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Practical Applications of Technology for Learning
e-Magazine

THIS WEEK: Design Strategies

Learning Environment Design

By Catherine Lombardozzi

In the first decade of the 21st century, workplace learning is surely undergoing a sweeping transformation. The pace of change is accelerating, our learners have different expectations regarding the process of learning, and the tools for learning have entered the Internet age.

How do we, as learning professionals, respond to these changes? The work that we do as learning professionals needs to be overhauled as well. We need to transform our field of practice from instructional design to learning environment design. Instructional design has typically focused on identifying a defined set of learning objectives, and proposing a specific, one-time solution (albeit often a blended solution) to teach a required knowledge base or skill. Learning environment design, as described below, aggregates a variety of learning resources that can change to meet learning needs as they evolve over time.

In this article, I present the Learning Environment Design model, which I believe will provide the framework you need to deal with new expectations and with new tools. At the same time, the Learning Environment Design model retains the discipline of the ADDIE approach.

The learning environment perspective

Not only is Google a verb, it's also the most used learning tool on the planet. We no longer wait to get into a class or to make an appointment with a subject matter expert. The information we need – even proprietary information for our company and role – is often just a few clicks away. To keep up with changing subject matter, we can arrange to have news and information delivered to our in-bins or feed-readers. We can collaborate and converse, using electronic tools to mediate (*e.g.,* instant messaging, blogs, wikis) or match-make (*e.g.,* social networking sites, skills directories). We rely on working with peers and accessi-

As tools and modalities for learning have advanced in the last five to ten years, instructional design (ID) has generally remained committed to the ADDIE model that first appeared forty years ago. While this systematic approach to design is still conceptually valid, a process that discourages designers from doing the required analysis weighs down its implementation. This week, read about an updated ID model that can streamline your work, while not skipping the important steps.

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ble experts to learn what we need to know, and to develop new knowledge and skills as challenges require.

Whether you are a digital immigrant exploring these new environs or a digital native who grew up in this world, you can see how workplace learning is changing. Our learners are demanding more just-in-time, just-enough access to learning "nuggets." They won't wait for a design and development cycle that delivers what they need next month. They want solutions that are more nimble, and resources that are more personal, and – more importantly – they want solutions that are capable of changing with the workplace.

At its heart, the Learning Environment Design model is an important reconceptualization of our mental model for designing learning. It expands our view of our work outcomes, to include a wide range of components that constitute a learning environment for a specific topic. It bases the suggested components on research regarding how adults learn in the workplace, both formally and informally. We don't just let these tools fall into place – we deliberately design them for accessibility, flexibility, and comprehensiveness.

There are four categories of learning resources in a typical learning environment:

- **Resources and tools**: study and reference materials
- **Relationships and networks**: interpersonal connections to support learning
- **Training and education**: formal learning activities (still needed for some learning goals!)
- **Supervisor and company support**: development support from managers and company programs

Learning environment components constitute a mix of static materials and interpersonal relationships, just-in-time resources and more comprehensive formal learning programs, self-provisioned materials and deliberate teaching and coaching, formal education and informal learning – all directed at a specific knowledge base or skill set.

Table 1 on page 3 outlines the kinds of solutions that you might find in a more comprehensive learning environment.

It might be helpful to see some examples, and I've provided some in Sidebar 1 on page 4. While you can imagine a learning environment that supports all the knowledge and skill development for a given role, it's more useful (and manageable), I think, to design a learning environment for a specific knowledge base or skill set.

How to design a learning environment

The work that we do as learning professionals needs to be overhauled as well. We need to transform our field of practice from instructional design to learning environment design.

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The description of a complex learning environment, and the examples in the sidebar, illustrates how classic, traditional design outcomes need to change. But just as important, the thought process for design needs to be adjusted.

To design a comprehensive learning environment, the components of ADDIE – assessment, design, development, implementation, and evaluation – are still in play, but they need to be implemented in an iterative and recursive (and rapid!) way. That's not as outlandish as it may seem; most designers can attest that ADDIE is not a linear process, even for traditional solutions.

One way to visualize the process is like a "spirograph" – as depicted in the Learning Environment Design model (see Figure 1 on page 4). For example, during assessment, we need to explore capabilities that influence the design of components; as we design, we need to consider implementation limitations; we implement and evaluate prototypes or pilots, and then go back and tweak designs; the whole process is fluid and responsive, while still following an ADDIE arc.

Step-by-step, here's how ADDIE works for Learning Environment Design.

