and mentoring. It focuses on helping students develop strategies for

[12] Special thanks to Dr. Richard Ramsay, one of the early faculty members of The Greenwood School, who articulated the educational philosophy of the school to me. For more information, and the source of the quotations used, see http://www.thegreenwoodschool.org/about/philosophy.cfm.

learning that work for them, strategies that help them sift through the huge glut of content made available via the Internet to find genuine knowledge.

When it is at its best, the old paradigm stresses "pedagogy." The word, which has come to mean "activities that impart knowledge," stresses what the teacher does to educate the child. The use of "child" here is deliberate – pedagogy comes from the same Greek root as pediatrics, pertaining to the medical care of infants and children. Yet, in college, we are not educating children. Admittedly, college students are not quite yet adults, but they are certainly not children. Teaching strategies for children may not be the best for young adults. I propose a new word and a new approach: "androgogy," meaning "activities that impart knowledge to adults."

I worked with Saturn Corporation for eight years where we placed particular emphasis on how adults learn. We came to understand that, as learners reach adulthood, their motivations change, the experience they bring to the learning opportunity are much broader, the learning styles they have are much more developed, and, thus, the strategies used to teach must also change. We used an experiential learning model (more about that in Paradigm 3) to connect with learners on a variety of levels. We made sure that every concept was presented in a number of ways: aural, visual, kinesthetic, and so on. We tried to understand and connect with each learner's needs so that, at the end of each course, everyone had an opportunity to acquire the content.

In this new paradigm of being learning mentors, androgogy must be a foundation upon which our teaching and our students' learning are built. Faculty development must go into high gear. Why is it acceptable for a college professor to be an expert in his or her field and yet to have never to have thought much about how their students learn? K-12 teachers study the process of learning seriously. The paradigm shifts brought about by technology will force much more attention to be paid to how the faculty helps students learn. Schools that do this successfully will attract students and will thrive; those that do not will ultimately fail.

Does this new learner-centric approach have some implications for how classes are taught? I believe it does. One model for the classroom of the future might have a faculty member responsible for mentoring a dozen students a year. Much more than an advisor, the professor would help students learn about their own learning style, help them tailor strategies for acquiring knowledge from a variety of sources, on campus and off, and help them design and prepare a challenging curriculum. This faculty mentor would not have to be an expert in all areas of the students' majors. Instead, the faculty mentor would know where learning resources are available and facilitate connections with the students. Is there a resident "master teacher" on a particular topic on campus? The faculty mentor would arrange for the student to attend (in addition to serving as a resident expert in his or her own area). Are resources available via the Internet? Together the mentor and the student would prepare to use that resource. Would a term abroad fit into the curriculum? The mentor could broker the arrangements. Would some form of service learning be

appropriate to the subject? The mentor would arrange connections to program heads on campus or with off-campus programs as appropriate. Mentors would provide accountability and discipline to ensure that studies were completed, and would provide inspiration and motivation by being examples of learners themselves.

A less dramatic example of how this paradigm shift can be found in the current ACA explorations of team teaching across campuses. Currently there are several experiments in which multiple teachers (usually three) from different campuses collaborate to develop and deliver a course to students on all of the campuses. Another type of example is the current experiments in which a course is offered to students at college A, but the professor and the course material are from college B. This arrangement clearly makes a distinction between content creation and content acquisition (see Figure 1). The challenging question is, what role, if any, does a faculty member at college A have? I maintain that, in an arrangement like this, there is a clear role for a faculty member at college A, that of a learning mentor, who facilitates and ensures that students on the local campus are mastering the content successfully.

When outside observers visit our ACA campuses and, more particularly, spend time with our ACA faculty, they are almost universally impressed with the deep care, even love that our faculty members have for their students. This passion can be leveraged, in the new paradigm, to create a powerful way of utilizing the best of the content that is now ubiquitously available combined with the passionate caring of our faculty.

Paradigm 3: From Liberal Arts to Experiential Arts

There is an old saying, sometimes attributed to Confucius, which goes something like this: "Tell me something and I'll probably forget it. Show me something and I may remember. But let me do it, and then I will understand." More recently, Seymore Papert said, "Constructionism means learning by making something. [It is] what you learn in the process of doing that sinks much deeper, its roots go deeper into the subsoil of the mind than anything anybody can tell you."[13] There is a general understanding that some ways of teaching are better than others.

