

I am sometimes asked why I've stayed in the field of technology-based instruction for so many years. I can tell you that once you experience some successes in helping people learn and see what is possible through creative uses of technology, the allure of repeating and enhancing those successes is very strong. Let me tell you a story of an early success with the PLATO system:

## **True Stories—School Break In**

A custodian at a public school in the eastern United States was at his wit's end. After repeatedly lecturing teachers and staff about turning off the building lights when they left in the evening, lights were still being found ablaze many mornings when the building was unlocked for the day. No one would admit leaving lights on. To the contrary, everyone assured the custodian that lights were switched off as the last person left.

In desperation, a security guard was posted. Sure enough, the lights went off as the last employee left, but sometime later in the evening the guard heard a noise outside. While he was outside checking, lights came on inside the school building!

The guard quietly reentered the building to see what was happening. To his great surprise, he found a room full of kids hard at work studying math on PLATO computers. The noise he had heard was the kids getting into the ventilation ductwork so they could crawl through to the classroom. Once in, of course, it was very dark. Scary. So, the kids turned on the lights!

How often do kids break into school to study? How many situations do you know of in which schoolchildren voluntarily assemble to do yet more schoolwork?

I have had many experiences in which I have personally seen technology-based instruction make a dramatic difference in the lives of learners. Each one of them has given me a craving for more. Each one of them has shown me how much untapped potential lies in e-learning.

One area that definitely deserves more attention is the ability of e-learning to motivate learners. Although outstanding teachers do their best to motivate learners on the first day of class and continually thereafter, many e-learning designers don't even consider the issue of learner motivation, let alone take action to raise it. They tend to focus instead on the meticulous presentation of information or content. Perhaps they believe the techniques teachers use to motivate learners are beyond the capabilities of e-learning. Instead of looking for alternative ways to use the strengths of e-learning technology to address motivation, they focus only on content.

## The e-Learning Equation

To learn is an action taken by and occurring within the learner. Instructors cannot learn for their learners, and neither can e-learning technology even with all its graphics, animations, effects, audio, interactivity, and so on. Learners must be active participants and, in the end, do the learning.

Learner motivation determines the level of participation in learning activities and the degree to which learners will make the effort needed to learn. Motivation is an essential element of learning success.

With apologies to Albert Einstein, let me advance a conceptual model through a simple equation:

$$e = m^2 c$$

where  $e$  = edification (or e-learning outcomes)  
 $m$  = motivation  
 $c$  = content presentation

The equation suggests that if there is no motivation ( $m = 0$ ), there are no learning outcomes ( $e = 0$ ), regardless of how perfectly structured and

presented the content may be. Of course, if the content is also inaccurate or faulty ( $c = 0$ ), the amount of learning will also be null. However, as the equation suggests, emphasizing motivation in an e-learning course can have an exponentially greater impact than comprehensive content presentation. This is an essential insight often missed by e-learning designers.

No matter what the speculative value of  $c$  (content presentation) might be, when  $m = 0$ ,  $e = 0$ . If you think about it, you know this represents a common situation and outcome. You've surely attended a class that went into a topic you didn't see as valuable or applicable to you. You started thinking about something else and later jerked to attention, realizing you had no idea of what had been said. Your motivations redirected your attention elsewhere and by not attending to what was happening, you had no chance of learning from it.

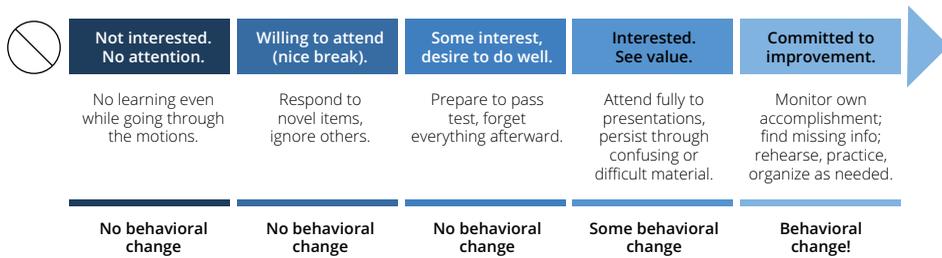
## **Motivation and Perception**

Our selective perception allows us to filter out uninteresting, unimportant stimuli. It's vital that we have the capability of ignoring unimportant stimuli; otherwise, we would be distracted by the flood of sensory input coming our way in any moment and unable to focus. Without selective perception, we wouldn't be able to attend properly to important events.

Of the countless stimuli vying for our attention, most are unimportant and need to be ignored. As we sit in a lecture, for example, we can study the finish of the ceiling, note the styles of shoes people are wearing, and check to see whether our fingernails are trimmed evenly. The more we attend to unimportant things, the more difficult it becomes to attend effectively to those things that might actually be important to us.

