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ABSTRACT

College faculty can avoid investing valuable time and resources in inappropriate technologies by staying in step with technological progress. A "future proof" approach to technology recognizes and welcomes small failures, considering them part of the ongoing process of absorbing technology into the learning process. Future proofing attempts to understand the factors that influence technology, and hence, the impact of technology on learners. The factors that comprise future proofing include: (1) market dominance solutions based on a strong market presence often prove to be the single greatest factor in decision making; (2) ease of use users of technology will usually prefer simplicity over functionality; (3) the best-practice approach since technology is just a delivery medium, proven successful teaching and learning practices are likely to work when technology is added; (4) technical nonreliance--users should avoid relying too heavily on the expertise of technical gurus; (5) least cost--free software should be rigorously reviewed and users should plan on receiving limited or no technical support, since software freely available may disappear or fall victim to programmer neglect; and (6) best guess-roulette creative and effective solutions evolve from combinations of technologies only possible from experimentation. (DB)

"FUTURE PROOFING" FACULTY: THE STRUGGLE TO CREATE TECHNICAL LIFELONG LEARNERS

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Introduction

The use of technology has the potential of being the greatest single change agent effecting learners. A major problem individuals often encounter is choosing the "correct" technology. Faculty are faced with a multitude of equally compelling technologies having the promise of being the ultimate solution – **today**! The problem is not the lack of technical solutions available to solve problems, it is knowing where the rest of world is heading with technology. Ignorance with respect to where technology is heading can force countless hours of working and reworking solutions to the point that a paradigm shift deadlock will bring to a halt all creativity and productivity. Time is forever lost retooling thought processes and skills, not to mention the hard costs of revamping hardware and software. Unless one is fortunate to have unlimited resources available to forge new directions, it makes sense to stay technically in-sync-step with the rest of the world; only then is it financially viable for vendors to build solutions to your fingertips.

This begs the question, how does one determine where the rest of the world is heading? Do you determine the most popular technology by number of solutions sold? Do you determine direction based upon the ease of use of the technology? Do you rely on colleagues? Do you seek insight from local technical gurus? Do you seek to minimize your perceived risk by working with

free or nearly free solutions. Or, do you spin the roulette wheel of technology only to find out you are playing Russian roulette?

Purpose

If you do not know where you are going, then any technological road will get you there. The purpose of this paper is to explore approaches that can help one avoid investing valuable time and resources into technologies that may lead into dead-end streets that discourage learners from pursuing knowledge through technology. All too often, technical solutions are chosen to solve immediate needs with little attention given to the critical evaluation of how best to integrate and leverage investments in existing infrastructures. To create technical life-long learners every effort must be made to avoid frustrating learners with short-term technological solutions. One sure way to discourage learners is to prevent them from building upon their existing knowledge base as they progress to the next level. The rate of change in technology today demands a tactical approach that anticipates and welcomes change. As new technologies are introduced, the capacity for change must be planned from the beginning or the learner will not be able to carry forward the skills learned from previous experiences.

How to Future Proof

The future is most difficult to predict. Technology is encroaching into every facet of modern life. The rapid change of technology can create a stranglehold on decision-making ability of the average teacher. Why would technophobic teachers ever make decisions concerning the use technology when

the threat of totally starting over holds a death grip on their careers? Time is limited and failures are unavoidable. The only way to proceed is to develop a "future proof" approach to technology that recognizes and welcomes failure as the tool to help chisel away toward a solution that seamlessly absorbs technology into the learning process. Small failures can and should be recognized for what they are; small nudges guiding an individual to the best implementation of technology.

Future proofing is an art, not science; it can not guarantee immunity from failure. However it can provide a career insurance policy that inhibits the policyholder from making catastrophic decisions with respect to the implementation of technology. Each step in the future proofing process can be individually analyzed to clarify the critical components that makes that step unique in the process.

Using the above question, "how does one determine where the rest of the world is heading?", and spin off questions that logically follow, an will attempt will be made to identify the major factors in the "future proofing" process. Knowing how to future proof requires an examination of the factors that serve as the basis for this concept. Any factor alone has the power to swage the final determination of how best to prepare for the future.

Factor 1: Market Dominance

Depending on the degree of market dominance, solutions based on a strong market presence often prove to be the single greatest factor in decision-making. As a user of technology, it would be a relief to know there are other individuals coping with the exact same technical issues; there is safety in

numbers. For example, Microsoft Word is the dominant word processing software package in the world today. If another vendor ever attempted to challenge Microsoft's dominance, they would have to develop solutions which provide compelling reasons to switch. In an attempt to sway Word users to another software platform, a vendor would develop migration strategies to facilitate the conversion of Word documents to a new format. If you were using a word processing package that had little or no market presence, then vendors would not be as willing to spend time or resources developing migration strategies. On a purely financial self-interest basis, vendors will develop and tailor solutions that meet the needs of the greatest number of users.

When it is not possible to clearly identify a market leader, it would make sense to choose a technology path allowing greatest freedom for migration in the future. For example, the Web browser war between Microsoft and Netscape for Web market dominance can be described as a virtual tie. In this situation it would be wise to determine the common technology between the two vendors' solutions and select a strategy allowing for a flexible migration path in the future. If this instance, if one were developing Web-based solutions, it makes sense to develop pages that are non-proprietary; pages that adhere to the Hyper Text Markup Language (HTML) standard. At a later date, once it is obvious who the market leader is, web pages should be able to be folded into the vendor solution with little trouble.

