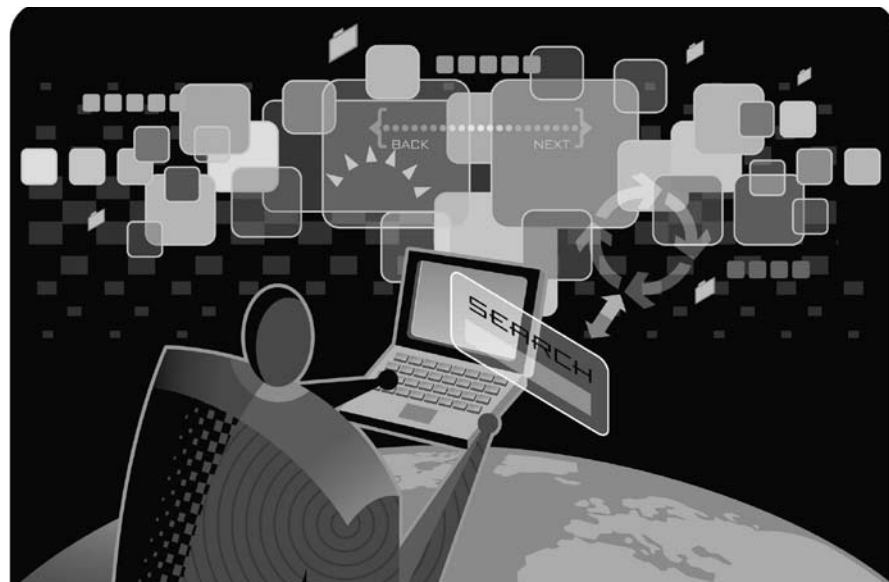# The Three-E Strategy for Overcoming Resistance to Technological Change

*If you just build it, they won't come—you need to shape users' behavior by acknowledging their world view rather than your own as a technology implementer*

By **Tom Haymes**

The dirty little secret of technology in education is that a lot of it doesn't get used effectively—or at all. As technologists, many of us find it hard to understand why. We constantly search for new ways to employ technology in the service of teaching and research. Most users, however, be they faculty, staff, or students, do not approach technology the same way we do. According to a 2007 Pew/Internet study,[1] 49 percent of Americans only occasionally use information and communication technology. Of the remaining 51 percent, only 8 percent are what Pew calls *omnivores*, "deep users of the participatory Web and mobile applications." This presents serious challenges to anyone trying to implement technology for the broad user base a typical university or college represents. These challenges are not always apparent to the more technologically minded among us because our perception of technology differs from that of the average user. We usually belong to the 8 percent, while most of our users belong to the other 92 percent.

This is a serious, and often frustrating, hurdle for technologists. Many of us are more adept at dealing with "hard" problems such as server infrastructure or network capacity. Shaping user behavior is a "soft" problem that has more to do with psychological and social barriers to technology adoption. Academia has its own cultural mores, which often conflict with experimenting with new ways of doing things. Gardner Campbell put it nicely last year when he wrote, "For an academic to risk 'failure' is often synonymous with 'looking stupid in front of someone'."[2] The safe option for most users is to avoid trying something as risky as new technology.

As technology professionals, we often fail to see how intimidating technology can be to the user community. The introduction of new technologies, especially those that affect communication, is a stressful process for any society. As Carolyn Marvin points out in her analysis of the changes wrought by electricity in the nineteenth century:

For if it is the case, as it is fashionable to assert, that media give shape to the imaginative boundaries of modern communities, then the introduction of new media is a special historical occasion when patterns anchored in older media that have provided the stable currency for social exchange are reexamined, challenged, and defended.[3]

Consider for a moment the impact of Web 2.0 on a professor working in academia for 20 or 30 years. The flattening of knowledge production and the ease of access to information represented by Web 2.0 technologies in many ways negates the concept of the "sage on the stage" or even traditional

notions of scholarship. This world is not what most professors are used to, and many are threatened by and therefore resist this kind of change.

