Chapter 1 What's New?

What's new in our field? What's new in this second edition of the *Guide*?

Useful world knowledge continues to advance by leaps and bounds. Along with the growth of knowledge comes the need for more effective access, communication, and aids to learning these ever-more-complex understandings.

Similarly, brain research continues to inform conversations across multiple disciplines (Blakemore and Frith, 2005) and appears on the edge of providing valuable insights for teaching, although we remain short of transferring knowledge instantly and bioelectrically as forecast in the movie *The Matrix*:

Neo: *Can you fly that thing [helicopter]?*
Trinity: *Not yet.* Taps cell phone.
Tank: *Operator.*
Trinity: *I need a pilot program for a B212 helicopter. Hurry.* Seconds later: Enlightened facial expression. Let's go!

As technology transforms in amazing ways, often with unexpected consequences, I'm ready to think we will find effortless ways to transfer knowledge and skills at some point. But as appealing as that is, we need to accept the fact we're just not there yet. In the meantime, the question should be: while it's still necessary for learners to do their own learning, how can we best facilitate the process?

My observation is that we continue to look for unrealistically easy answers. We even hope simple access to information may preclude the need for any instruction or learning at all. It seems we want to avoid the work of creating meaningful, memorable, motivational learning experiences, even though there's no doubt they provide the best way for people to learn and improve performance. There's no evidence the fundamentals of human brain function have changed recently and diminished the value of effective instruction. But we seem to keep looking for signs that has occurred as an excuse for not doing the admittedly challenging work of instructional design.

Although there are frequent claims that succeeding generations learn in different ways, most are myths (Bruyckere, Kirschner, and Hulshof, 2015). I've seen no foundational changes in what we know about how people learn or in what we know about effective instruction. The critical principles remain valid and, sadly, unheeded. And yet claims abound that, with advances in technology, *everything* has changed.

This edition of *Michael Allen's Guide to e-Learning* was created to respond to the assertions that everything has changed and quality instructional design is no longer critical. Responses are provided through:

- New perspectives on the hyperbolical claims that everything has changed
- Additional efforts to simplify and clarify foundational principles that haven't changed (and aren't likely ever to change)
- A fresh, new, and expanded collection of examples of approaches that work

To get started, let's take a look at these opposing perspectives—that nothing fundamental has changed versus everything (or at least a whole lot) has changed.

Nothing Has Changed

Let's first consider the perspective that nothing has changed—at least not the most important aspects of learning and instruction. Take the process of human learning, for instance. The foundations of human learning have not changed, despite concerning attempts to excuse lack of instructional effectiveness by suggesting the human brain works differently now that we're in the digital age (Bruyckere et al., 2015, p. 142).

We're still quite certain that much of human learning is centralized in the brain and that information gets to the brain through our nervous system from our senses of sight, hearing, smell, taste, touch, and through kinesthesia (awareness of the position and movement of body parts that is essential in coordinated activity).

We also remain confident that meaningful learning is a function of tying new information to existing, well-rooted knowledge and physical skills. And, we know most well-rooted knowledge and physical skills were established through experience and practiced application. We understand that it takes energy to learn and that learners must spend this energy themselves; we cannot learn for them. We know motivation behaves like a water hose to direct attention and release energy, and we know motivations fluctuate up and down in response to situations, such as rising scores in a game, an inspiring TED speaker, or boring e-learning.

We have considerable evidence that practice aids learning, and practice spaced over time leads to more enduring memory and behavior patterns. We also know:

- Examples are more effective when paired with counterexamples
- Worked problems provide clarity often missing from instruction
- Consequences shown in response to specific learner behaviors elevate helpful emotional involvement as well as understanding and do so more effectively than simple, right/wrong feedback

For decades now, the Successive Approximations Model (SAM) has been a remarkably effective process and alternative approach to designing and building learner-centered learning experiences. It has been less widely known and applied than it is today, so perhaps there's been some change here. Its value is now even more certain. Coverage of SAM in the first edition of this book resulted in a flood of appreciative feedback, so it

remains a centerpiece of this edition as well, updated a bit from the work we've done to prepare for workshops and webinars on the process and from feedback from countless applications.

In summary, we really know quite a lot about human learning, effective instruction, and instructional design. These long-standing foundational concepts continue to offer valuable guidance. That's why we can say: nothing critical has changed, including the need for us all to pay greater attention to validated fundamentals. And, in this second edition, foundational concepts remain in the spotlight. They are covered as straightforwardly as I could manage.

