

## Technology Philosophy: Some Considerations

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*This document is the fusion of three distinct parts, all interrelated, which are 1.) the philosophy of technology plans, 2.) the uses of and philosophy for an institution portal, 3.) The philosophy for how the technology center should be used.*

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## Philosophy of Technology: First Thoughts

It seems that every institution has vision statements, mission statements, and philosophical statements affixed to every third document for public consumption. These are, at heart, outstanding concepts: guiding constructs around which all other decisions hinge. Of course, most realize that instead they may become as irrelevant as the campus mascot to the day-in-and-out decision making. However this does not have to be so. If any organization is intentional about policy and action with the very real tenets of their stated value system then these may serve as far more than window dressing. These may indeed act as chassis for the balance of this vehicle that is public education.

The primary philosophy that undergirds the medical field is “first, do no harm.” As it relates to technology plans, locally or nationally, it seems that this caveat should be the unspoken qualifier under which all actions are addressed. It is imperative that the 1.) endorsement of, 2.) acquisition of, or 3.) use of any technologies should not diminish the existing educational landscape just for the sake of existing.

Secondly, an institution must be introspective in the development of its philosophy. A “mirror-mirror-on-the-wall” perspective is not a good ending point, but is perhaps a nice starting place. By this I mean that at the outset the academic organism should consider its strong suits. If a college is historically known for being conservative and lauds an old-world Oxford model then throwing that baby’s reputation out with the bathwater may be inadvisable. It is possible that the overt adoption of high-profile technologies that are available elsewhere will alter the school’s climate for the worse. If a campus is known for subtle aesthetics and detail that are not in keeping with blatant technological identity, and **is successful** with this identity, then it is conceivable that radical change to look like some hi-tech high school may be ill advised. Wholesale conversion to ubiquitous computing and technology’s affordances may well be a catalyst for reform, but should never be seen as a panacea--especially when the cure is not

called for. A meaningful technological philosophy must be in place to complement informed, sequential, systematic progress in these areas.

Beyond this preface it seems that some of the areas that should be addressed will include the specific values of an institution as they will be reflected through the adoption or absence of certain aspects of technology's presence. Equity is one of these areas. If one wants to put in a business department that is state-of-the-art with all of the newest advances, but the consequence is disenfranchising the less served areas then the overall *inequity tilt* of an institution may be increased. The influx of technology-rich environments on a campus may highlight or increase the internal *have and have nots*. Conversely, if each "pot sits on its own base," (referencing departments) and that is the philosophy, then that should be addressed specifically in the philosophy statement. This initial document does exist in a real political environment, and if it is written in a vague, perfect-world manner then its efficacy will be reduced. (*Less black and white is a statement that embraces equity insofar as it is possible with the use of discretionary funds and resources...*)

### **Areas of Impact:**

In regard to resources, if an institution actually values the potential influence that technologies may impress upon a campus, then the aggressive stance of this document (technology plan) should reflect the actual percentage of funds shifted year-to-year to assist this effort. A philosophy *of importance* might also be reflected by the percentage of courses that have appropriately infused technology into their syllabi. This also includes stated goals for facility inclusion. This may include a building or facility overview of spaces with adequate/advanced technologies. There also must be a stated commitment to in-service and preservice requisites for faculty, staff and administration. In this same light there should exist a plank of consideration for technology when considering tenure and hiring.

The next area that this philosophy should reflect is the commitment to technical support. Any philosophy that embraces the positive changes that may be resultant from an intelligent and proactive integration of technology must include a serious commitment to the division charged with the maintenance and service of these technologies.

Another constituency that will be concerned with this technology plan is the governing body charged with seeing to it that the university is doing what it is supposed to. For most institutions this will include NCATE. The intentionality of these tech plans must always be cognizant of these real-world arbiters of priorities. National standards offer a lowest common denominator for this task. It is this set of standards that also acts as the gauge NCATE uses to identify progress. The philosophy should be a guiding influence to the decision making, and should at the same time be open and direct about the report card that the institution itself will receive at the end of the day. It is reasonable to feel that the university itself is *teaching to the test*. Part of any philosophy that applies to these real actions should be open about this important task: remaining certified and endorsed.