## The Three-E Strategy

These concerns must shape our strategy for gaining acceptance of any new technology. First, a technology must be *evident* to the user as potentially useful in making his or her life easier (or more enjoyable). Second, a technology must be *easy to use* to avoid rousing feelings of inadequacy. Third, the technology must become *essential* to the user in going about his or her business. This "Three-E Strategy," if applied properly, has been at the core of every successful technology adoption throughout history. Let's look at these concepts in greater detail.

### Evident

The first half of the "evident" equation requires careful handling through a two-fold strategy. First, users must be made aware of the new technology. Second, their expectations must be set properly in terms of costs and benefits. Users disillusioned by a disappointing first experience with a new technology can be some of the most difficult to recapture.

The second half of the evident equation benefits from marketing. It is important to get the word out in a format that appeals to harried and overstretched faculty. One approach we use at Houston Community College (HCC) Northwest is the creation of "Technology of the Week" posters. We actually advertise some of the useful and interesting things that faculty can do with a particular technology. They can then go to the Curriculum Innovation Center or attend a workshop to learn how to use that technology.

It is important to craft these appeals carefully, keeping in mind the cautions that Gardner Campbell and Carolyn Marvin express. For instance, one topic involved the things HCC Northwest faculty can now do because the Internet is available in their classrooms as part of the multimedia presentation system. The first idea for a slogan was "Expand the Horizons of Your Class." On further reflection, I realized that "expand" implies limited horizons in the first place. A much better slogan was "Show Your Class the World with Your Fingertips." An enabling statement, it shows faculty the possibilities offered by technology rather than playing on fears of doing something risky in class.

We have to recognize that the technologies we are implementing and presenting to faculty and staff are not self-evident to most of them and represent a threat to established ways of doing things. It is imperative to market new technologies in positive and encouraging ways. The old adage that you catch more flies with honey than with vinegar certainly applies here.

### Easy to Use

The second E is one that both the implementers and designers of software and hardware often miss. Technology must be easy and intuitive to use for the majority of the user audience—or they won't use it. The graphical user interface resulted from this realization on the part of engineers at Xerox PARC and Apple. Their key breakthrough was in usability, not functionality. The majority of users have no interest in seeing the code beneath their web browser or application window.

Complexity, however, remains a potent obstacle to realizing the goal of making technology easy. Omnivores (the top 8 percent of users) revel in complexity. Consider for a moment how much time some people spend creating clothes for their avatars in Second Life or the intricacies of gameplay in *World of Warcraft*. This complexity gives the expert users a type of power, but is also a turnoff for the majority of potential users.

Commercial interests can also exploit complexity. This is not evil—it is simply good business. Features, which usually translate into complexity, are effective in selling a product. With many options available, a virtuoso can do some really interesting things. However, the vast majority of users are overwhelmed and intimidated by the number of choices.

Software companies maintain a hold over their market in part by selling their feature sets to technology administrators who might not realize that few will use the full range of the platform's potential benefits. Most users will learn the minimum set of features necessary to get their work done. They measure success not by what can be done with the software but rather how easy it is to do. The best software companies adopt an "onion" approach where the initial layer of features confronting the user is fairly simple to use; deeper layers allow advanced functionality for specialists.

Web 2.0 and open source present another interesting solution to this problem. The user community quickly abandons those applications they consider too complicated. As long as the community focuses on usability, the open source approach has a lot of promise. There are still a lot of obstacles out there, however. I have encountered many faculty who turned away from technology long-term because of their experiences with badly written user interfaces. This failure to overcome the "easy" hurdle creates a barrier to the adoption of all technology, not just the offending software packages.

### Essential

The final element dovetails with the second—any new technology must become essential to users, particularly the productivity enhancers among faculty and staff. Faculty faced with increasing numbers of students and demands for accountability see their workloads going up and up. The last thing they want to confront is another task. Technology is often presented this way. Accountability, for example, often manifests itself as some kind of technology education requirement for students, effectively requiring teachers to master the relevant technology.