Analyze

When the outcome is intended to be a comprehensive learning environment, the scope of your front-end analysis dramatically changes. Consider these three areas of focus:

- **Audience**: Who is the audience? What are their characteristics relevant to the learning?
- **Goals**: What is the focus of the learning environment?
- **Learning Environment**: What is the current status and possible future capability of the four arenas of the learning environment (resources and tools, relationships and networks, training and education, and company and supervisor support) with regard to how they support or could support learning?

Let's look at these more closely.

- **Audience:** One of the most intriguing aspects of a learning environment is that it is always available. However, just because many of the components are accessible to a wide range of people does not mean that you have to design it to meet the needs of all of them. We should consider carefully who the target audience is, and identify goals with that group in mind. To scope a project that is manageable from an implementation perspective, we may need to tightly focus the audience specification, no matter how widely applicable the broad skill set may be.
- **Goals:** Designers are experienced at identifying goals. In typical instructional design, assessment is meant to determine goals for a relatively small part of the audience's learning needs. In performance assessments, the scope widens out to define the aims of the entire performance environment. In Learning Environment Design, we land somewhere in the middle. The analysis phase should put us in a position to define the performance context (what we want learners to do on the job, and the context in which they have to work) and the business goals that performance is meant to support. These are the key drivers to the design of the learning envi-

Table 1 *Learning Environment Structure*

Arena	Potential Components	Characteristics for Success
Resources and Tools *Study and reference materials accessed independently as needed.*	• Online databases • Knowledge management systems • Study resources: books, articles, book chapters, internet resources • Job aids • Podcasts, videocasts • Reference library • Procedure manuals • Technical manuals • Electronic performance support (process-driven directions for completing transactions)	• Easily accessible • Kept up to date • Mix of expert-generated and learner-generated materials • Annotated access points so learners know what they are looking at
Relationships and Networks *Active interpersonal connections for ongoing learning.*	• Peer support systems • Expert directories • Communities of practice • Mentor relationships • Collaborative online resources (ongoing blogs, discussion boards, wikis created by experts and active practitioners) • Professional networks (live and online), *e.g.,* professional organizations, user groups • Conferences and professional meetings	• Facilitated access (introductions, memberships) • Loosely defined roles and responsibilities for assigned mentors and peer supports • Active, ongoing conversations
Training and Education *Formal learning activities.*	• Classroom training • E-Learning • Online learning • Blended learning programs • Webinars • Formal coaching after training • On-the-job training	• Follow design best practices and adult learning principles • Mix of opportunities • Accessible as close to point of need as possible • Support application of formal learning
Supervisor and Company Support *Learning support activities that require active engagement by company management.*	• Ongoing feedback and coaching (designer may provide models and tools) • Communication activities to influence learning readiness and application • Support for on-the-job training and coaching activities (*e.g.,* selection, development, and recognition of trainers/coaches) • Action learning programs • Stretch assignment management • Rotation and other experiential learning programs based in workplace activities • Learning recognition programs (*e.g.,* certification, designations, job title changes, bonuses, pay raises, or promotions based on demonstrated learning)	• Defined role of manager in ongoing learning and development • Multiple opportunities to discuss learning goals and progress on application of learning • Ensure experiences are reflected upon and learning is defined and applied to future experiences

ronment; we should be able to name the knowledge and skills necessary to performance. From there, we need to define a learning focus, that is, the targeted knowledge and skills that are in-scope for the project. Learning objectives may be a bit broad at this point. The designer can fine-tune these while considering the component level, especially for instructional components.

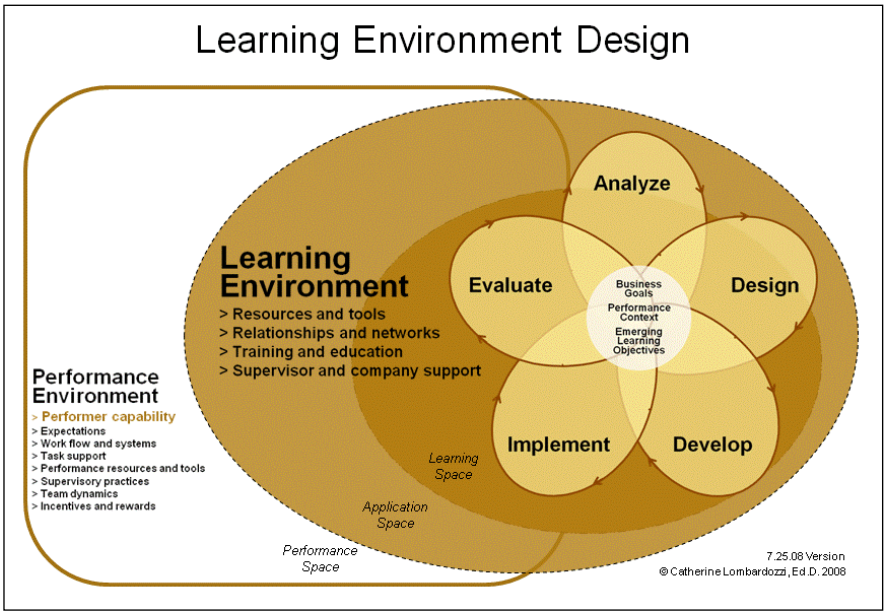
- **Learning environment:** We need to ask specific questions that will help us to evaluate each of the four areas of the learning environment, as well as help us to envision what components we may leverage or design to support learning needs. For example, what exists and how effective is each component? What kinds of components might be supportable from a budget, technology, and logistical perspective?

