Seven Steps to Better E-learning (Dec 06)
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Too much of e-learning is inadvertently designed to minimize effectiveness. Online courses often fail to engage the learner's interest and what we know about how people learn isn't applied, among other problems. Remember that the desired outcome of a learning intervention is a change in behavior; it's all about doing, not learning. Our goals for any such learning initiative, then, should be to sustain that change over time.

What follows is a distillation of cognitive research on learning intended to make your e-learning more effective, and to create a better experience for the learner. These seven principles integrate cognitive and emotional components of learning, and the more that happens, the greater the outcomes.

The first two steps fall into the broad category of overall goals, and should be addressed at the beginning of the design process and reflected throughout the learner's experience.

1. **Meaningful Skills**
The first learning objective should be to change the skill set of the learner, making sure she learns to do something new, not just know something new.

Too often, subject-matter experts (SMEs), lose access to their own expertise and no longer know how they really do things. They focus on knowledge—not on the ability to apply it—because that's what they remember. Make sure your objectives are framed in terms of what people will be able to do differently after the learning experience. If you're faced with an expert saying, "They need to know this," ask a simple question: "Armed with this new knowledge, what can learners do differently than before?" Get your SMEs thinking in terms of new skills, not new knowledge.

2. **Keep Things Lean and Light**
Our content is verbose, our text is monotonous, our materials are overproduced. Elegant prose is not what's appropriate for the online medium, nor for learning. John Carroll, with his [minimalist theory](https://www.john-carroll.net/), has shown that you can leverage your learners' pre-existing knowledge to streamline training. Web guru Jakob Nielsen often describes the need for short and punchy phrases online. Though most of us are familiar with these ideas, we keep doing the wrong thing.

We're scarcely employing tools like white space, bullet points, and highlighting. And we should use much more underlining, bolding, italics—even color. We must help our learners focus on the key words in a sentence, not make them wade through reams of prose to find the nuggets. Time is money!
The next five steps address components of the learning experience: the introduction, concept, examples, practice, and summary.

3. Emotional Engagement
We must engage learners from the very beginning. What we do currently under the guise of "course introductions" is, at best, woefully inappropriate. At worst, it's downright learner abuse! Good introductions engage learners' hearts as well as their brains.

One of the worst sins we commit is the pre-test. Why should learners have to take questions on material we've already determined they likely shouldn't know? There's no valid reason other than to allow learners to skip some sections of a course's content.

We know that learning is more effective when learners are emotionally committed. So in addition to addressing individual learning styles, we must address motivation. We should make learners see how new skills will help them actually do things, beyond whatever value others may place on these skills.

As an additional element of emotional maintenance, set expectations about what's to come. Let learners know how much time they'll be spending, and what their expectations should be about the overall experience. This helps learners maintain focus throughout the experience. If they know ahead of time there's a tough stretch ahead, for example, they're much more likely to persevere.

4. Connected Concepts
We know that acquiring a specific skill doesn't work without reactivating the context in which that skill is used. When introducing a company-specific sales process, for instance, you might introduce it in the context of why sales are important, and why your company is adopting this approach. It doesn't need to be much, but it should help learners place the material in a meaningful context, and associate it more appropriately. Drill down from the broad context to the current topic (and back up at the end).

In addition, we should provide a mental model for the process which will ground the approach in a set of relationships, creating a meaning-based framework. Learning may actually take a little longer this way, but learners are better able to adapt the process to problematic situations if they comprehend the underlying structure. Similarly, if they happen to forget a particular step, they can often regenerate the missing component rather than being utterly lost.

One representation of the concept may not be sufficient, however, especially as regards complex skills. At a minimum, consider a graphic in addition to prose. It may seem difficult to always come up with one, but a reliable principle is to map the conceptual relationships to spatial ones. Of course, if it's a dynamic relationship, an animation may be more appropriate.
Good concepts are elaborated into a meaningful rationale, represented in multiple ways, and model-based. This gives learners the best chance of not only understanding at the time of learning, but of retaining and applying that learning flexibly and appropriately at the time of need.

5. Elaborated Examples
Now that we've created a meaningful basis for the performance of a skill, we must help our learners understand how the skill can be applied in multiple contexts (except when there's a single situation for which they're training). We also want to use the best communication techniques, and highlight mistakes and ways to repair.

Highlighting mistakes may sound counterintuitive, but of course experts often make mistakes, then step back and take a different approach until they find a solution—particularly in difficult and complex areas of performance. Yet learners don't often see this process, and can take away an artificial impression of what competent performance means. Seeing realistic performance examples can illuminate the framework more clearly, and result in learners who are more flexible and empowered than those who've only seen a correct performance.

It's essential to employ tools that let us move beyond what experts have to say about their own thought processes. In video you can use voiceovers as a dramatic technique; thought bubbles work for comic strips. Storytelling also provides a natural way to talk about thought processes. We know that our cognitive architecture is highly efficient at processing stories, if not fundamentally based around them.

Ensuring a sufficient quantity of examples is also important. The more removed the training is from the specific task, the more examples you need. And as you move toward more generalizable skills, you start needing broadly disparate examples from which to abstract common underlying principles.

Good examples indicate the context, model the underlying thought processes as well as the actual steps, and connect the application of the concept to varying contexts. Making them meaningful in an emotionally satisfying way, including good story telling, is an additional enhancement.

6. Pragmatic Practice
Some learners like to look at concepts first, some prefer examples, and others would rather grapple with a practice problem for motivation. Still others would rather take whatever order is presented rather than have to determine it for themselves. All the learning styles above are fine: Even if you don't have an adaptive system, you can set up a default path then represent the structure of the content and make it navigable so learners can take control.
Practice should involve applying knowledge, not just testing it. If new knowledge is purely abstract, learners don't connect it to the real world. It must be contextualized and active. Wrap a story around the practice activity to create a setting learners will understand.

But valuable mistakes only happen when we maintain an appropriate level of challenge. Too many e-learning tasks are easier than they should be. It's a fine line to strike: making tasks challenging enough to engage the learner, but not so hard as to cause frustration. We'll get to the desired level of performance faster if we keep the challenge ramped up, and we'll keep our learners from getting bored.

The ideal practice is contextualized, meaningful to the learner, sufficiently challenging, and plays out in a full story. My ideal practice is a game, where there's unpredictability, replay, and gradually increasing challenge (this is not as expensive or time-consuming as you may think). But even writing your standard multiple-choice questions as mini-scenarios is an improvement over straight knowledge-oriented testing.

7. Refined Reflection
Once we've provided practice until the learner has demonstrated success, it's time to provide closure—a completion of the learning experience. Too often that's just a final test with a grade, and a summary of what they've learned. We can and should be doing more to help make this whole experience more meaningful, and to provide greater retention.

Ideally, we'd first summarize individual performance through the learning experience, not just a generic summary. In theory, we should be able to do this if we track learner performance, but at present it's still problematic. Still, that's a direction on which we need to focus: pulling out what a learner did—and did not—do well. We also want to avoid assuming learners can maintain knowledge themselves. We should provide a method by which learners can practice new skills until it's time to apply them.

And finally, we should remember to emphasize the broader context at the end of the learning experience. We must reiterate the significance of the newly acquired skills in a real-world context. Our segue out of the learning experience should provide emotional closure as well as ongoing support.

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