

The eLearning Guild's
LEARNING SOLUTIONSSM

Practical Applications of Technology for Learning

e-Magazine

THIS WEEK: Design Strategies

Crafting the Total Learner Experience: Preventing Data Corruption in Instructional Messaging

By Brandon Carson

Think back to a recent learning intervention you helped create. As you think about the project, ask yourself these questions:

- *Did the program promote the idea of good?*
- *Was it a responsible and necessary production?*
- *Did it evoke a sense of fun?*
- *Was it useful?*
- *Did you streamline when you had the chance?*

Although at first glance, you may think those are silly questions, I am being completely serious. When I think back over some of the projects I have worked on, I can't honestly answer yes to every question. In many circumstances when the harsh light of workday reality shines down on us, the simple fact is that we have budgets, schedules, and multiple projects to produce. So although we'd like to put our heart and soul into everything we do, sometimes we have to compromise. Make it work – get it done.

As you read this article, I'd like you to think about the learners. Put the brakes on just a bit, slow down and ponder what you're doing to them. You may

All too often, the first thing a course designer does is to make a content outline. However, all too often, the learners are not interested in the content for its own sake. They are trying to learn how to solve a problem, how to be successful in their work, or how to have a better life. There are critical moments that affect the learner's experience, and you can use these to everyone's benefit. In this week's article, learn how to create a total learner experience that meets the learners' goals, and that inspires their confidence in the content.

A publication of



be causing more harm than good. Recently I had a moment of epiphany. You know what I mean – I'm sure you've had one as well. For me it led to what you're reading now.

I was in line at Starbucks, dangerously close to being late to a meeting, trying to beat the clock and get a jolt of caffeine before having to commence with my standard dog and pony show (trying to convince someone to hire me), when it hit me. *Too often during my busy day, while I grind out deliverables, get content uploaded, and check off to-dos, somewhere along the busy road of work life that I travel every day, I have lost my purpose.* What purpose is that, you ask?

As I left Starbucks with my venti, non-fat, triple shot, it became so clear to me what was missing: Where was the learner? Did he or she even matter anymore? I had lost the sole purpose of what I was doing: making sure I create the type of learning intervention that would not only transfer knowledge to improve performance, but also engage and motivate to action. It really should be all about the learner!

The Total Learner Experience (TLE)

Recent advances in technology have enabled instructional designers to build more interactive training

quicker, and with smaller budgets. Software tools allow more flexibility in creating custom technology-based training specific to the needs of the organization; however, we can't rely on information technology alone to transform learning. Without organizational alignment between business executives, training, and IT departments, organizations will continue to suffer from inflexibility, rigidity, and slow responsiveness to critical business needs – hindering the capability for rapid knowledge transfer to affect strategic functions.

The bottom line: until organizations synchronize their business goals with practical, usable employee training focused on engaging and motivating learners, business will continue to suffer compromised performance.

After my insightful Starbucks moment, I began to ponder what a learning experience should mean for the learner. Many instructional designers focus only on the course content, and not on what I now refer to as the Total Learner Experience, or TLE. The learners' experience with a course begins the moment they start to access the course. I formulated this definition for the TLE:

A successful Total Learner Experience should promote the cohesive integration of informational resources into the overall structure of a course

I'd like you to think about the learners. Put the brakes on just a bit, slow down and ponder what you're doing to them. You may be causing more harm than good.



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delivery system. A course delivery system contains every component designed to facilitate a learning intervention, including the interface access point for the course, which could be a learning management system, corporate intranet, or a simple Web page.

Successful consideration and application of the Total Learner Experience enables the learner to:

- Easily find, access, and consume the appropriate learning intervention.
- Be engaged, motivated, and enthusiastic throughout the learning intervention.
- Transfer understanding into action after the learning intervention is completed.

For the rest of this article, I will offer tips and tricks on how you can design for the TLE, and at the same time build courseware that engages and motivates your audience to action. The critical part of implementing a successful TLE involves crafting a non-corrupt, pure instructional message that meets the objectives for both the organization and the learner.

Design for your learners

Many conventional courses comprise a logical hierarchy of modules and topics that may also include a menu with navigation options. This places the content in a structure that makes sense to an instructional designer. When constructing a course around a navigation menu containing links to content, the instructional designer may be thinking in terms of: where will the learner want to go, where will I let them go, how should I name the modules and topics, and does this all support the instructional goal? The basic thrust is to push the learner off the navigation menu into the content. This model places the focus on structure instead of content.

More than likely, learners are not interested in the structure of the course. They may be more interested in learning the content that will enable them to achieve their learning goals. What are their goals? If I am taking a course on how to set up an email account in Outlook, do I care about an "Overview of Outlook" module, when what I really want to know are the steps I must perform to set up an email account? If I'm on the navigation menu, I will probably look for a topic titled "How to set up an email account in Outlook" – I hope to find it by scanning the menu structure and clicking the link. If the navigation menu consists of a list of modules with clever names, such as "Overview" or "Getting Started," it makes it more difficult to scan for the trigger words of "Set up an email account." The learner has no interest at this point in anything other than achieving the goal of setting up an email account, which is based on content, not structure.