Everything Has Changed!

An alternate perspective—perhaps the more commonly held perspective—is that so much has changed in the world of e-learning, we are almost starting from a clean slate. The one correct aspect of that assertion is that today one might not even recognize what's going on in the field of e-learning as an outgrowth of its origins.

In its infancy, instructional design for e-learning was taken very seriously, the paradigms we used were an outgrowth of learning science, and we carefully evaluated courseware before launching it to larger populations of learners. Today, the prevalent notion is, "thank goodness, instructional design isn't that complicated. It's not really a profession. Everyone can develop good instruction. You just need to remember the six steps."

Although I endeavor to help everyone attempting to design instruction to find ways to be effective, and I actually think many people complicate the process unnecessarily, it's very troublesome to see so many do-it-yourself lists presented as sufficient guidelines to genuine design integrity and excellence.

Let's look at some of the changes frequently noted—the good, the bad, and the very much unexpected.

Prevalence of e-Learning

One obvious change is that e-learning is no longer new or a novelty for most organizations and institutions. Its use has spread broadly, and there is a plethora of ways technology is used—all unfortunately lumped into the category e-learning. Today, 77 percent of U.S. companies offer e-learning in their professional development programs

(Roland Berger, 2014). More than 80 percent of higher education institutions offer at least several courses online, and more than half offer a significant number of courses online (EDUCAUSE, 2013).

Low Expectations

In whatever capacity organizations have come to use e-learning, the way they use it defines what e-learning is and, very often, what they think it should and will be for them. In so many cases, initial unguided forays into e-learning reduce delivery costs in the short-term, but achieve little in terms of behavior change or performance improvement. e-Learning has so many more capabilities and advantages than most people ever recognize.

Lost Perspective

At the conception of e-learning, we tried to determine how effective instruction could be delivered via computer technology (Allen, 2008). Missing some of the capabilities of live instructors, but having its own unique capabilities—such as the ability to accommodate needs of any number of learners individually—we asked, *Can e-learning be as effective as typical classroom instruction? Could the e-learning experience be even more effective than that delivered by an instructor?* The exciting answers, proven now through decades of experiments and applications, are yes and yes.

There was another important observation, too—a broadly evidenced fact: There are many forms of e-learning that are not only poor substitutes for live instruction, but also painfully ineffective and wasteful. Not everything called e-learning has the same utility or capability. Just as not all instructors are effective with the techniques they employ, not all e-learning is effective with the instructional techniques implemented in it. And complicating matters, some forms of e-learning are effective in some circumstances for some goals but not in other circumstances for other goals.

What's changed? The change is that, many years after its conception, people now think of e-learning as an instructional approach, whereas e-learning is actually a delivery platform with an interesting set of capabilities. The instructional design of experiences delivered through e-learning reflects the instructional strategy or pedagogy and determines effectiveness. Because e-learning can provide a wide variety of instructional experiences, it's inappropriate to speak in terms of whether or not e-learning is effective. A specific design must be evaluated in light of the goals for which the e-learning was deployed. And then the results, good or bad, must be attributed only to the design, not to e-learning as a whole.

Yet we now deal with the problematic perception that e-learning is a singular and often rather simplistic method of instruction, which is nothing close to its potential.

Lost Expertise

Perhaps the most significant change is the number of people saddled with the responsibility of creating e-learning having so little knowledge of prior work. Whether enthusiastically delving into the field with the confidence—*I can do that!*—or with the ambition to create better e-learning than they've seen—or having been given the task because no one else was available, many people today have to produce e-learning in shorter and shorter time frames. They simply don't have the time needed to learn fundamentals of good design let alone become proficient at it.

Catering to the demand for instant training, providers of courseware development tools suggest that building courseware is mostly about implementation as opposed to design. *Anyone* can build great instruction, "just click here." And people go for it. As a result, much invaluable knowledge about appropriate and effective instructional design is ignored or buried in the past, lost and forgotten.

New (Mobile) Delivery Options

Today, we further complicate the landscape by adding into the mix an expanded variety of delivery technologies of which mobile devices are presently receiving prominent attention. Because a delivery device is mobile, do people learn differently? No, of course not. Despite the fact that some developers of mobile applications claim *mobility changes everything*, it doesn't. And, excuse me, our reluctance to go along with the new world stance isn't because we're not open to new possibilities; it's because mobility is just one new opportunity technology provides. It's not a panacea for all instruction.