### **Suggestions:**

For institutions that have chosen to rethink their identities in light of the catalyst that this technology revolution provides, there seem several mandates:

**Endorse the ubiquity of meaningful technology.** This is not a prescription for reshaping any institution into the cliché antiseptic vocational college model. It might be choosing a model that is not widely seen on campuses previously though, as communication and distance technologies help to create a culture of life-long learning. This ever-present existence of technologies from kiosks to fully prepared class spaces, to vibrant distance ed programs<sup>1</sup> creates a culture where the tools for research, presentation, presentation, etc are always at the fingertips

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<sup>1</sup> A more fully formed description begins on page 10.

of the students, faculty and staff. It creates an environment that is the model for the future.

**Endorse human-friendly environments** where the human condition is celebrated in the placement of technological enhancements and the assistance and human presence needed is close by. These environments will also celebrate the arts and the comfort of place. This refers to temperature, lighting, texture and visuals. The place wherein different activities transpire should complement current pedagogy and the needs of different populations. The placement of these tools should not and need not alter any learning environment negatively. One could argue that ergonomics should be the leading factor in all tech distribution and installation.

**Endorse high-end use.** This model is not designed to attend to the needs of the offensive stereotype of the comic-book nerd with the pocket protector. That image of *computing being for a select few* is a great hindrance to looking at the reality of the sophisticated users that our culture (let alone our schools) is producing. If your clientele is not they should be, and they will be. The users that are the most gifted in any field will find room for themselves in graduate school and in the corporate world. This select group of demanding technology users will and do affect the balance of the population. This is what we should come to expect regardless of field and domain.

**Endorse heavy use:** By this I contest the treatment of any technology as *too important to use*. If this is the editing equipment, or the oversize color printer, or the handheld unit, it should be made clear that the school encourages use, and heavy use. Any technology that has been driven hard for its entire life has been used as a tool. Any technology that is too special to use till it becomes obsolete is religious icon and its presence must be seen as suspect.

**Endorse equitable use:** The hierarchy of education has served schools for generations. But, the individuals who need the most access and the most use are those who may have little voice on campus. Some of these are the young

hackers who are learning by playing: same as Steve Jobs and Bill Gates. Other groups who have little voice may be those who traditionally have not been seen as “computer classes.” Now it seems that all fields need that as a skillset for the larger tool bag. There are also underserved or marginalized departments who should be brought into the mix intentionally by this document.

**Be student-centered:** Initiatives are often driven from a remote administrative perspective. Subsequently their effect may be both filtered and muted in its ultimate impact on the actual student body. Every choice should look at the outcomes. Every outcome that is not about students first, second and last is missing the mark. By this it is not implied that a decision to say, *guarantee all faculty a state-of-the-art hardware and software package* is not about students. Clearly faculty recruitment and retention is fundamental to meeting the needs of the student population. Still the correlation must be clear.

**Endorse high-bandwidth use.** This is expensive and will be used *wrongly* by many to download mp3s and god knows what else. But it must be common to use the Web for more than text transfers. It must become second nature to all of our students to use the Web as an extension of themselves to seek, share and explore. This implies using it in edgy and unusual ways. The most significant things that will be with technology next year are those very applications that seem the most ludicrous today. Telling students that they may only color inside the lines with their technology seems a disincentive to learning.

**Be forward looking:** The university must provide an environment that is ahead of the curve. Universities are not preparing students to go into today’s market. They are preparing them for tomorrow. With every decision that is made one must try to predict the future. The days of decade-long paradigm shifts have past by several decades and institutions must plan to change and change to plan. Most of the information for insight into what is coming will be expressed through non-academic media. Periodicals like Wired magazine and sites like Born Magazine are more telling than the Chronical of Higher Educatin to the direction

and velocity of change. Technology plans should have as a fundamental mandate the need to be transformative of their institution and also themselves. The plan must be in a constant state of self revision that will dutifully look to the school's philosophy as its true north.