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Designing content should come first, with the module names, topics, navigation menu hierarchy, etc., coming last. In many courses subject matter experts and instructional designers have told me what the module and topic names are before writing any content. If content rules, then you start with content, and determine the most important trigger words. Place the trigger words in the appropriate spots so learners will identify them when they scan the page. Instead of creating your own structure based on your agenda, think of the learner and ask these questions:

- Why is the learner here?
- What areas will be most important to the learner?
- How will learners get to the important areas?
- What are the associated trigger words for these areas?

By focusing on the content first, the structure of the course will come next, and will more than likely reflect the actual needs of your learner. Attend to the content, and then let the structure take care of itself.

Create course confidence

When learners can't find something they want to know, they will often turn to the navigation options to help hunt down the missing content. The ability for the learners to achieve their learning goals within the structure of your content gives them a sense of confidence in the course. The critical times of course confidence are right before and right after the learner clicks. Is the link name understandable as to where it will lead? Did the link lead to the right content? Confidence and trigger words go hand in hand.

Lure your learners to the content they need:

- Communicate effective content through module, topic, and link names. Don't worry about keeping these names short and concise. Name them appropriately to be informative. If the module name needs to wrap to multiple lines, let it wrap.
- Remember the trigger words that the learners will associate with the course, module, topic, and link names, and their expectations and assumptions about the content underneath the link.
- Learners do not mind clicking through pages as long as they feel confident that the content is "evolving" with the link. If they are seeing the trigger words associated with the content, they will feel like the linking is getting them closer to the desired information.
- Learners don't mind scrolling. They only fail when they encounter "scroll killers." Common scroll killers include horizontal rules and large margins. A horizontal rule acts as a barrier to continue scrolling. Learners see it as a border. Large margins or large areas of white space suggest there is nothing else to see (see my recommendations

about reading Tufte, in the Sidebar at right).

- Learners expect text links to be blue and underlined.
- A link should accurately describe what would appear on the linked page.

Apply the six rules of design simplicity

Your instructional messages should show comparison, contrasts, and or differences in a meaningful, structured context. Be prepared for the fact that learners with prior knowledge may ask the fundamental question, "Compared to what?" when evaluating your message.

The first application of effective instructional messaging appears at the course's ecological level: the foundational environment where learning occurs. In this environment, the learner must be able to pursue optimally the goals and objectives of the course while engaged and happy. Instructional components required to keep learners happy include but are not limited to:

- Good design
- Evidence
- Credibility
- Encouragement
- Ability to relate the information to their real world selves

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Sidebar: Recommended Reading, Viewing, and Listening

- *The Way Things Work*, by David Macauley. Instructional design requires some knowledge of systems, and how they work. This book explains basic technologies that are important in our day and age.
- Any article or book written by Marc Prensky (www.prensky.com) or Thiagi (www.thiagi.com). Thiagi was and is my personal mentor. His models form the foundation for how I approach training in general.
- *Engaging Learning: Designing Learning Simulation Games*, by Clark Quinn. A fast, informative read, jam-packed with great information.
- *Homo Ludens* by Johan Huizinga. A definitive work on Play.
- All of Edward Tufte's books, but start with *Envisioning Information*. You will not want to put it down, so take a long weekend – preferably on a deck with a good view. He also has a compelling critique of how he thinks PowerPoint software played a major role in the space shuttle Challenger tragedy. You can order it on his site at www.tufte.com.
- Comic books and graphic novels for ideas on drama, graphics, and storyline. You can argue to your boss that "Yes, you should get paid for reading comic books!"
- *The Design of Everyday Things* by Donald Norman. This book will open your eyes to how bad the design of most things is.
- Chris Crawford's *On Game Design* and *The Art of Interactivity Design*
- Watch Chaplin and Brando movies. Make sure you have a large tub of buttered popcorn (with extra butter drizzled on).
- Get some alone time, dim the lights, put on a good pair of headphones and listen to "Shooting Star" by Bob Dylan (on the "Wonder Boys" soundtrack CD). If this doesn't spur creativity in your brain, you're in the wrong business – consider accounting.

Sharp content, or content that remains focused on the learning objectives should pass the six rules of design simplicity shown in Table 1 below.

Preventing data corruption

Data corruption often causes a barrier to successful implementation of the TLE. Data corruption is a flaw in the design process that cognitively diminishes the transfer of information that specifically promotes learning.

Any of several factors can cause data corruption.