Still there remain faculty members who to deny this principle. In a recent conversation with one professor, I was discussing building some technology-enhanced classrooms, with network to the desktop, digital projectors, and the like. The faculty member was very resistant, stating, "If I can't teach the way Aristotle taught, I'm not interested." The fact that this was a fairly young faculty member made his statement even more incongruous to me.

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[13] Papert (b. March 1, 1928 in South Africa) worked with Jean Piaget before spending much of his career at MIT. He is well respected as an early pioneer in artificial intelligence work, and is popularly known for his work that lead to the creation of Lego® MindStorms® hands-on learning system.

There is a tension on liberal arts campuses. Some want pure liberal arts – learning for learning's sake. Others are pragmatic. "Our students will need to get jobs when they graduate," they say. "We need to give them some practical skills." Many of our member institutions claim to be liberal arts institutions, yet have BS programs in nursing, computer science, technology, and agriculture. Does technology force us away from liberal arts and into applied subjects? Or should we remain "pure" liberal arts institutions, willing to endure the hint of Luddite ism wafting about my faculty colleague? I suggest a third way: experiential arts, based on the earlier idea of androgogy.

Within the idea of experiential arts is a clear acknowledgement of the foundations of liberal arts: learning how to learn in a broad variety of areas, how to think and discern, and how to communicate are valuable skills. But experiential arts goes further, acknowledging both that our students are looking for applications of the knowledge they garner that will translate directly into good jobs when they graduate, and that more powerful learning occurs through experience, through, as Papert calls it, constructionism.

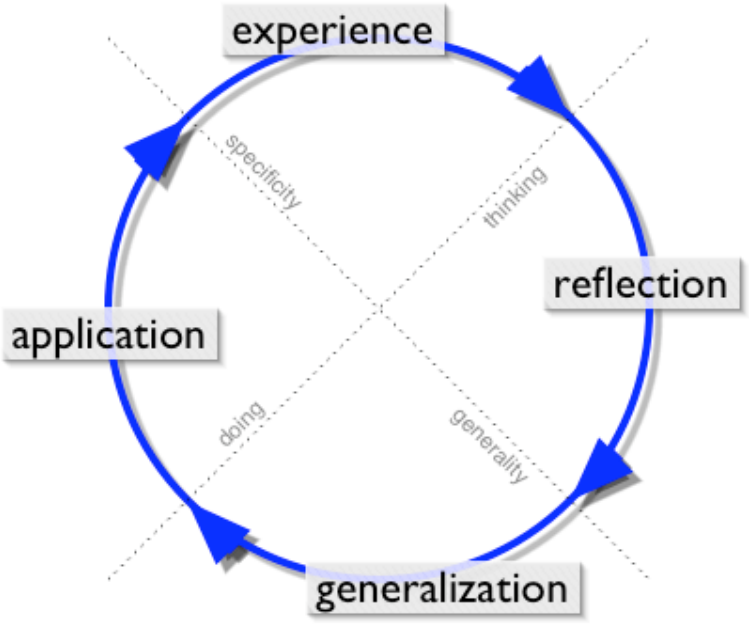

Figure 3

The experiential learning cycle deliberately provides time for reflection, generalization and application after a learning experience. Note that the cycle can be divided in two halves, one that looks at the specific experience and one that makes more general applications. The cycle can also be divided in the other direction, one half focusing on doing, the other half on thinking.

A useful way to think about learning is the experiential learning cycle[14] (see Figure 3). In this model, a learning experience is quickly followed by a deliberate time of

[14] While this particular cycle is my own, it builds upon the wonderful work done by others, particularly University Associates in San Diego.

reflection. Particularly in America, where we are prone to rush on to "the next thing," a faculty mentor can provide real help here by insisting that the student pause and reflect about what has been experienced. This is followed by a time of generalization: "If my experience has led me to understand that A is true, what else might be true? Could B and C also be true? What more might I need to know to test my generalization?" Finally, this phase is followed by a time of application, putting the new understanding to work in a tangible way. And, of course, this leads to further experiences, and the cycle repeats itself.

What does this view of learning have to do with technology? One fear is that technology, particularly of the distance education variety, can allow a learning experience to be very limited in the actual experience. As Figure 2 suggests, for example, video conferencing will allow the teacher and the learner to be far apart. But it does nothing to ensure that the student's learning experience is a rich one. My fear is that, in the name of technology, we may let ourselves off the hook when it comes to providing deep, powerful learning experiences for our students.