## **Attitude**

**Be aggressive.** In the present market tradition is at low ebb. Moreover, with the entire landscape shifting like a seascape few institutions may rest on their laurels. With technology planning institutions who want to or need to rethink their image should look at a take-no-prisoners attitude to technology and managing resources. The opportunity to use this catalyst as a springboard is rapidly waning. After every other campus has reworked their infrastructure to accommodate this new frame, changes will no longer reflect *leading change* neither will they *seem contemporary*, they will demonstrate an effort to catch up with a parade that has already passed them by.

## **Portal Plans**

### **The Philosophy and Logic Behind the Adoption of Technologically Enhanced Campus Communications and Web-Based Systems**

- *"Today, fueled by more than four decades of aspirations and more than a dozen years of sustained (if often ad hoc) experimentation, information technology has finally emerged as an essential component of college experience."*<sup>2</sup>

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<sup>2</sup> *"When the Wishes Come True: Colleges and the Convergence of Access, Lifelong Learning, And Technology." Change 31.4 (1999): 11-15. (Change: The Magazine of Higher Learning is put out by the American Association for Higher Education)*

The academic landscape has been altered dramatically in the past two decades by the infusion, almost transfusion, of technology (specifically computers and computer networking) throughout every aspect of the university campus.

The shift has been so persistent and so comprehensive that describing this evolution is seen as belaboring the obvious.

### **The Analogy**

Business has adopted this revolution, and has even driven it, as the *productivity tools* serve as an enticement toward increased bottom line. These spreadsheet applications, allow one CPA to track, review and make adjustments on the records of clients that were previously served by dozens. Couple these with administrative tools, allowing managers to review and supervise specific successes and challenges of many employees in great detail, while also noting pay schedules, sick leave and myriad data collected and filtered according to the requirements of each company or division. Through these tools record keeping could become a vital and stimulating factor in business, rather than just a way of filling filing cabinets.

Of course communications too has also been forever altered during this information age. The need for immediate text transfer was readily apparent before the advent of email, with the facsimile machine, and Teletype. These precursors to email and its ubiquity were clear indicators that our culture was tired of waiting: waiting a week, waiting two days, waiting five minutes. For business this immediate communication tool was as necessary as the telephone, in some ways more necessary. Interoffice memoranda flies at the speed of sound, but so too does information to stockholders. Any business that found itself unable to keep up in this facet of the technology rapids, found itself either retooling or retiring. Businesses that do not have a public presence soon do not have a presence at all. Computing has not replaced advertising, but a strong web presence is now and will continue to be requisite as proof of existence.

## **The Correlation**

I pursue this extended illustration to highlight the rather apparent similarities between the two domains. Although Higher Ed. should not be seen as a business first, it does indeed function on market principles of supply and demand. The correlates that I describe are not so much about profit, popularity or even relevance—they are about efficiency, productivity and meeting customer expectation. Insofar as businesses have adopted certain technologies as necessities, educational institutions are mandated to look at these same tools and see if productivity, research efforts, communication, administration, record keeping/sharing, advertising, and even community service can be enhanced in a cost-effective fashion.

Five areas where educational institutions will be benefited by an up-to-date technological infrastructure are:

- Institution presence
- Course enhancements and replacements
- Social interaction and awareness
- Research base increases
- Administrative interface

## **Curb Appeal**

The existence of the campus façade and its institution's buildings and edifice becomes a metaphor of the campus itself. This has long been so, with clock or bell towers and ivy covered buildings serving as icons of the important work that takes place within these centers. There is now an additional icon or metaphor used by the public to identify the institution: this is the website. More and more all research begins not at the card catalogue nor at the school counselor's office, but at the keyboard where potential students first visit the doors of the campus.