Ambiguous instruction. Avoid including imprecise language such as, “Click the items that the box usually includes.” Note that with sketchy words like “only,” “usually,” “never,” and “nothing,” you risk having learners misinterpret the intent of the learning objective. Help them to succeed by being as clear as possible.

False or unnecessary information. Make sure the content displays the information relevant to the objective. Be careful of including too much information, or information you cannot verify is accurate. Learners are more than willing to question the credibility of your content.

Jargon. Refrain from buzzwords, especially industry specific ones. “Return-on-investment,” “constraints,” “accountability,” “resources,” and “targeting” are examples of jargon. Consider this sentence from a training course I recently reviewed, “Comprehensive, community-oriented involvement naturally leads to a substantial return-on-investment rationale that can be modeled, based on existing practices from specific groups.” Does this sentence really say anything?

Irrelevant visuals. Ask yourself if the visual you are about to design or place near your content will add anything to the instructional objective? Is it just a pretty, decorative graphic, or a sharp-looking photo of a young model? Do not clutter the screen if it adds nothing to the instructional message. Your learners will thank you.

Forced action. Some course material may warrant forcing the learner to travel a prescribed path, but if your course is overly long and tedious, you will frustrate your learner if, on top of requiring them to view 400 screens of content, you force them to view it in the order you dictate.

Limited choice. Try to refrain from limiting the learner’s choices when it comes to the ability to explore your content, unless exploration can diminish the instruction.

Invasive user interface objects. Display only the elements you really need. If your “Help” content is simply a regurgitation of generic information, and is not context sensitive, question whether or not you

need the element on the user interface. Do not consume screen real estate with non-essential decoration such as large course title banners or company logos. Reserve as much of the screen for substantive content as possible.

Non-intuitive navigation. The first rule of a good user interface is to not make your user have to think about the user interface. Don’t try to re-invent what many of the largest companies in the world have already figured out: how to build good navigation. Conventions exist, so use them. Do not think you should change or break conventions, especially for a design aesthetic.

Clear, concise, and informative messaging can substantially reduce the risk of data corruption. To aid in preventing data corruption, an effective instructional message should:

- contain credible and verifiable data,
- display constructive visual evidence, and
- show meaningful context and causality.

Evidence and credibility

As the sender of the instructional message, you are the agent of information, and, to successfully influence the learner to action, you must build trust and confidence. In an instructional message, the link between the sender and receiver is prejudiced based on variables such as distance and time. Electronic messaging, by its very definition, is based on one-directional influence. The receiver of the message must be willing to accept the message’s credibility before it can influence her to action. You should craft an instructional message that shows causality at all times – speculation and selective use of data is no substitute for evidence.

You should constantly strive for simplicity and clari-

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Table 1: Six Rules of Design Simplicity

Show meaningful context	Does the information relate to the learners’ real-world or on-the-job experience?
Present evidence and credibility	Are you able to demonstrate subject matter expertise and relevance to the learners? Will they trust your message?
Remove invasive user interface clutter	Is navigation intuitive? Are the company branding and course information closing in on your content?
Remove irrelevant visuals	Do the visual media support the instruction?
Strip out jargon and corporate-speak	Do acronyms, marketing language, and industry buzzwords run rampant in your content?
Remove barriers to content	Can the learners easily access the content without unnecessary logins, bad LMS design, intrusive pop-ups, and uninstalled plug-ins?

ty – the very idea of causality is simplicity (Tufte again). You foster the ability to deduce intent without relying on assumption, or too little evidence for the learner, by stripping away unnecessary information, jargon, mismatched meaning, and marketing-speak. Learning improves when the instructional message is verifiable and easily placed in context to the learner's sense of reality. Your instructional message should contain whatever is necessary to show evidence, and to assist in reasoning.

Display visual evidence

Integrating text and visuals is common in e-Learning courses. The visuals may easily overwhelm the learner if they are irrelevant, segregated from the learning objectives, or do not assist reasoning. Credibility and evidence should be the primary motivating factors behind the integration of a visual into an instructional message. The learner quickly judges the visuals based on quality, the explanatory ability of the visual, and its association with the content. For explanatory visuals, show evidence by annotating, labeling, or highlighting where appropriate. Show credibility by referencing sources as a part of the visual.

A variety of factors determines the learner's ability to decode the visuals correctly. These factors include:

- Sex – when decoding the meaning of visuals men usually perform slightly better than women do.
- Age – Older adults tend to perform worse than younger adults do.
- Computer skills – Certain learners will perform information retrieval and storage more efficiently than others will. A host of factors, including the ability to manipulate computer interfaces, affects this performance.

Integrating visuals

Although static visuals are usually cheaper than animated visuals, it is not easy to measure the difference between the two in learning pay-off. The main goal of the visual should be to convey a relevant learning message. If the visual strays from the learning objective it will be less relevant, and the learner may experience mental clutter and confusion. Designers often load e-Learning courses with non-relevant visuals meant to heighten emotion, or decorate the user interface. Too many decorative visuals corrupt the learner's ability to process data, and may diminish the instructional value of the entire message.

