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Designing Hybrid OnLine/In-Class Learning Programs for Adults

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Abstract

The use of technology in learning has been a topic of lively discourse, but relatively little has been written on the essential design principles for developing programs using technology in adult learning settings. The particular focus of this paper is professional / executive education programs.

The authors draw on the insights shared by a group of experts from the fields of learning and adult education who attended a workshop held at Harvard Business School in late April 2002 (Adult Learning Workshop: Face-to-Face and Distributed). The paper highlights key differences that exist between in-class and online learning environments and identifies seven essential design principles to consider when developing learning programs with an online component.

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Introduction

The Adult Learning Workshop (ALW) held at Harvard Business School in late April, 2002, focused the attention of the attendees on some of the dilemmas in the current state of online adult education. Underlying the entire workshop was a question central to the design of programs: to what extent is the face-to-face classroom experience, with all its attendant benefits, the gold standard for online programs? Should those managing and developing educational programs with at least some online elements, instead be starting with a fresh look at how people learn, and go back to the basics of human behavior with the proverbial "beginner's mind," unencumbered with the objective of replicating the very successful classroom experiences that have long characterized the best of adult education?

Two observations can be drawn from the workshop experience: 1) it is very difficult for people who know the power of the classroom to eschew that as the standard; 2) some principles of learning cross the boundaries of different pedagogical methods, simply because humans, for all their individual complexity, have certain predictable preferences and capabilities in learning.

This paper attempts to capture a few of those principles that are both deeply grounded in research and understanding of human behavior and that also have obvious implications for the way that programs of learning are designed. We make no attempt to be exhaustive or even representative. We have selected those principles that, in our

opinion, profoundly affect program design, development and delivery. Some rely upon the fine distinctions that experts in the field of pedagogy are capable of making, while others are deceptively obvious. The implementation of any of them requires much thought.

1. Recognize that learning is largely a social activity

Humans are social animals.[1] While of course there is still need for individual computer-aided training or the just-in-time kind of performance enhancing tools provided by the Harvard Manage Mentor, there is also a huge and perhaps underestimated need for group activity to be designed into management education.[2] This activity can be conducted at two different levels of aggregation: pairs or groups, and communities.

Small Group Activities

As a number of the participants at the ALW observed, peer-to-peer coaching is a powerful learning methodology. The small group activities can involve role-playing, joint problem-solving and evaluation. Participants pointed out that harnessing the power of small groups not only engages the learners but leverages the energies of the instructor. Larry Leifer found that "peer-to-peer learning in small groups is a self-perpetuating pedagogy. The groups can launch the next group." Joel Podolny noted that peer evaluation is "seen by students as very valuable and motivating"—and concluded that technologies can be very helpful in formulating and delivering such evaluation. Stone Wiske commented that the instructor needs to build in the structure for the peer-to-peer learning, but that over time, one can "fade the scaffolding, if the goal is to be implicit."

Reliance upon peers in the educational program also places some of the responsibility for learning back on the group members rather than placing all responsibility on the instructor for transferring knowledge.

Perhaps most important is unleashing the expertise resident in the group of peers. In the HBS classroom, this occurs naturally through the case discussions. The challenge to designers of online segments is to enable students to tap each others' experiences. Projects appear to be one of the best enablers—yet these are labor intensive and do not run autonomously without a lot of prior structuring.[3]

Communities

Communities constitute the most ancient of learning situations, yet educators are struggling with how to exploit the potential of on-line groups for learning. Communities of practice[4] would seem to offer a natural venue for the promulgation of knowledge, but recent experience indicates that they are very difficult to artificially construct and keep running. It is clear that members would have to have a compelling reason to visit such communities online. As Byron Reeves noted: "most vibrant long-lived online communities are the ones in which we have a deep personal interest."

There are at least two types of community that are of interest to program designers: 1) the temporary ones built around the substance in an educational course and 2) an on-going community built around some life-long learning objectives. Experiments in various online educational courses suggest that the first kind can be useful and appreciated.[5] There is less experience with the latter. However, either type of community offers the same potential as a physical class to bring in experts, expose

students to innovation on the topic and tap each other's expertise. To date, it seems that most class-based communities have been designed to be rather insular—tying students together but not taking advantage of the potential to link the classes to other experts, associations or external sources of knowledge. In both types of communities, trust among members is essential and has to be consciously nurtured and supported in the design of activities and infrastructure. So, for example, people may feel more or less free to expose their personal learning tracks to members of an online community whom they do not know well.

