Beyond Classroom Solutions: New Design Perspectives for Online Learning Excellence

Moderator & Summarizer:
Maggie Martinez
CEO, The Training Place, USA
Maggiez99z@cs.com

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Discussion: 21 - 30 January 2002
Summing up: 31 January - 1 February 2002

Pre discussion paper

Introduction

This discussion is aimed at professionals who want to explore new perspectives on designing Web learning instruction and environments. It is intended for participants who recognize that conventional classroom design methodologies may not always work for online learning, especially when an instructor is not available to facilitate more independent learning. What changes do we need to make when we shift the responsibility for learning from the classroom instructor to the online learner? What are our new considerations and what changes do we need to make when we expect learners to become more self-motivated and self-directed online learners?

Like many others, I have many questions. What are others doing to consider the changes and demands for online learning? In fact, I would like to see our industry take a formal approach in considering the impact (good and bad) that technology has had on how we design, integrate and present instruction and environments and develop social relationships. I would like to see a framework based on concrete research that distinguishes key differences that can guide our online design strategies—with successful results. An exaggerated hope perhaps but let’s start talking about what needs to be done!

Not Surprisingly Several Questions Arise

- Which design strategies help learners become more self-motivated and independent learners?
- What are designers curriculum developers doing differently when they design for online learning and what do they say what works?
- What are designers doing differently to accommodate social relationships that support effective learning for individuals.
- What are the similarities and contrasts between online learning and classroom environments?
- What are the design issues and strategies for individuals using synchronous and asynchronous tools?
- How much do you need to know about the content delivery tools to deliver the content to individuals effectively?

These are just a few of the question running through my head. What are the other questions that need to be asked? Some of the answers to these complex questions rely on how well we understand key learning differences and their influence on successful learning. One missing link is the instructional perspective that embraces a truly learner-centric understanding of how individuals want or intend to learn (more than just the cognitive understanding of how learner’s process and build knowledge). Conventional solutions that focus on primarily cognitive factors may be incomplete or no longer capable of fulfilling the needs of today’s online learner.

Historically, cognitive-rich (how people think) explanations about learning differences have tended to underplay or overlook the dominant impact of affective (how people feel) and conative (how people realize intentions) factors on thinking, learning, and performance. Previously, primarily cognitive-based solutions were enough because instructors were in the classroom to implement, adapt, and personalize the solutions to their audience and specific objectives. After years of depending on the instructor in the classroom, learners are experiencing a change. Clearly online, the responsibility to learn shifts considerably to the learner.
Recently, these dimensions have gained considerable importance as contemporary multidisciplinary research (including recent advances in neurobiology of learning and memory) has revealed how intentions and emotions can influence, guide, and, at times, override our thinking (cognitive) processes. Since instructors, who previously addressed the conative, affective, and social factors in the classroom are not always available, the primarily cognitive-based solutions and perspectives used previously may be incomplete and need to be refined as more and more learners move to learning on the Web.

Key Issues for Individual Learning Differences

My personal search is to explore individual learning differences, particularly in understanding the impact of emotions and intentions on learning and how we develop, use or manage our values, cognitive abilities and social relationships. As we put learners online and expect learners to take on more responsibility for their learning, we begin to see learners as individuals and identify how each may use or need additional support to improve their online learning achievement and ability over time. In this understanding, we also begin to see patterns (from a “whole-person” perspective) that identify gaps in how people are equipped to engage in learning online.

This discussion should explore design guidelines for at least three key areas for more personalized online learning:

- presentation of instruction
- learning environments
- social relationships

Within each of these areas, how do we consider how individuals learn differently from a whole-person perspective (not cognitive-based learning styles)?

The first area of consideration emerges from the understanding that learning environments strongly influence how we learn and especially online without an instructor. Most research studies suggest that a closely matched learning or personalized environment will have a positive impact on learning. As a result, this discussion may also consider how to build learning environments that adapt to key individual learning differences. Or is it even necessary? Certainly we’ve tried adaptive learning and intelligent tutoring in the past. Is the typical, cognitive-based “one-size-fits” all the most sensible? In the past, have we considered how individuals want and intend to learn and is this consideration of individual differences a waste of resources? From another perspective, should we educate our audiences to demand a more sophisticated understanding of how individuals learn? Or, when we design a course with only a universal type or “one-size-fits-all” learner in mind do we unintentionally set other learners up for frustration and possible failure?

The second area of consideration is how to design and present instruction that recognizes, matches, and supports how individuals want and intend to learn differently. In this area, the primary design goals should provide instruction that helps learners accomplish instructional objectives and, more importantly, also helps them continually improve online learning ability (e.g., more self-motivated and self-directed learning than when they were in instructor-led environments).

The third area of consideration is how to develop social relationships in support of the instructional objectives (instructional objectives and achievement) but also improved online learning ability and individual needs.