To show evidence properly, strive to reveal full details in your visuals. The ability to display complex information in a visual is a design challenge. Before you decide to manipulate the visual "to fit" or to reduce perceived complexity, consider the relationship bet-

ween the visual, the data surrounding the visual (or included as a part of the visual), and the learner.

Visuals may contain some form of interaction. Sometimes the best way to communicate information is with a visual. Add interactivity to the visual and you may increase the chance the learner will want to interact with the visual. Using visuals (even visuals that contain text) for navigation or interaction is problematic because they don't necessarily look clickable. Interactive visuals work best when the learner can easily identify what is actually clickable.

Decorative visuals, such as company or department logos, backgrounds, or large course banners, usually do more harm than good, especially when they consume a large area of the interface. They may contribute design flair or a sense of professionalism, but, honestly, do you really need to have a large percentage of the screen devoted to the company logo – especially if the course is only for company employees to view? Do you need to remind them constantly of the organization for which they work?

It is possible for decorative visuals to backfire. Using cartoonish visuals or clip art may frustrate the learner when these images crowd the trigger words, or content. By conducting a thorough audience analysis before your design begins, you can focus on the elements of design that will matter most to your learners, and refrain from losing precious interface real estate to non-relevant decorative visuals.

Screen layouts and templates

Too often templates dictate the placement of data in screen layout designs. Improper use of white space can affect the learner's cognitive ability, and may even negatively affect learning. Rigid templates can diminish the instructional value and cause learner fatigue and frustration. Don't be afraid to modify the placement of the data elements – to manipulate the white space – in order to reduce visual noise and clutter.

To improve clarity, I suggest these guidelines for displaying data elements:

- Reduce visual noise.
- Prevent insufficient range of color between similar elements.
- Carefully consider font weights and differences. Consider sturdy, readable fonts. Arial or Helvetica, often the default font, is rarely strong enough to prevent eye fatigue.
- Use color to enhance spatial dimension.
- Be careful about shading and color usage. Never place shading behind text.
- Remove all unnecessary data.
- Design for harmony between the data and the user interface.

The critical times of course confidence are right before and right after the learner clicks. Is the link name understandable as to where it will lead? Did the link lead to the right content? Confidence and trigger words go hand in hand.

- Focus on the relationship between the visual and the text on the screen, and make sure there is a relationship.
- Avoid thick rules and boxes surrounding text or pictures, especially Microsoft clip art objects. I recommend avoiding clip art completely.
- Layer and separate elements to prevent clutter. It is best to reduce or eliminate decorative visuals.
- Enhance the resolution when possible. Don't just scale screen shots and allow the data to become distorted.


Displaying complex data

Presenting large amounts of data on a computer increases the risk of data clutter and confusion, which I sometimes refer to as "data fog." We assume that learners will not "read" too much text on computer displays. How much is too much text? And should we continue to assume learners will not read text on a computer display?

Cognitive load theory is based on information processing research findings about the amount of information a learner can keep in memory. Small segments of "chunked" information facilitate knowledge transfer by enabling the learner to focus attention. Consider how videogame players process information during game play. A game displays large amounts of data, which the player stores and later recalls during moments of heightened emotion. Ace game players learn quickly by doing, recalling key combinations, player moves, shortcuts, goals, and challenges during repetitive play, when the game requires action. With this thought in mind, it may behoove instructional designers to reconsider how they present large amounts of information. Compelling content with strong, relevant visuals chunked appropriately may counteract the possible contamination brought on by the memory overload created by dry, macro-chunked content devoid of a bold visual narrative.

High-resolution displays combined with good instructional design, compelling visual evidence, and readable text can lead the learner to action. Data clutter is more a failure of design than the display of too much information. By presenting credible and verifiable data, you offer full evidence, which may be paramount in helping to achieve the learning objective, and help to prevent data corruption.

Conclusion

Of the many tasks an instructional designer performs, the most important is to ensure the credibility of the instructional message. By involving yourself in the detailed process of analysis, content gathering, evaluation, and construction of the message (including the visual elements), you can guarantee that every step in the process of creating and delivering the Total Learner Experience will be free of data corruption. You can be sure that you are displaying a relevant, cohesive, and accurate message to your learners. Preventing data corruption in instructional messaging is a key component in the larger goal of closing the productivity gap and improving workplace performance. 

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articles and essays on effective human-centered learning design and has contributed to books focused on e-Learning development strategies. He has an extensive background in corporate training and previously worked as a designer of educational materials and supplements for the higher education market. Brandon has established an approach to developing courseware focused on maximizing the learners' potential and satisfaction. Contact Brandon through his Web site at <http://www.clsllc.com>.

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