Mobility does offer new possibilities that have great value for certain goals and situations (for an overview of options and carefully considered viewpoints on m-learning, see Quinn, 2011), but it doesn't change the most important factor: the instructional design, not the delivery technology, determines effectiveness.

Mobility provides valuable conveniences and the ability to deliver some learning experiences in real-life contexts, which is sometimes desirable and sometimes very dangerous. We recognize the importance of context—the *critical* importance of context for learning—but we also prize the possibility of placing learners in multiple contexts and adjusting those contexts to

provide a range of examples and challenges that enrich learning. Real-life contexts cannot often be manipulated at practical speeds and costs just for the purpose of instruction, or to meet the needs of each learner.

Questions About Mobile Delivery

With mobility, do we have a different array of instructional approaches to choose from?	To a degree, yes.
Are there more options to create ineffective e-learning?	Unfortunately, yes. (Although, we had plenty of ways to fall short already.)
Does mobility offer additional ways e-learning can be of value?	Yes.
Is making the right instructional design choice more important than ever?	Absolutely. With mobility, there are even more ways to look clever and smart while wasting time, money, and opportunity.

Could we ask the same questions of online video, social learning, serious learning games, real-time simulations, and massive open online courses (MOOCS)? For sure, yes.

And the answers? The same as above.

Mobile Performance Support versus m-Learning

The value of mobility is not to be understated. It can, in fact, bring great value by making other kinds of learning unnecessary. Used as an on-the-spot source of reference material, such as a checklist or a video demonstration, it can make it unnecessary to memorize the same information through learning. The performer need only remember how to access the guidelines or job aids needed to perform to expectations. Even in this, the technology can assist by using either or both global positioning data (GPS) and photographic recognition to look up relevant resources.

This is, indeed, a change to the instructional landscape and a welcome opportunity. But when mobile devices are used for various types of reference access and performance support, these uses should not be called m-learning or any kind of learning. Something more like m-help or m-guidance would be more accurate. This is a different domain with its own challenges and opportunities and can be a welcome complement to instructional systems.

Learning Games

Since the emergence of video games with their avid users and explosive market, we stalwarts in e-learning have witnessed the fact that engaged users will spend long sessions at the keyboard, and learn facts, skills, and strategies for simply the satisfaction of conquest and touting all the fun they've had doing it. This flies in the face of what too many pundits claim: Today's digital learners don't have patience for anything beyond short snippets of information. In many cases, what's learned from entertainment games has some general utility, such as problem recognition, problem solving, and quick keyboard/controller skills. The major skills acquired are, however, typically pertinent only to the game at hand. Yet the time and effort is worth it to the millions of people who build and proudly demonstrate superior game skills. If only we witnessed the same behavior, outcome, and fun reported by e-learners.

e-Learning designers haven't been blind to the coveted attributes of computer games. In the early 1990s, a flood of "edutainment" products hit the market, boasting fun learning. Unfortunately, the vast majority of these products, delivered via CD-ROMs, were neither instructional nor fun. A few succeeded, but what many designers thought would be fun wasn't. It was clear they didn't understand what makes games tick.

Our understanding of games has advanced immeasurably, although groundwork was actually laid for game-based instructional design long ago. The concept of applying the engaging and motivating aspects of games to digital learning experiences, is even older than the work of the 1990s, although you'd think from recent hyperbole the idea has just dawned on us. For a bit of very interesting history, watch the videos at the Computer History Museum covering work done in the 1970s on the PLATO system, much of it looking and feeling like a game, and all of it providing fun immersive and even addictive learning experiences. Here's the link to one: https://youtu.be/rdDwoUk4ojY.

In a later chapter on Serious Learning Games (SLGs), I'll lay out my new understanding of how to design instructional games that have high impact and are really, truly fun. The exciting discovery for me in this research is that both successful games and successful e-learning experiences are actually built on the same components: context, challenge, activity, and feedback (CCAF). And, further, that when game rules reflect real life relationships between actions and consequences, we not only get learners to work gleefully at skills development but also to develop skills that have real life applicability and value.

Social Learning

It's a difficult challenge in creating instruction to think like a new learner. When you have deep content knowledge and skills, you have synthesized the content and recognize the interrelationships of its components so well that you instantly see and act on patterns—patterns new learners are unable to detect. Recent learners may have an easier time than experts when asked to unravel confusion and answer questions from new learners. This presents an opportunity for social learning.