We are still very much in the experimental stage for creating Web learning environments. Much still needs to be learned about designing successful environments, both technically and pedagogically. Since the fifties, researchers have challenged the field to find for each individual the instructional solutions that the learner can most easily adapt for the best payoff. Hopefully our readers will examine their own position on (a) considering the influence of key psychological factors (conative, affective, cognitive, and social) that influence learning differently, (b) recognizing critical links between Web instruction, learning environments, learning differences, social relationships, and online learning ability, and (c) developing supportive Web instruction and learning environments (different from classroom solutions) that match values, beliefs, and individual learning differences.
Conclusions

The Web offers the perfect technology and environment for precision learning because learners can be uniquely identified, content can be personalized, and subsequent progress can be monitored, supported, and assessed—cost effectively. Technologically, researchers are making rapid progress realizing the personalized learning dream. The missing link is the instructional perspective that embraces a truly personal, whole-person understanding of how individuals want or intend to learn (more than just processing and building knowledge). Conventional solutions that focus on primarily cognitive factors may be incomplete or no longer capable of fulfilling the needs of the more sophisticated Information Age online learner.

Hopefully, these suggestions will contribute to the development of a more successful learning framework for the Web and a greater understanding about matching solutions with key, fundamental learning differences. When we design a course with only a universal type or “one-size-fits-all” learner in mind are we unintentionally setting other learners up for frustration and possible failure? If we are serious about providing good online instruction for learners, should we move away from traditional classroom solutions and when necessary learn to design multiple ways to conduct instruction in environments that all learners have opportunities to succeed? This discussion is a first step in thinking about recognizing and accommodating individual learning differences. They are also an important step in recognizing the expanded, dominant role and impact of emotions and intentions on learning, especially since online learners must be by nature of the delivery system more self-motivated and self-directed learners.

References


Post discussion paper

Recap

A big thank you to all the folks who responded (both via the list and private e-mail) to my questions about considering what changes may be occurring or need to occur in designs for online learning? This is an important question as we see more and more learners moving online. My primary assumption is that today’s online learners need to manage more of their learning on their own (i.e., take greater responsibility for their own lifelong learning)—with or without instructor involvement. This critical transition focuses on the how learners
begin to use more intrinsic resources, in contrast to the more traditional classroom dependence on instructors and external support systems. This assumption assumes that we can help learners tap into their emotions and foster more self-motivated and self-directed learning.

Still, as Mark Nichols pointed out, there is no automatic or necessary assumption that the instructor, peers, or collaboration must go away when learners move online. Hence, what are the complex set of factors that designers need to consider? If instructors and peers are involved, what is the instructor’s involvement online and what are the new roles and expectations for both learners and instructors? What are the design strategies that we use to support the new roles? How involve do we get involved as online facilitators, especially when it comes to motivation, direction, or independence.

Another assumption in this discussion is that not all learners respond well to one given approach (one-size-may-not-fit-all). Some learners are just more successful online and simply do not need all the additional support or structure that other learners might need. For example, they may like learning on their own and have less dependence on the instructor and environment than others. Steve diFilipo describes such a learner when he stated “that the real self-motivated learning takes place in the structure of freedom from ANY requirements” (e.g., inside knowledge as to what content the learner needs to acquire). “The Internet is in fact the perfect design for self-motivated learning. If I, as the learner, need interpersonal interaction to construct my learning and / or to validate my learnings then I must access that individual.” Mark Nichols speaks from experience when he suggests that instructors ought to be actively involved in the process. He notes that a few of his students “do not encourage to engage in learning, but most do - and all can benefit from an instructor-as-mentor. I don't see the issue as one of students becoming dependent. Instead, I see danger in going to far to make them independent when they are not ready for it.

Other learners may prefer or depend on the companionship of their peers, structured content, and guidance and feedback from an instructor. One must also ask the question that if you have the Internet as a great source for self-motivated learning (e.g., successful online learning), than is the converse true, that is, the Internet or online learning may not be as effective for demotivated learners?

As educators, do we need to consider how to identify and support the differences, especially through designs that consider the impact from emotions (e.g., motivation, demotivation, frustration, satisfaction, or enjoyment from discovery or explicit guidance). Christine Schickentanz asked, “I wonder why it seems to be so difficult to accept the importance of emotions?”

Dr. Eric Flescher asked, “what are the variables of importance that online courses should have to interactively involve students in the learning process of online courses.” Hence, the transition to online learning may also require the designer’s understanding of the interplay between important multiple variables (including, the learner, instructor, environment, instructional presentation, social relationships, learning process, and expected outcomes). Especially, when these multiple variables, working together, can nurture positive emotions and results.