2. Integrate learning into life

Most of learning in life occurs in settings other than educational ones. The reasons go beyond the fact that we spend more time outside of classrooms than in. Much knowledge is deeply connected to context—and this is especially true of topics related to relationships with other people, such as management. Two implications derive from these observations: 1) we need to build learning *environments*—not to design "e-learning," and 2) we need to connect programs of learning to people's work.

A learning environment is not the same as a teaching environment. For example, in the former, students have some mechanism for tracking and archiving their own learning over time—besides their notebooks. In the former, students also have some control over the "chunking" of their learning into the pieces that they have time and/or ability to absorb. In the ALW, discussion turned to the futuristic potential for providing students with an *experience* rather than an educational product. As noted later under the discussions of learning-by-doing and by discovery, a learning environment would allow

the student to learn by means of personally selected pathways through individual and group educational processes.

One of the clearest needs for professional education today is a link to daily work—"situated learning" that results in immediate positive reinforcement from enhanced job performance. Obviously not *all* aspects of an educational program would need to have this component, but relevance to work is highly valued by today's students. Again, projects in the work setting exemplify learning in context.

3. Enable learning by doing

Even as adult learners request that education have more direct relevance to work, intense time pressures also encourage education in ever-shorter bursts. As Howard Gardner noted, "It is ironic that in the country that invented pragmatism, there is increased resistance to learning by doing and a push towards direct instruction." Yet "[i]n all domains of learning, the development of expertise occurs only with major investments of time, and the amount of time it takes to learn material is roughly proportional to the amount of material being learned."[6] Learning cannot be reduced to check lists and PowerPoint™ slide frameworks. The more "soft" the topic to be learned, i.e., the more it is based on human behavior and group-based phenomena, the more that it must be taught using groups and human interaction. (There is a difference between the know-what part of management and the know-how, skills-based part of management.) Thus, topics such as leadership and creativity cannot be taught with rules and totally online.

The experts in learning gathered at the ALW were clear that no matter what the medium through which the educational materials are delivered, students must have time and opportunity to *practice* what they are learning. The designers of educational programs thus have at least a dual reason for work-related exercises: participants will appreciate the relevance and they will learn the materials better. Simulations obviously offer the kind of almost real-world experience combined with the potential for rapid feedback that motivates learning. Peter Senge saw simulation as the most critical frontier for technology-enabled learning of the future. (Progress in this area was reported in an August 2002 Boston Globe article - *Simulations evolve as training tools*.[7])

Moreover, passive learners may have to be forced into more active learning. Howard Gardner recounted his own experience with a class for which he put lectures online, ahead of face-to-face meetings, anticipating that the students would come prepared to discuss rather than just listen. They did not. The next year, he assigned roles such as summarizer, questioner, etc. to the students, and there was much more interactivity. Passive learning is easier on instructor and learner—but less productive.

4. Encourage learning by discovery

Tufts University cognitive psychology professor Salvatore Soraci has built his career on understanding the way humans' memory works. One important finding in his research is that people remember longer those things that they learn after some mental struggling. This "aha" effect comes from the individual's generating his/her own hypothesized meanings and understanding for something before being given the "answer."[8] HBS case teachers know this intuitively – students are not given the actual

results of the management decision ahead of time, and they may not achieve resolution to some of the management dilemmas for several classes — if at all! Cases are simulations of real life, intended to build management intuition and judgment, rather than to provide answers. Both HBS students and professors can recall some case situations with amazing clarity because they have struggled to identify options for action.

Thus, program developers should try to engage the students in their own hypothesis generation before providing answers. There are, however, at least three difficulties that constraint *to some degree* the capability of the designer to build initial confusion (followed by some resolution) into the educational experience. First, the students have to be aware of the underlying intent. HBS students know that they are coming to a school where the case method is the predominate pedagogy —and if they don't "buy into" this method, they are advised to go elsewhere; participants in other programs may not have the same understanding. Michael Moore pointed out that for some, the process of discovery may be uncomfortable or threatening; some individuals would much prefer a more structured set of clear steps detailing exactly what is to be learned and when. Second, the initial uncertainty about meaning that leads students to puzzle over a problem before seeking resolution has to be an intelligent exercise—not just confusion. Third, it is much easier to construct neat lines of reasoning than to capture enough of the messiness of real life problems to stimulate discovery.

Although it is therefore challenging to build discovery into an educational program, perhaps the ability to do so will distinguish high quality online programs as they have in-class MBA programs. There are good reasons for the fact that most business schools today not only *use* HBS cases but increasingly, also *produce* them. Over the past

two decades, top business schools have begun imitating the pedagogy that they once decried as too unstructured.