In addition to the initial visit with mission statements and entrance requirements, their should be depth, so that visitors can go into each department and even into each course and faculty member to see what richness is available at the institution. What are its strengths and areas of emphasis, and who supports these goals? These answers, and the ability to contact those who have more information still, should all be available on line. Presently, in this “age of information”, these affordances are not *bells and whistles* but are expectations.

- *"Many universities are simply unprepared for the new plug-and-play generation, already experienced in using computers and net-savvy, who will expect - indeed, demand - sophisticated computing environments at college. More broadly, information technology is rapidly becoming a strategic asset for universities, critical to their academic mission and their administrative services, that must be provided on a robust basis to the entire faculty, staff, and student body."*<sup>3</sup>

### **Course enhancements**

Universities are a very specific type of vendor. Since information is our stock and trade, disseminating this in an efficient, and cost-effective fashion, that complements varying user styles is critical. The need for web-based enhancements is self evident. Some courses, which tend to be tactile by nature, (i.e. pottery, wrestling...) may be less obvious candidates for web-enhancements, but even these tough-fit courses have need for faculty/student interface with grades, attendance and often have a presentation component that might draw from computer visual aids. Many courses have an abundance of “handouts” or short readings, or other resources that are a natural fit as computer-accessed materials, which should be available through an instructor’s site.

There are also papers that are printed, marked on and handed back that then find there way into some file in a student’s desk. Meanwhile, the computer

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<sup>3</sup> James J. Duderstadt, *President Emeritus and University Professor of Science and Engineering at the University of Michigan*.  
Source 1: *A University for the 21st Century* (Ann Arbor: University of Michigan Press, 2000)

interface allows these to be turned in, commented on electronically and then amassed in a larger portfolio that can be retained by the student and shared for ongoing assessment. A clean web interface that makes this possible and uniform, seems another simple and appropriate use of technology. This takes the important work of research/writing, and then assessing, and finally storing and puts it in a simple template-based construct that expedites each step of this age-old process.

Presentation tools are also an enhancement that can be used to affect with a campus-wide application in place. Although one can argue the merits of filmstrip projectors, overheads, and PowerPoint presentations, it is not debatable that there are different types of learners. Those faculty members that use any projected media for their lecture may well want to be able to access these consistently in any meeting space where there is a net connection. They should also be able to share these visual aids or complete notes with students at any time, and to any locale. Again, this is only new as compared to all of human history—we are sharing notes with a culture that has every reason to believe that they can pay their bills, and look at their records and download their entertainment at any time from any place. And we are all part of this time-bending culture.

Inter-class communications may also be enhanced with a site available for asynchronous communication—in the traditional *bulletin-board* method, or synchronous textual communication in planned chat activities. These rather imply a step further away from a *standard class* where that communication is reserved for the classroom itself.

### **Course replacements**

This is not the usual nomenclature for “distance education.” But the term *distance education* rather assumes a correspondence-course tone. Universities around the country have been developing the current iteration of this concept over the past decade. Without revisiting the history of non-traditional or remote education,

let it suffice to say that the ease of uploading data, and the simplicity of the current web interface for accessing it, has led many to use this as the preferred source of refereed education. Of these, many are not “distant” in the classic sense. For some the draw is the asynchronous delivery; for others it is the convenience of not leaving the home... Current trends indicate that there are many reasons and many modalities of use. The distance of the user from the point of origin is largely transparent.

- *“The former president of a major research university predicts that within ten years, students will spend only about half their time on his campus; the rest will be spent in field experiences combined with distance education courses.”<sup>4</sup>*

I use the term “replacement” to indicate the far side of a continuum. There might be an initial visit, or ongoing conference calls during a course, or a scheduled chat environment. There are as many variations on theme as there are users. The traditional classroom is transmogrifying into a place that falls somewhere along this path. The current campus must be aware of this constantly shifting transition, and recognize that the cliché of “clicks vs. bricks” represents not a choice but a continuum. Students will be assessed by “seat time” less and less, and will instead be asked to create portfolios of work and activity that reflects growth and project generation. The availability of a robust and consistent template or tool to accommodate this transition, coupled with a rich and informed action plan will make evolving into the new university model a reality.