Instead, we should perhaps examine a program such as the one at the College of Wooster. The Applied Mathematical Research Experience[15] (AMRE) is a summer program for math and computer science majors that assembles students into teams of three for a summer project. The projects are provided by area organizations – for profit companies, municipalities, non-profits, and the like – to engage some very bright minds in some real problems that need to be solved. The sponsoring organizations cheerfully pay for the privilege of having these student teams work on their projects – to the degree that the program is self-sustaining (with stipends paid to both students and faculty mentors as well as covering expenses). The program works because the faculty take an active mentoring role with the student teams, teaching them not only to apply their classroom mathematics and computer science to such problems as scheduling utility maintenance on city streets, creating algorithms for loading transfer trucks to minimize delivery schedules, or analyzing stresses on building-size banners, but to learn to manage complex projects, to present well in front of the client companies, and to work together as a team.

In the ACA, we need to see technology as an enabler of this kind of knowledge, not use it as an excuse for impoverished learning experiences. Some of our schools already have interesting programs to build upon. The student labor programs at Alice Lloyd College, Berea College, and Warren Wilson College are examples. By combining the idea of faculty learning mentors, rather than content providers, with the idea of experiential arts, the ACA schools could be well positioned to both make a positive impact on their students and on the Appalachian region we serve.

[15] See http://www.wooster.edu/amre/ for more information.

Paradigm 4: From Residential Campuses to Relationship Development

Most of our member institutions are residential campuses. This comes, historically, as it has on many campuses, because of the need to provide housing for students who were far from home. This was particularly true in Appalachia because of the difficulty of getting from place to place.

The technology of ubiquitous automobiles and an interstate highway system have reduced this as a rationale for a residential campus. More recently, the availability of college courses of study, even degrees, via the Internet (for example, the for-profit University of Phoenix) make the rationale for residence halls much less compelling. Why should a student live in a dorm room when he or she can get a college degree from the comfort of his or her own home? Specters of empty and expensive residence halls haunt many school administrators. Is the idea of a residential campus now obsolete?

We in the ACA can turn this disadvantage to an advantage. We have long held that there is a benefit to be gained from a residential campus. We need to become even clearer about the advantages of face-to-face human interaction.

Technology makes it possible, but not necessarily desirable, to live in a cocoon in which all interaction is electronic. Our students are now part of the "always on" generation. They e-mail their friends down the hall and across the globe. They leave Instant Messenger sessions going on their computers 24/7, with quixotic away messages such as "doing laundry" or "chillin' with friends" when they are not at their computers. Cell phones are everywhere. Apple Computer's iChat[16] and similar technologies now make video conferencing affordable and universal.

Can we not articulate the need for and the value in personal, human interaction? Despite the availability of all of this technology, tomorrow's leaders will certainly have to discuss, argue, convince, and enjoy challenges with others, and they will have to do much of it in person. By touting the benefits of a residential campus where experience in building human relations is possible, our schools can turn what may seem like a technological liability into an asset.

[16] See http://www.apple.com/ichat/ for a complete explanation of this technology.

Paradigm 5: From Values Neutral to Values Based

Almost all of our schools were founded by Christian organizations. While some cling to their foundational tenants, others have evolved to a more values-neutral stance. The idea of "tolerance" practiced on many campuses has become a euphemism for "anything goes." Schools find themselves in a paradox – we're tolerant, as long as you don't ask us to be tolerant of people who are intolerant, or who have a different idea of what tolerance means.

One only needs to read the headlines of the Wall Street Journal or check the news feeds on CNN to know that educated people are not necessarily moral people. Enron, junk bonds, Arthur Anderson, arms for hostages, insider trading – the list goes on and on. If we are preparing tomorrow's leaders, they must be moral forces as well as educated ones.