Our motivations influence our perceptions and how we filter stimuli. We attend to things of interest, whether those things paint exciting opportunities or present dangers. When we see the possibility of winning a valued prize or avoiding classroom embarrassment by correctly and quickly answering a question, for example, we focus and ready our whole body to respond. At that moment, we become completely oblivious to many other stimuli so we can focus exclusively on responsive behavior. Conversely, if we expect little benefit from taking action or producing a correct answer, we might remain fully relaxed, not trying to generate any answer, and perhaps not even listening to the question. We might, instead, begin watching the behaviors of those really trying to win. If people-watching provides little entertainment, that ceiling may take on a new fascination. There's a good likelihood we'll never even hear the

## Motivation Level



**FIGURE 9.1** Effect of motivation on behavior.

question or the correct answer, because we'll be listening to our internal thoughts instead.

### Motivation and Persistence

As the gateway to learning, motivation first helps us attend to learning events. It then energizes selected actions we take in response to them. Viewed from the perspective of whether we achieve targeted behavioral changes, instructional success correlates with motivation as shown in Figure 9.1.

When we're motivated to learn, we find needed information even if it's not so easily accessed. We make the most of available resources. We stay on track with even a disorganized or inarticulate lecturer. We ask questions, plead for examples, or even suggest activities and topics for discussion. If the lecturer proves unable to assist, we turn to other learners, the library, or even other instructors for the help we need. We might switch to another class if that's an option, but somehow, if our motivation is high enough, we learn what we want to learn. And to the extent possible under our control, we refuse to waste time in unproductive activities.

**Premise 1: Motivation is critical for learning. If motivation to learn is low, very little if any learning will occur.**

**Premise 2: If motivation to learn is high, learning will occur even if instructional materials are poor and minimal assistance is available.**

## Instructional Design Priorities

As we've seen, motivation controls our perception—what we see, hear, and experience. Motivation also fuels our persistence to achieve selected goals. Strong motivation, therefore, becomes critical for sustained learning.

There may be exceptions to this statement, as there are to most rules; however, many situations that appear to be exceptions are not. We learn things, for example, from simple observation. We learn from traumatic events, from surprises, and from shocking happenings. Are these exceptions? We find concurrent motivations at work even in these cases. Our motivations to belong, to be safe, to avoid unemployment, or to win can all translate readily into motivation to learn. They cause what appears to be involuntary learning but is, nonetheless, motivated learning.

Learning motivation is nearly always energized by other motivations, whether negative (such as avoidance of embarrassment, danger, or financial losses) or positive (such as competence, self-esteem, recognition, or financial gain).

**Conclusion: As our formula,  $e = m^2c$ , tells us, it is more important to bolster learner motivation than it is to articulate content clearly.**

Although it seems logical and is certainly the norm, delineation of content is almost always the wrong initial focus of instructional design. Designers should consider what can be done to be sure learners are well motivated initially and remain motivated throughout the learning experience.

## E-Learning Design Can Heighten as Well as Stifle Motivation

In a self-perpetuating way, e-learning can help build the motivation needed for success. Heightened motivation increases the effectiveness of e-learning and therefore promotes more learning. This self-energizing system should be fostered.

The alternative is an opposing, deadly cycle. Poor e-learning saps any motivation learners have. As learners suspect their e-learning work is of little value, they pay less attention and participate less, thus reducing the possibility that the learning experiences will be of value. With evidence that e-learning isn't working for them, learner interest and motivation continue to drop. This self-defeating system should, of course, be avoided.

## **E-Learning Dropouts**

Many e-learning designs tacitly assume, expect, require, and depend on high learner motivation, as evidenced by the good measure of persistence it takes just to endure them. If learner motivation wanes before the completion of instruction, learners drop out mentally, if not physically. Know what? This is exactly what is reported: 70 percent of learners drop out of their e-learning applications without completing them (Islam, 2002).

Optimists claim (or hope) that high e-learning dropout rates simply reflect the attrition of learners who have gotten all they needed. Learners quit, it is reasoned, because their needs have been satisfied, and they feel ready to meet their performance expectations. This may be their excuse, but I doubt that learners feel their initial e-learning experiences were so successful that they need not complete the training.

**Moviegoer:** *This movie is so good! Let's leave now. I don't care how it ends.*

**Reader:** *This book is so good I don't think I'll read any more of it.*

**E-Learner:** *This e-learning application is so good, I think I'll quit before I learn anything more.*

Does this logic sound right to you? e-Learners more likely drop out because they can't take the boredom and frustration than because the instruction has served their needs so well nothing more could be of value. The time, effort, and patience required are greater than the perceived benefit. So they quit.