Moreover, what are the key strategies that learners need to hone to succeed and increasingly improve online learning ability. Lora Kaisler offered excellent examples of getting the learner’s attention, offering them choices, and engaging them with problem-based learning and project-based learning opportunities that also help them improve learning ability. She discusses giving students the opportunity to reflect and get involved in their own learning. She also highlights how she empowers students for more self-motivated learning. She states, “by offering real-world examples and letting the learner choose his/her own direction for information gathering [on the Internet], I empower the learner to engage with the information on his/her own level.” Her results are positive and she adds that her students “never fail to thank me for the experience.” Lora’s comments nicely address Dr. Eric Flescher’s comment about wanting to know how project based learning ties in with the whole [online learning] process.”

As previously mentioned, I am hoping that our industry will take a more formal approach in considering the multiple variables and instructional impact (good and bad) that technology has had and will have on how we design, integrate and present instruction and environments, seek outcomes, and establish social relationships. Can we work together to take our traditional past and integrate new online designs more smoothly with how people want and intend to learn? Additionally, can we use the most recent research ongoing in the field of the neurobiology of learning and memory that specifically highlights the dominant power of the brain’s emotional center? As an example, Barry Kort’s previous IFETS discussion (Jan 2001) considered the impact of fear on
learning. More information appears at these web sites. [http://affect.media.mit.edu/AC_research/lc/](http://affect.media.mit.edu/AC_research/lc/)

Here are just a few books and sites that highlight much of the activity that is ongoing in this exciting field. This research advocates using the scientific view to study the measurable impact of emotions and intentions on learning, memory, and performance.

**Suggested Readings:**


“Rapid advances in brain research elaborates on the theory that the particular patterns of synaptic connections in our brain provide keys information about who we are, LeDoux (author of The Emotional Brain, 1996 and SYNAPTIC SELF: How Our Brains Become Who We Are, 2002). In his most recent book, he discusses how neuronal circuits are modified by what we learn and remember; he considers how the brain systems that underlie thinking, emotion, and motivation develop, interact with, and influence each other to make us who we are.” LeDoux is a favorite of mine. He also wrote the Emotional Brain, another must read.


**A Few Suggested Web Sites:**

a. "Human behavior is a reflection of brain function. Our emotions, our intelligence, and our ability to learn and remember all depend on the intricacy of communication between trillions of nerve cells in the human brain. These neuronal circuits, or pathways, are sculpted by the constant modification of synaptic connections between neurons." [online -- [http://www.hhmi.org/research/investigators/huganir.html](http://www.hhmi.org/research/investigators/huganir.html)].

b. "PET scan studies are consistent with the neuropsychological findings in suggesting that amygdala activity in humans is selectively related to memory formation under conditions of emotional arousal" (Cahill et al., 1996). [online --http://darwin.bio.uci.edu/neurobio/Faculty/Cahill/cahill.htm].

c. "Kandel's contribution stands as the single most important advance in bridging molecular neurobiology to behavior. He has shown how the methods of psychology can be merged with those of biology to endow the study of behavior and learning with renewed vigor and explanatory power.” (Wolf Foundation, 1999). [online -- http://www.columbia.edu/cu/pr/96_99/19457.htm and [http://www.columbia.edu/cu/news/00/10/ericKandel.html](http://www.columbia.edu/cu/news/00/10/ericKandel.html)]

d. Conroy (2000) writes that "scientists at Brown University say they have figured out HOW learning causes those brain changes. Here's the experiment conducted by neuroscientist Mengia-Seraina Rioul-Pedotti, who led the study: Over five days, rats were trained to use one paw to dig a food pellet out of a box. They got better at this simple task each day. After five days, Rioul-Pedotti removed the rats' brains and measured the changes that occurred in them with electrical currents. She found definite differences in regions known to control the activity of the rats' right front paws. The conclusion: The connections between neurons were stronger in the region that controlled the new task." "The animal is learning, I can see a change in behavior, and I can see a change in the brain," Rioul-Pedotti said. (Cathryn Conroy, 2000). The results of this study are reported in Science, Oct 20 2000;290(5491): 533-536.

Additional web sites on the neurobiology of learning and memory can be found at this web site: [http://training.trainingplace.com/newsletter/Jan2001.htm](http://training.trainingplace.com/newsletter/Jan2001.htm)
Learning Orientation Questionnaire

Additionally, several folks asked to take the Learning Orientation Questionnaire. You can take the LOQ for free if you send an email to maggiez99z@cs.com. The LOQ is also made free for researchers who are doing university-based research.

Summary

My hope is to see a scientific framework based on concrete research that distinguishes key differences in how the brain works and then guides how learners learn differently. This is a framework that we can use to fashion our online and offline design strategies that really enable us to improve the instructional use of technology—with successful results.

In conclusion, your responses suggested that emotions and empowering students in general are important to you and naturally key elements in learning and performance. We have much to do to smooth the acceptance and success of online learning, especially as we integrate what many already seem to accept and use intuitively. I look forward to working with you all towards a more useful understanding of the important impact of emotions on learning.

Thank you again. I thank all of you on this list for your kind responses and interest in this discussion.