Because state legislators, trustees, and other educational leaders seldom understand the technology they mandate, their directives frequently have a negative effect on faculty's willingness to adopt technology for use in the classroom. How many faculty have a website only because told to do so by their administrations? Faculty who

# The Importance of Feedback

A key part of making the Three-E Strategy work is an effective feedback mechanism. In an interesting study on the use of technology in warfare, Azriel Lorber points out:

> Not everything can be predicted, but an integrated kind of thinking, with consideration of a multitude of potential scenarios, is an absolute necessity. An important factor in the success of any such effort is the practice of feedback among the scientists, engineers, the military, and the political decision makers.[1]

Lorber's book is full of technologies implemented during wartime that failed in some way. Decision makers and weapons designers, however, were either not informed of the operational problems or chose to ignore negative reports coming from the front. In other words, the practitioners were forced to use the technology given to them without consideration for their real needs or even whether there were critical shortcomings in the technology. Given the option, they would have discarded the technology as a nuisance rather than essential. In some cases this happened; in others, lives were lost trying to get an ineffective technology to work.

Despite the lower stakes in an educational environment, we ignore feedback from the teaching front at our peril. A wide variety of strategies can be used to solicit input from faculty to determine whether a tactical modification of the Three E's is in order. Sometimes a low-tech strategy such as a committee designed to get feedback is most effective. At HCC Northwest, for example, I set up a Technology Council with representatives from each department whose role is, in part, to give feedback and suggest changes in our technology strategy. More high-tech solutions such as wikis are also an option. Regardless, care must be taken to ensure that the feedback mechanism itself conforms to the Three-E Strategy. If it doesn't, it won't be an effective conduit of information.

### Endnote

1. Azriel Lorber, *Misguided Weapons: Technological Failure and Surprise on the Battlefield* (Washington, DC: Brassey's, 2002), pp. 240–241.

understand the utility of setting up a web page, on the other hand, might come to consider it essential.

## Reluctance to Face Change

Individuals and societies resist change. Technology brings change. Higher education has its own sets of rules and expectations of behavior. Technology threatens to reorder those behavior patterns and is therefore a threat. The first instinct is thus to graft technology onto preexisting modes of behavior. Hence PowerPoint slides replace the overhead projector, and the learning or course management system attempts to simulate an in-person classroom.

It is arguable whether these changes represent a significant advance. In the case of distance education, they might even represent a step backwards. As technologists, however, we have to realize that incremental change is the best we can hope for in many cases. The organizational instinct is to be suspicious of concepts that threaten the social order.

Market-driven forces such as the drive to fulfill the apparent demand for distance education or other forms of on-demand instruction are often viewed with suspicion by faculty, and technology is blamed for making them possible in the first place.

These strong societal forces work against technology adoption. Some individuals will continue to push the technology envelope, of course, but we have a responsibility to the rest to bring them along at a pace at which they are comfortable. That pace is dictated in large measure by their response to the Three E's. We have to make them aware of the benefits realized through the effective use of technology. We have to make sure that the platforms they are forced to use are relatively easy to manipulate and conform in some way to the reality in which they exist. It's a fairly easy mental leap from an overhead transparency to a PowerPoint, for instance. Grasping the pedagogical implications of Second Life or even a wiki is a longer journey for most faculty. Finally, we have to show them how the enhanced communication made possible through technologies such as Web 2.0 will enhance their efficiency, productivity, and ability to teach and learn. Only then will faculty effectively use the complex technical infrastructure that we technologists labor so hard to put into place. *e*

### Endnotes

1. John B. Horrigan, "A Typology of Information and Communication Technology Users," Pew Internet & American Life Project, Washington, D.C., May 7, 2007, http://www.pewinternet.org/pdfs/PIP_ICT_Typology.pdf, p. ii.
2. Gardner Campbell, "My Computer Romance," *EDUCAUSE Review*, vol. 42, no. 5 (September/October 2007), p. 14, http://connect.educause.edu/Library/EDUCAUSE+Review/MyComputerRomance/44990.
3. Carolyn Marvin, *When Old Technologies Were New: Thinking About Electric Communication in the Late Nineteenth Century* (New York: Oxford University Press, 1988), p. 4.

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