Social learning builds on the multichannel digital communications at hand today to facilitate access to people with helpful information—people who can communicate at the right level. Peers working under the same constraints and facing similar challenges can share how they deal with issues and how they've adapted processes for greatest effectiveness.

Further, technology may embolden us to ask questions we might not ask in face-to-face contexts. Learners can take their time to compose questions (as we can do with e-mail and texting) and converse in a protected and relatively safe environment. In large organizations, and those with a geographically distributed workforce, exchanges may offer the comfort of anonymity, which may encourage others to disagree with answers given or to offer alternative suggestions and expanded information.

Social learning can be very effective and valuable. As is always the case, it has advantages and disadvantages. Not having to prepare courseware, but just making a lot of information accessible sounds attractive. Letting learners guide themselves instead of providing professional instructors seems like a major reduction in training costs. But a risk of social learning is that unmonitored poor practices can be perpetuated resulting in something akin to the blind leading the blind. And, that more experienced and knowledgeable people may not participate when needed. Exchanges can become more social than instructive, absorbing big chunks of time. Indeed, social learning doesn't take instructional design off the hook; social learning systems need organization, preparation, leadership, and continuing participation by experts.

What's Old Is New Again

With so many head-turning paradigms and technologies it could seem like we need to start over again to determine what makes effective instruction. Mobile delivery has become inexpensive and practical in a short span of time. Published game frameworks make it easy simply to *insert content here*, and in no time, you're up and running with a game to present questions

and score results. Learners can easily communicate with one another, access and exchange information, and download files.

People of many backgrounds, skills, and talents find themselves involved in creating instructional applications because interactive technology is more accessible than ever before. Creation tools that emphasize speed and minimal instructional knowledge seduce the unwary into instructional design roles where, although well-meaning, they are not ready or able to make good design decisions.

There's no doubt we are blessed with more ways than ever to help people and organizations perform better. It's all very exciting. At the same time, even more expertise is required to choose an effective path—to avoid what's novel and new but not the best fit.

Unprepared courseware developers, with far too many instructional models, tools, and delivery technologies, are spurred on by eye-catching examples that have great appeal, but actually miss most instructional opportunities. This has created a new environment in our industry. And, it is why my answer to the question *What's new?* could well be *everything*. And yet, the most important guidelines remain the enduring basics of what we know about learning and performance. Through all these changes, it's more important than ever to be grounded in, and guided by, the basic principles of human learning and performance.

Can This Book Make Sense of It All?

For those who have undertaken serious study of human learning and have extensive experience in technology-assisted learning, redirecting the field onto more effective paths has become a pervasive challenge. As always, I try to be pragmatic. I've hoped to help by linking theory, research, and practice for those who need to build effective learning applications. Although I would greatly enjoy a life of research on nuances of instruction and learning, I find it abhorrent that millions of learners are forced into boring, ineffective, time-wasting "lessons" when they could be energetically developing valuable skills that would enhance self-worth, self-confidence, and the ability to contribute meaningfully to pursuits of their choice.

It Doesn't Have to Be Like This

Perhaps I'm overwrought about missed learning opportunities and poorly used technology. Perhaps I'm taking this all too personally, and perhaps almost every well-balanced person feels poor instruction and wasted time will always be a part of learning programs. Like it or not, no one should get agitated about it. No big deal. That's life.

But I just can't accept this. It doesn't have to be like this. e-Learning can be so much better. If it were, it could change our world for the better. Seriously. It matters when people have marketable skills and can reduce economic disparity. It matters when people understand the history and values of nations—their own and others. It matters when people can communicate in a common language, understand one another, tackle common problems, and share their insights. And it matters when people give up, thinking they can't learn.

When technology entered the exclusive domain of live teachers, interacting face to face with their students, many reacted to the intrusion with fear and pushed back in understandable ways. There needed to be proof that the pros outweighed the cons before letting technology take responsibility for teaching their students. So, extensive exploratory work began. It became clear that, with proper design, extraordinary learning opportunities were, in fact, feasible. Further, technology made it possible to deliver consistently great learning experiences to very large populations of learners. Amortizing costs across larger numbers of learners would afford far more time and expertise in preparation of content and still produce learning experiences that cost very little per learner. In short, the cost per student could be far less than traditional classroom instruction and the learning experience far better.