Design

To conceptualize the total environment, we need to consider the existing and potential components in each of the four arenas (again, these are resources and tools, relationships and networks, training and education, and company and supervisor support).

Consider incorporating almost pure learning components, along with components that move learning toward application and performance. We can envision the learning environment (as Figure 1 shows) as comprising a couple of overlapping planes, and the "lines" between these planes are fluid. The "learning space" is a plane re-moved from the day-to-day work environment, and contains components such as classroom

Figure 1 ***The Learning Environment Design model updates ADDIE by adding iteration and recursion.***



Sidebar 1 *Example Learning Environment Components*

Learning Need and Target Audience	Resources and Tools	Relationships and Networks	Training and Education	Supervisor and Company Support
• Instructional design skill for new and experienced instructional designers	• Department resource library • Online procedure and reference tools	• Peer support program for new hires • Access to identified industry blogs • Internal blog focusing on design topics • Routine design showcases (sharing completed projects with peers) • Membership in professional organizations	• Monthly educational team meeting • Annual seminar series • Degree and certificate programs offered by academic institutions	• Ongoing quality review, feedback, and coaching by management • Tuition reimbursement for both degree and certificate programs
• Customer relationship skills for external sales representatives	• Skill briefings • Procedure manual • Product manual • Online examples and success stories	• Weekly blog from sales leadership team that focuses on skills and application (leading to results) • New hire "buddy" system • Team learning forum	• Blended training on core customer relationship skills • E-Learning briefings on each skill • Podcast reinforcement for six weeks following training • Advanced customer service training	• Observation and feedback system • Skill certification program • Defined roles and responsibilities for "buddies," and training on peer coaching skills
• Employee development skill for managers	• Reference containing typical developmental goals and potential task assignments that develop those skills • Links to policies and procedures related to development planning in the organization • Career development resources and tools	• Development support network formed during blended training program • Podcast series wherein managers share their development success stories	• Blended training program (e-Learning for core content; classroom to practice developmental discussions, especially difficult ones)	• Employee development champion recognition program

training or e-Learning, academic programs, learning lab work, and the like. The "application space" is that porous plane that is in the workplace, but is still part of the learning environment. Components such as coaching and job aids might be in this space. You conduct ongoing work in the "performance space," and this overlaps with the application and learning spaces as well. The distinctions remind us to design application opportunities and enrichment (in the application space), not just learning interventions (in the learning space).

We should start by identifying two to four components that will be the primary tools for learning, and conceptualize additional components around these. All of the considerations we've been using to identify the right "blends" apply here as well. Different components make differing contributions to learning, application, and ongoing development. These components should work together, not only to support learning, but also to support application of that learning. (For example, on-the-job coaches may be put in place to scaffold the transfer of learning from a course to on-the-job action.) Each component contributes to the overall effort, and they should build on and reinforce one another. You should work out the interrelationships and unique contributions of each component at the environment design level. Then, when we're ready to develop each of the components, we will know how it fits in to the overall picture.

As we design, we need to remember to consider resources required for development and implementation – no use coming up with a grand plan you can't realize. Like any comprehensive effort, we will want to design and implement in phases, so understanding the interrelationships of the components, and determining the priority, will also be critical.

Develop

Each component will have its own development process, and I won't go into detail on what those processes are. But remember, when we develop the learning environment, we don't have to go it alone. Using collaborative technologies and other rapid development techniques, we can tap into the supervisor team, the experts, and the learners themselves to allow interested parties to build the resources and networks they need. We can also tap into the resources available on the Web – not to gather the data we need to create a beautifully packaged program – but to find the best resources that we learners can access through links. That way, as those resources grow and change, what our learners have access to grows as well (without creating one of those pesky maintenance projects).