## **Even Excellent Instruction Must Be Sold to the Learner**

To create successful e-learning—or any successful learning program, for that matter—we need to make sure that value to the learner really is there. But perhaps just as important, we also need to make sure learners see and appreciate that value in concrete terms. Each learner must buy into the value of the learning—not just in general but for specific, personally

meaningful benefits. In other words, we need to *sell* learners on the *truthful* proposition that participation will provide benefits that make learning worth the time and effort. Doing so will create vital initial motivation and give the program a chance to succeed.

I'm not talking about marketing spin meant to mask a miserable experience (although if the experience is going to be miserable, it's more important than ever to maximize learner motivation). Nor do I suggest cajoling learners or propositioning them: "If you struggle through this, you'll be much the better for it."

Adult learners are sensitive to manipulation. If they feel they are being manipulated, they are likely to react defensively. They may become motivated, but motivated to prove the instruction was a waste of their time. Active rebellion, of course, is even worse than no motivation. Everyone has much to gain if the learner sees the personal advantages of learning. Again, the value must truly exist *and* learners must be able to envision and appraise the benefit firsthand.

All of this is done to ensure that the  $m$  in  $e = m^2c$  reaches the highest value possible.

## **It Isn't Bad News That Motivation Is Essential**

Knowing the importance of learner motivation gives us an explanation behind many e-learning failures and points the way to success. This is good news as it helps us understand our task more clearly.

Actually, even better news lies in knowing motivation levels change from situation to situation and from moment to moment. In other words, motivation levels are context-sensitive and can be influenced. We don't have to be satisfied with the levels of motivation learners carry into a learning event. If a learner's motivation is low, we can do things that are likely to raise it.

$$e = m^2c$$

As noted in contrast to Einstein's equation ( $e = mc^2$ ), I squared the motivation factor. This is done to emphasize not only that motivation is essential, as would be indicated simply by  $e = mc$ , but also that the learning outcome is more likely to be affected by motivational factors than it is by content presentation. Again, if motivation is high, learners will make the most of available content information. If motivation is low, refining presentation text and graphics may help to improve attention somewhat, but not to the same level as heightening motivation.

It's also critical that these two elements complement each other. Content can be structured and presented in ways that are sensitive to the issue of motivation. That is, just as confusing and incomprehensible content presentation can counteract motivation (i.e.,  $c$  can be 0), selection of the right content at the right time can stimulate motivation.

Further, interactivity allows learners to act on their motivations, to choose what's relevant to them at a particular time. Seeing their initiative advance them toward meaningful goals reinforces motivation. We might, therefore, extend our equation to include the value of interactive design, adaptability to individual needs, and learner control:

$$e = m^2 ci$$

where

$i$  = interactive adaptability

The equation is not to be taken in any literal, computational sense, of course. We have no practical units of measurement applicable to content presentation or standardized measures of motivation. However, the factors that determine learning as shown here are operative and easily observed in real learner testing. The equation serves as a reminder to pay attention to each and every factor.

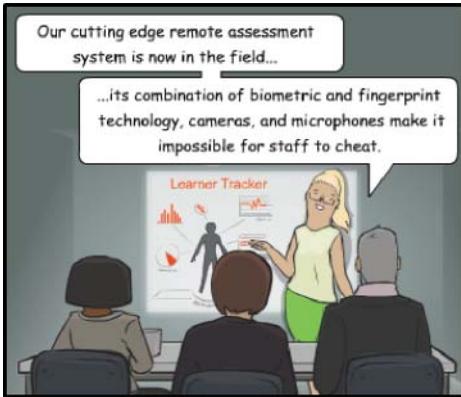
## **Motivation to Learn versus Motivation to Learn via e-Learning**

Motivation has focus. It has a goal. We can and perhaps always do have a varying set of simultaneous motivations with their accompanying individual goals. They can be supportive of, or competitive with, each other. In certain contexts, one motive will have sufficient strength to dominate all our attention. At these moments, stimuli unrelated to the dominant motivation won't even reach our consciousness.

Realizing the context sensitivity of motivations, we can also understand that e-learning events have the power to both increase and to decrease learner motivation. Like every other aspect of human behavior, learner motivation is complex, but a simple view of motivation is sufficient to reveal powerful design principles for interactive instruction.

The simple view is this:

- If we want to learn, we will find a way.
- If we don't want to learn, we won't.
- If we want to learn but the e-learning application isn't working for us, we will find a way around it and turn to something else.



When we want the cost savings, quality control, easy access, and other advantages of e-learning, the question becomes, How do we get learners to *want* to learn via e-learning?