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<sup>4</sup> <http://www.acpa.nche.edu/seniorscholars/trends/trends5.htm>

Lee Upcraft, Professor-Center for the Study of Higher Education, Pennsylvania State University.

*"Thus, a 21st century analog to the 19th century land-grant university might be termed a "learn-grant" university, designed to develop human resources as its top priority along with the infrastructure necessary to sustain a knowledge-driven society. The field stations and cooperative extension programs--perhaps existing in cyberspace as much as at physical locations--could be directed to the needs and the development of the people in the region."*<sup>5</sup>

## **Social Interaction and awareness**

Clearly, a great deal of what a student acquires through their education is social. For the non-traditional student this may be less so. For the student who is not even on campus, this interaction may be replaced in other environments. But with that said, the knowledge of activities and the ability to interact--both actually and virtually—can be enhanced through vigorous communication efforts on campus. These can also be assisted through a web-based calendaring, and advertising. A campus is a microcosm, but no matter how valuable the community there are always those individuals or groups who feel disenfranchised. The aggressive information distribution to contact and reach out has in the past been limited to word-of-mouth and physical campus bulletin boards. Yet, there can be large parts of the campus community who remain unreached.

In a day and time where suicide on campus is still whispered about, but known to be far more common than one would like to admit, it is imperative that administration and faculty alike recognize that the obligation that we have to students exceeds the in-class interaction. Only a part of this interaction will be addressed by web-based portals, list serves and orchestrated student-body contact, but again the tools that can be provided and not duplicated may create a technical environment to help streamline, co-ordinate these efforts and allow fewer students to "fall through the cracks."

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<sup>5</sup> *"New Roles for the 21st-Century University." Issues in Science and Technology 16.2(1999) 37*

## **Research base increases**

This plank to a system-wide technology enhancement plan is largely in place already, yet since it is key to the appropriate use of computer-assisted instruction on campus it is worth addressing this factor in this overview. Each department on campus requires research tools. One used to gauge the quality of an institution by the size of its library, and rightly so. In a recent interview with the research team at the Library of Congress in DC I asked how much of their research was on line. The response was 85-90%. If the majority of data is available in your computer screen, then why go across the street to the largest library in the world? Why Indeed. Dillon does not have a large collection as it is a moderately funded campus, which has had its library's budget unchanged for almost a decade. The answer is clearly on line.

Presently Lucy Carson has eight major collections available on line. The interface is acceptable, but if it can be joined to a campus standard, which also possesses an elegant, user-friendly look, the combination would be ideal. The interface to pay parking tickets, sign up for classes, check e-mail, see about homework assignments would all begin at the same efficient locale.

## **Administrative interface**

As referenced above the various systems and services on any campus can be vast. The method and simplicity for accessing these services is integral to assessing their worthiness. If a campus offers a service (i.e. help with computing, counseling...) or shares records (i.e. transcripts, certificates...) and these cannot be readily accessed then the value of the service or provision is also diminished. There is no reason why a student should have to go to numerous locations, through redundant systems for their administrative contact, when one clean interface will provide this more efficiently and less duplicity.

There is also the need for Faculty to enter data into permanent records in a secure environment that also streamlines workload and primitive data-entry

tasks. How a system is populated with data is in many cases an indicator of its overall worth. If records can be accessed through multiple application without reentry this is an exponential increase in productivity for the administrative staff.

This goes all the way back to the first reference of “institution presence.” The primary task of administration is to serve as the providers of a safe and efficient institution that is both academically significant and cost effective. Serving the community well in the year 2002 necessarily includes the combining of these multiple systems and trying them together in a competent and user-friendly fashion. Students and the community expect it, and they should.