The people of Appalachia come from a culture with strong values. For the most part, Appalachians have a strong sense of right and wrong. Yet, when Appalachian students arrive at a so-called values-neutral campus, they often find their own values challenged and torn down, with nothing to replace them. Worse, a professor who claims to be values-neutral probably isn't; all people have some set of beliefs upon which they base judgments and make decisions. Thus, in the name of values-neutrality, a professor removes the student's values, replacing them with his or her own. What values are professors teaching? What is their source? The paradigm of the future would have us be explicit about our values, their source, and why we teach them to our students. Some of our schools continue to insist on teaching based on their foundational ethics. Surprisingly, these are sometimes viewed as being quaint and obsolete, anachronistic or out of touch. But others would do well to follow suit – or to return to the roots from whence they came. In a technology rich world, in which opportunities to cheat and steal are increasingly facilitated, a bedrock of values is more important than ever.

Embracing the Paradigms

Five Hurdles to Overcome

The five paradigm shifts outlined above will, undoubtedly, be difficult to embrace. They can, and should, generate passionate discussions about the future of education, the role of colleges and the place of the Appalachian College Association in a future rich with technology. We are at the brink of an age in which everything has been set back to zero – technology has become the great leveler which provides an incredible opportunity for Appalachian colleges to survive, serve their region, and even to thrive. Like Japan, in the era of Swiss domination of the watch making industry, Appalachian Colleges could be poised to seize these new opportunities.

However, there will be challenges. Briefly, in closing, let me suggest five hurdles that will have to be overcome if we are to embrace our future.

Hurdle 1: Collaboration

Traditionally, small schools have not worked well together. They see each other as competitors for the same students, the same faculty, and the same donors. If the Appalachian College Association member institutions are to succeed in the technology-rich world of the future, this attitude will have to change. Sharing courses, even faculty, among campuses will have to become the norm, not the exception. Providing opportunities for students from other colleges within the association will also have to become standard. The ACA must help its member colleges move from individual fiefdoms to a collaborative network of campuses.

Hurdle 2: Courses

As noted above, the content of the courses taught may now come from many sources – faculty on campus, faculty from another campus, a big provider such as MIT or Virginia Tech, or anywhere else "out there." In this new world, we will have to be more flexible and creative in how courses are put together, and we may even have to question the paradigm of the "course." How should educational content be delivered and acquired? Who will organize and facilitate this new approach?

A practical issue has to do with money. Who will pay for a course developed on one campus, delivered by a second to students on a third? Who will give the credit to those students? The ACA will need to help its member institutions think through how courses can be developed and shared.

Hurdle 3: Accreditation

Much of what is proposed in the section on paradigms will cause some problems with accreditation. How do we think about a course that was developed externally and is being lead by a professor on another campus? Currently the rules from the Southern Association of Colleges and Schools (SACS) for Kentucky, Tennessee, North Carolina and Virginia and the North Central Association of Colleges and

Schools (NCA) for West Virginia, the accrediting bodies for the ACA institutions, are reasonably well understood. Yet those same rules may not work particularly well in the paradigms of the future. Perhaps the ACA needs to work with SACS and NCA to find out what the rules really are and to influence changing those rules where they do not fit the new realities.

Hurdle 4: Faculty Development

Efforts at faculty development in the past have been minimal when compared with what will be needed in the future. The role of the faculty will change dramatically in the coming years. Are our campuses ready for that change? How do we prepare them, not only to use the technology that is available today and that will be available in the future, but also to think about learning and pedagogy (or androgogy, if you accept my new term) and about experiential learning? How do we help our member institutions prepare for this changing role of faculty? The ACA already invests efforts in this area; the role of the ACA in faculty development will become even more significant in the future.

Hurdle 5: Leadership Development

Who will take the lead in these new paradigms shaping the work of the Appalachian colleges? Can we look to presidents? To deans? To a few motivated faculty? While there are bright spots of promise on every campus, broad recognition of these trends, and the changes they imply, does not currently exist.

I maintain that the Appalachian College Association is uniquely positioned to serve as the lightning rod for the new ideas that will shape education in Appalachian in the 21st century. Perhaps the most significant role of the ACA will be in providing and developing the leadership for these coming challenges.

The Role of the Appalachian College Association

The New Road Builders in Appalachia

The new roads in Appalachia will not be made of concrete and asphalt. They will be made of fiber optics and digital signals and they will allow Appalachia to move from second-class status to a place of opportunity, status and example. The Appalachian College Association's role is to facilitate the road building that will be done by our member institutions. The energy that fuels the future will be the minds and spirits of our students who are ready for the challenges of leadership, entrepreneurship, and morality that will shape this world.

There are roads to be built. Let's get to work!

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