Implement

Implementation will likely need to be staggered, and each type of component has its own implementation requirements and challenges. When our recommendations include a number of additions or refinements to the learning environment, we likely won't be able to

At its heart, the Learning Environment Design model is an important reconceptualization of our mental model for designing learning. It expands our view of our work outcomes, to include a wide range of components that constitute a learning environment for a specific topic. It bases the suggested components on research regarding how adults learn in the workplace, both formally and informally.

produce those all at once. The list will need to be prioritized, and tackled at a pace that everyone can bear. Several considerations will influence prioritization decisions: anticipated impact, required resources, availability of talent, impact on other organizational projects, and so on. Our overall project plan will include the details necessary to implement each component in its turn.

Evaluate

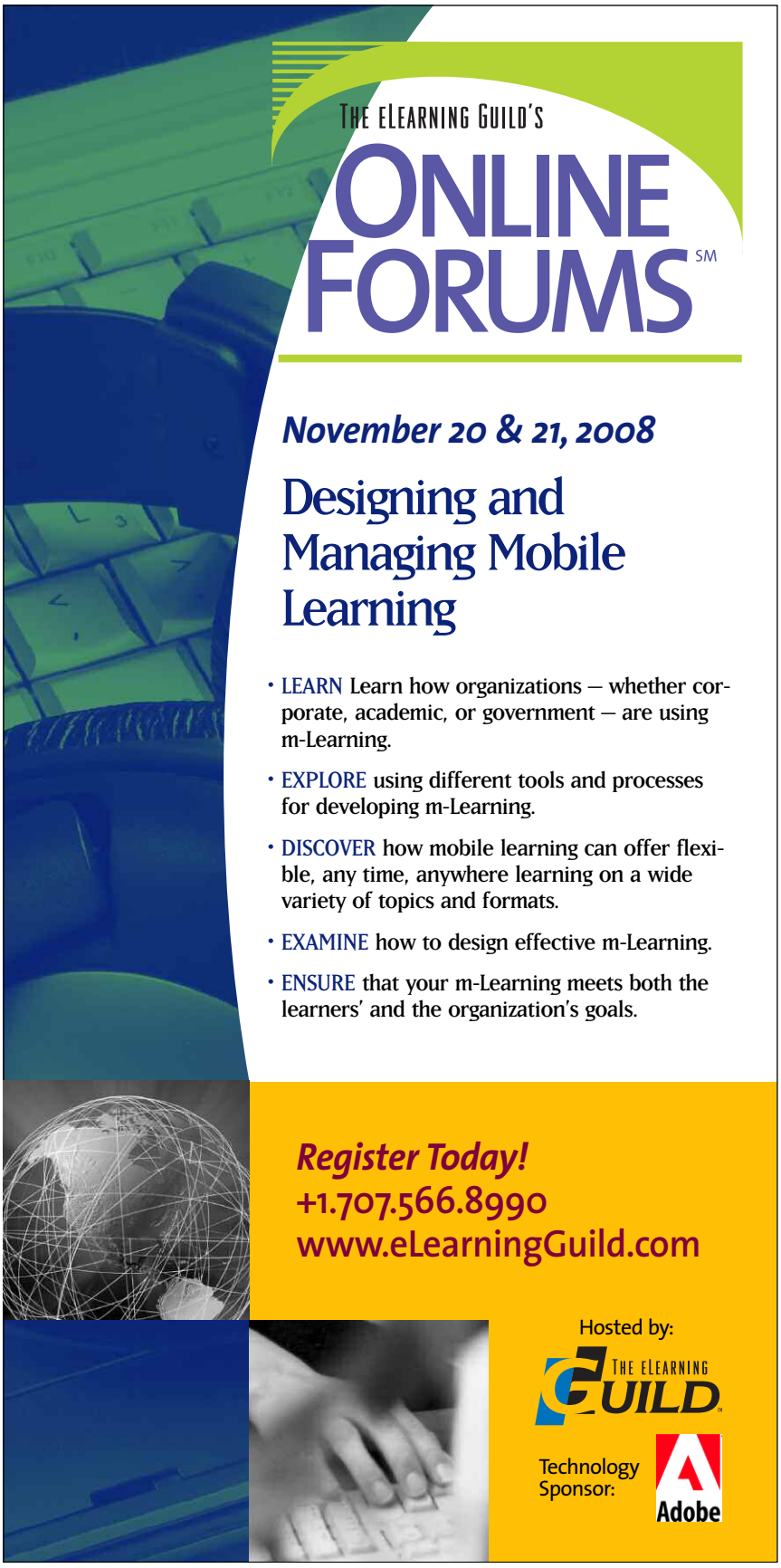
We need to conceptualize evaluation on a grand scale as well. While it's helpful to gather some evaluation data at the component level, it's more important to evaluate the learning environment as a whole. We can ask for feedback on the primary components of the learning environment, as well as seek input on additional needs and suggestions for improvement. For some components, we may be able to design and develop them in a way that will allow us to gather evaluation data more easily from users (for example, blog dashboards). A regular survey of the targeted group and their managers can collect data on which components they used, which they found useful, and which they perceived had impact on performance.