### **A Plan of Action for Portal Efforts**

Happily Western is not pioneering this concept of combining systems and committing itself to an integrated web-interface. Campuses have done this and in the process, throughout the country, of dedicating themselves and their resources to this transition.

With a staff and faculty of less than a hundred training and transition should be less painful than at many larger institutions. Also with a faculty who has shown themselves consistently in favor of value-added change, the recalcitrance issue should not play a large role. But as on all campuses the steps are clear.

- Initial needs assessment (systems and infrastructure)
- Staff and Faculty Information session and initial “buy in”
- Timeline planning—infrastructure/systems and applications/training
- Contracting with service provider
- Acquisition and install of *initial* servers and *initial* infrastructure affordances
- Pre-use training sessions (3-day workshops / ongoing support)
- Initial Online steps
  - Web portal comes on line
  - Syllabi on line
  - All courses--web presence

- Papers and grades all on line
  - Students have user-specific entrance
  - Chat availability
  - Discussion board available
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- Transition in additional systems and services

## **The Technical Center and Best Use**

There are certain advantages and disadvantages with being an "early adopter" of technology: As an early adopter you get the energizing boost of attending to new affordances, which by virtue of their "newness" offer extrinsic motivation, and attention. If these technologies offer no "killer app" and have no clear advantage over the previous way of doing things then this motivator soon wanes. With the classic analogy of the eight-track player, it is easy to demonstrate that even proliferation and wide initial excitement do not cause permanent acquisition of a technology. In the case of that audio device there was no over riding benefit, while it actually had less functionality than existing technology. This is the risk of early adoption: excitement exceeding usefulness.

The Center is itself a technology. The eagerness of certain individuals to use it shows a certain optimism and interest in altering current pedagogy. If the *bells and whistles* are not significant and do not offer a clear advantage, then moving one's class is a distraction more than a help. The instructors who want to immediately embrace these differences run a risk, and will also serve a necessary function of debugging the amenities offered. Each class will have several systems that all must run in concert to offer the goal of nearly transparent use. These spaces will offer all of the presentation media that one can anticipate, and are designed to switch seamlessly from one to the other with audio following the choice, etc. However this will take a bit of energy and patience to use it and

see it all begin to behave as instructed. But this process should begin ASAP, so as to get it fixed while it migrates in this semester.

Then there is the issue with course-appropriate use. This is a discussion that references the change in the use of these several technologies. As mentioned ad-nausea by me in the myriad tours that I have given in the building, the labs are not really designed to be labs, and the class spaces are really designed to just be standard class spaces. The entire enterprise anticipates shrinking technologies and the need for best-practice as it relates to these. If one can have access to all information at all times, and have means of varied interface at all times, and one can further have multiple choices about display and audio distribution then the perfect class environ is established. You can distribute and broadcast and connect in any way that you desire with any medium you choose.

The lab area is just a class where we provide the interface that soon the student will be able to bring to class. The *class areas* are areas that assume the student will bring part of the interface and we will provide the larger carriage and transmission devices. Neither area is about data entry. These are classes that are dandy for teaching **about** technology, but if they are *limited to or prioritized for* that function then they are not being employed as one would hope. The goal of adopting technology as a necessary and important part of modern pedagogy assumes that it will be infused *across the curriculum*. So much so that terms like “interdisciplinary” take on a cliché, although not meaningless tenor.

The Center should be opened up to all classes, and the clear relevance of teaching educational technology in the space should not disqualify the use of each space for literature, history or physical education. The Humanities may well benefit by the interface provided every bit as much of teaching spreadsheet creation. I feel that the important question is not so much the *content* of the course, but of the equitable availability to the students. If we leave open other “lab” spaces while one is being used for class, then from 7-5 (or so) Monday – Friday the students and the faculty will have the greatest benefit that we can

render in these spaces. Class “size should be considered in these choices more than content perhaps.