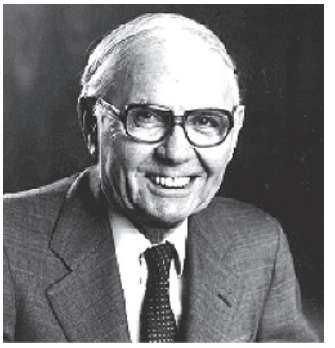
Lower Costs, Better Learning

Delivery costs *are* less today—far less than the sum cost of classrooms, teacher salaries, travel, materials, and other components of traditional training and instruction, where costs have risen and will continue to rise. Organizations have not missed this point, but many have taken a tragic turn. Instead of using a portion of the savings provided by e-learning delivery to produce higher-quality learning experiences that would lead to valuable performance contributions in return, they rejoice at initial overhead cost reductions and continue to squeeze design and development costs. The result is that e-learning is often not much better than a data

sheet or a manual on the screen, perhaps with a 10-item quiz included. Better than nothing? Perhaps, but not much better.

So, I am agitated. Poorly designed, boring e-learning is not something I endure easily because it's so unnecessary and hard to justify. It just makes no sense to me. It's very hard to sit by when every learning opportunity could lead to a beneficial and enjoyable experience, available worldwide and systematically improving as better ideas were incorporated. Contrast this vision with today's common practice of haphazardly thrown together courses that waste learner time, frustrate learners, and cause some to despair of their abilities and lose what small interest they might have had in the topic.

With delivery of instruction via e-learning being so inexpensive, e-learning on a wide range of topics should really be free to all. We should strive for this. But in the present situation, e-learning should be better than it is—more inspiring, more fun, more effective, more meaningful, more memorable, more motivational. It's hard to accept excuses for it being otherwise.



Bill Norris

Bill Norris, CEO of Control Data Corporation nourished the famous PLATO project—a system that was far ahead of its time in terms of e-learning. He wanted (and tried) to fund pretty much anyone who wanted to develop e-learning, because across the globe there were populations of people interested in every topic. When a first version of an e-learning course became widely accessible, he applauded the start and expected others would help improve it. Through what we now call crowd-accelerated innovation, he expected courseware to evolve continuously, reflecting the inspiration and wisdom of the world's best experts and teachers. Once the idea that freely sharing knowledge and skills became a recognized human value, he expected this somewhat utopian vision to be realized through funding for courseware from many sources, public and private, and through contributions of time and creativity from people who just want to help others. I shared this vision with Mr. Norris in my work on the PLATO system and on Authorware, and continue to believe wholeheartedly that it can be realized.

No Excuses, Please

My thesis is this: Instructional design is a profession requiring study and mentored practice to achieve excellence. If learners are going to exchange their time for the learning outcomes an instructional event provides, we have an obligation to make that time productive. It doesn't take many learners for the accumulated usage time to become significant. Employers need to take note here that broadcasting poor instruction quickly becomes a *huge expense* in both direct costs of employee time (even without factoring in costs of delivery) and indirect costs of missed opportunities because people were in training and unavailable to work. As the number of students rises, the need to make instruction effective becomes paramount; yet, decision makers who insist on frittering money away on hastily produced, time-wasting training somehow overlook this, preferring to ask how much training costs can be reduced further.

But here's the good news. Simple principles and an effective process can help create much better learning activities than those we typically see. The weak designs so prevalent in the field are really so deplorable that even just the application of a few principles and a slight process change would help a lot. I would personally relish seeing continuous advancement in our most sophisticated approaches. Certainly, there are important investigations being undertaken at various universities and corporate centers, but the greatest benefits probably will be made by improving the oceans of ineffectual applications at the lower end of the spectrum. Here's where people are making unnecessary, fundamental errors—the prevention of which costs nearly nothing. Here's where I think I and this book can help most, although I've included much material I believe is of value across the spectrum of design experience, from novice to sophisticated pro.

New Examples

While the first edition of this book had a good and useful collection of examples (many readers told me the examples were invaluable to them), it seemed only fitting to reward readers of this second edition with an updated collection. Admittedly, it was somewhat difficult to improve on the initial collection, but they were built in older technology and were not able to do all the things we can do so easily now. So one last element of change is found in new examples, although I had to hold on to some of my old favorites that illustrate concepts so clearly and seem to have timeless value.

Ready?

So, the table is set. We're going to look at ways to design and produce e-learning you can be proud of. We will identify fundamental concepts that will enable you to do an excellent job with whatever resources, time, and money you have. We'll take advantage of technology, but we won't let technology mask poor designs. And we'll produce for our organizations performance improvements that will justify every penny of their support.