Factor 2: Ease of Use

Ease of use issues are related to the KIS (Keep It Simple) principle. Given the choice, users of technology would gladly surrender functionality in favor of simplicity. The simplest technical problem can quickly become an insurmountable barrier, preventing the teaching and learning process from occurring productively. Technologists and educators must be brought together and focus their energies on keeping the complexities from getting in the way of learning.

Strive for the highest common denominator in technology and functionality without sacrificing the message. To achieve the highest common denominator, a conscious effort must made to avoid using technologies that place the learner on the "bleeding edge". More often then not, the appeal to include flashing gizmos is often too compelling to resist and quickly becomes the focus of problems that create unnecessary barriers to the teaching and learning process. For example, the use of plug-ins and helper applications for Web based applications create instant configuration problems for learners as they try to adapt their browsers to the latest and greatest technology possible. Stay far enough behind the bleeding edge of the technology curve to provide the highest functionality possible with minimum user frustration and confusion. If you can not delivery the message, you are failing the learner.

Factor 3: Best Practice Approach

Successful teaching and learning practices that have worked in the past are good indicators of what may work in the future when technology is added.

Technology in most situations is just a delivery medium, the message often remains the same. What has changed is how the message is delivered and way the learner interacts with the new medium. Technology in itself is not the means to create technical life long learners, it is how the technology is applied to the learning process that counts! Technology, properly applied, has the potential of creating new pathways to dynamically engage the learner.

The converse is also true; poorly applied technology can discourage the learner and make the learning process much worse than if nothing were done at all.

In real life situations, unexpected failures often arise when applying new technology to traditional education processes. What really matters is how you apply the technology. Failures are part of the struggle and should be used as learning opportunities to gain a better understanding of how to refine the best practice approach to create technical lifelong learners. We must constantly reevaluate, inquire, and collaborate on new approaches for the application of technology to learning, or we will never fully realize the potential technology has to offer. Continual experimentation and evaluation of the application of technology to learning will reveal how best to combine proven learning practices with new technology innovations. The application of technology is a work-in-progress, constantly changing and evolving. Determine what has worked successfully in the past and investigate ways to use the dynamic nature of technology to refine and improve desired learning approaches.

Factor 4: Technical Non-Reliance

Avoid relying too heavily on the expertise of technical gurus. Too often their focus is purely technical based, and the solutions offered are too complex to have any tangible benefit to learners. Technical applications for the sake of technology sizzle are surely going to frustrate and change the focus from learner based solutions to excesses in frustration. Always temper the advice from technical people with questions like: What will this give me when I am finished? How long will it take to implement? Who do I call when I have problems? How much does this cost?

Input from technical experts is absolutely necessary in the development of technical lifelong learners. However, a little technical input can mutate what was a learning opportunity to a computer science project where programming, software installation and complex configurations are required. Constant evaluation of the initial goal must occur to guarantee the application of technology is improving the learning process.

Factor 5: Least Cost

The success of the World Wide Web (WWW) can directly be attributed to software that has been freely available on the Internet. Mosaic, Netscape and Internet Explorer are examples of free WWW browsers that have revolutionized the delivery of information. The initial lure of assembling learning solutions using free or nearly free software should be rigorously reviewed before foundational decisions are made effecting future directions. Software freely available today, may instantly disappear or fall victim of programmer neglect.

When assembling free software, plan on receiving limited or no technical support from the author or vendor.

Factor 6: Best Guess – Roulette

The best guess approach often leads to failure; but by eliminating possible solutions one can work toward the correct solution(s), one failure at a time. This approach can be costly in terms of human resources as well as hard costs in computing equipment. As illogical as this approach may seem, innovative applications of technology can emerge from experimenting with varied and dissimilar learning technologies. Creative and effective solutions evolve from combinations of technologies only possible from experimentation.

Summary

The future proofing concept is a learner-based strategy designed to help faculty keep pace in the rapidly changing world of technology. Unanticipated change can result when one is not aware of technological solutions and their potential impact on learning. Staying abreast of technology requires an investment of time and the capacity to accept failure as a positive influence. Realizing technology has become an integral component of the educational process; technology awareness and skills are absolutely essential for faculty and learners to be prepared for the 21st century. Future proofing is an approach to understanding the factors that influence technology, and hence, the impact technology has on learners. As new technologies enter the education scene, always keep the focus on learning. Is the technical enhancing the learning process?

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Dear Sir:

The enclosed research papers were presented at the 1997 Mid-West Educational Research Association Annual Meeting on October 16 in Chicago, Illinois. Six papers were given in a symposium focusing upon use of the Internet and new technology applications. Five of these papers are enclosed. The last paper needed editorial revisions and will be mailed shortly. Each paper has a signed cover sheet accompanying it.

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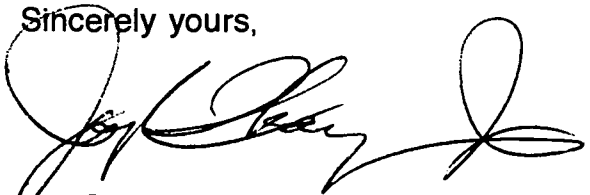
Sincerely yours,



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