Addressing the need for rapid deployment

At first glance, the Learning Environment Design process might appear to be too complicated for rapid deployment. But rapid design and development techniques (*e.g.,* straw man, rapid prototyping) and Web technologies (*e.g.,* online collaboration) can speed the process. We don't have to create a complete learning environment for the initial launch. We should conceptualize development of the environment as an ongoing effort that builds as resources become available, and needs become clearly defined. For the most part, we won't be starting from a blank slate; learning resources exist from a variety of sources, and we can link them in to build an environment quickly.

Leaving the performance environment out of scope

The Learning Environment Design model depicts the performance environment as tightly intertwined with the learning environment. Well-informed readers will recognize Tom Gilbert and Rummler-Brache (Geary Rummler and Alan Brache) as influences for the components of a performance environment. As mentioned earlier, the application space, and sometimes even the learning space, overlaps with the performance space. We know from our understanding of performance technology that performer capability – knowledge and skills – are just part of what is necessary to produce performance. Learning professionals must understand performance requirements, and must understand the



relationship between factors that support performance and factors that support learning.

However, to my mind, learning professionals must hold the creation and maintenance of the learning environment (including application of learning in the workplace) as their primary focus. Because of their interrelationships, we can not and should not ignore the performance environment. We still have to ask the question: What is the desired performance? But we shouldn't get drawn too far into analyzing the performance environment – we focus on the performer capability component: how to develop the knowledge and skill necessary to support performance. It's not that the performance analysis questions or other components required for performance are unimportant – it's that they belong in a parallel realm. Line managers (and performance technologists if needed) should have a good handle on the performance environment, and they rely on learning experts to support the development of employee capability.

ADDIE at the component level

Once we've agreed on the overarching design of the environment – what all the components are and how they fit together to support emerging learning needs – we can embark on a more tightly scoped process for individual components. Note the huge range of components that may become the focus of design from this point forward. Consider that we might be creating resources, courses, peer development programs, supervisor-coaching programs – all of which might require design attention and resources. Our ADDIE process multiplies at this point – an overarching development, implementation, and evaluation process for the learning environment as a whole may be in play, alongside a more narrowly focused design and development process for each of the components. The specific approach implemented will depend on the nature of the component: how we design for an instructor-led training component will be very different from how we design an online resource tool. Principles of adult learning apply across the board.

The role of the learning professional in the 21st century.

We can be both more responsive, and more effective, in meeting the rapidly changing learning needs of employees if we take a more comprehensive view of what we can do to support learning and skill building. Designing comprehensive learning environments should be our new standard.

We must be THE experts at delivering performer capability – to ensure that employees have the knowledge and skills they need to get the job done well. We can't simply create high-tech spot solutions, or respond impulsively to learners' (and managers') desires to employ "Learning 2.0" technologies. We must know the variety of tools and techniques, both high-tech and simple, that can generate learning, and support application of that learning in the workplace. We must educate ourselves on what makes each of these components and techniques effective, and we must learn how to design, develop, and implement them efficiently and effectively.

By becoming experts in learning in the workplace, we can add real value as partners with our business clients in ensuring the performance that achieves business goals. Applying the approaches described in Learning Environment Design, we can more effectively advance our profession.

Please join me at www.learningjournal.wordpress.com, where I blog about this model, and other topics related to learning in organizations. I welcome feedback and critique of the model through online comments.

Author Contact

Dr. Catherine Lombardozzi is a career workplace learning professional with more than 25 years' experience in learning management and instructional design. In her work, Catherine promotes performance-based design, engaging techniques, scholarly practice, and the use of new technology to support learning. Catherine manages the Best Practices team for the corporate university at Vanguard, and she serves as an adjunct faculty member in instructional design and adult learning for Pennsylvania State University (Great Valley campus), George Washington University, and Chestnut Hill College. She has a doctoral degree in Human Resources Development from George Washington University, and has been published in the *HRD Review* and the *Journal of Workplace Learning*. Check out her blog about learning in organizations at www.learning journal.wordpress.com. E-mail Catherine at c_lombardozzi@verizon.net. (Opinions expressed in this article are her own.)

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