5. Remember that individuals have different mental receptors for material

One of the most difficult tasks for an instructor is to assess the level of knowledge already extant in a class full of individuals who come from different life experiences. The ability of an individual to absorb new material depends partly on what is already in that individual's brain about the topic.[9] One of the reasons that Harvard Business School Interactive targets upper managers in its custom executive education programs is that those individuals already have a rich foundation of experience and education upon which to build. This foundation is both blessing and curse—blessing because instructors can presume a certain level of knowledge and do not have to spend time on remedial materials, and a curse because individuals with this kind of knowledge require more sophisticated and highly nuanced, context-rich material, which is harder to deliver online.

Educational designers have to cope with these unequal mental starting points, and online is both more and less difficult than in the classroom. In the classroom, an instructor is guided by many physical cues as to whether the material is "over the heads" of some present, and can even conduct a quick survey of hands to find out what the knowledge gaps are. On-line, the instructor has no visual cues—but has the same necessity to determine what receptors exist. However, technology does offer the instructor the option of conducting a quick anonymous survey of knowledge—and the anonymity is likely to generate a more honest appraisal of the class state of knowledge than if individuals have to raise their hands.

A second implication of the fact that people have different receptors is that the greatest expert on a topic may not be the best person to deliver the material—either in the classroom or online. The greater the gap of knowledge between the expert and the learner, the more dependent knowledge transfer is upon the willingness and skill of the expert to "come down" to the level of the novice in providing the basics.

A third implication is that instructors have to consider carefully the mix of small group exercises. In MBA classes at HBS the Technology and Operation group, teaching the first year required course in production, discovered that if there was one individual in a group who had specialized expertise (in this case it was in web design), the rest of the group members would defer to that individual and consequently didn't really learn by doing themselves.

6. Make it fun

Byron Reeves said, "Fun is the street word for engagement and involvement." Children are not the only ones who learn from entertaining education. John Seely Brown noted that "part of the reason that games are fun is the positive reinforcement that one gets from them—and this reinforcement is one of the hardest things to build into the technology." In ALW, the groups that performed the best in our hands-on Lego Mindstorms robotics exercise were those that had the most fun. Competition added to the excitement and fun for some groups. Interestingly, the group self-designated as "expert" in computerized exercises and the self-identified "novice" group both treated the exercise most seriously (albeit for different reasons). Both groups enjoyed themselves less—and performed less well than the intermediate group. The expert and novice groups were also less inclined to learn by trial and error. The risk involved in the exercise was greater for

both groups, in that the novices felt inadequate (a feeling unfortunately reinforced by being closely observed) and the experts believed they should be able to perform on the basis of software programming principles rather than through the brute force of trial and error. Fun has to be non-threatening to be an effective pedagogical approach.

7. Build in assessment—but don't delude yourself that you are measuring learning

The more complex the content, and the more that it is based in differentially defined outcomes, such as becoming a "better leader," the more impossible is a quantitative assessment. The real outcome of a program may be evident only years after the educational experience—assuming that the effect of education can be singled out from all the other intervening experiences. There is always a temptation to measure what is possible—whether or not those measures reflect any meaning or relevance.

However, it is possible to establish goals and measure progress against specific program goals. They may reflect process rather than outcome and they may be subjective judgments—but they can also be derived from individuals other than the instructor or the learner. Rather, assessments can be sought from the ultimate "users" of the educational experience—those who report to the managers being educated, or those to whom the managers report.

Two other forms of assessment were recommended in the ALW: peer evaluations (mentioned above) and very frequent individual feedback. The latter could be automated through technology if the students could take self-administered "tests" on the material

throughout the program. Obviously, such tests are appropriate for materials in such areas as accounting or engineering management, and almost impossible for leadership.

Conclusion

We need to distinguish between the automation of current teaching processes and designing a process that works. Sometimes this requires new tools, new mindsets. Specifically, as David Garvin emphasized, we need to think differently about, 1) Format, 2) Roles (for teachers and students), and 3) Skill sets (students' and institutions'). However, although the technology offers novel approaches to designing educational experiences, success depends upon our ability to build on a deep understanding of human learning. In this paper we focus on seven key principles for designing a learning process that works:

1. Recognize that learning is largely a social activity
2. Integrate learning into life
3. Enable learning by doing
4. Encourage learning by discovery
5. Remember that individuals have different mental receptors for material
6. Make it fun
7. Build in assessment—but don't delude yourself that you are measuring learning

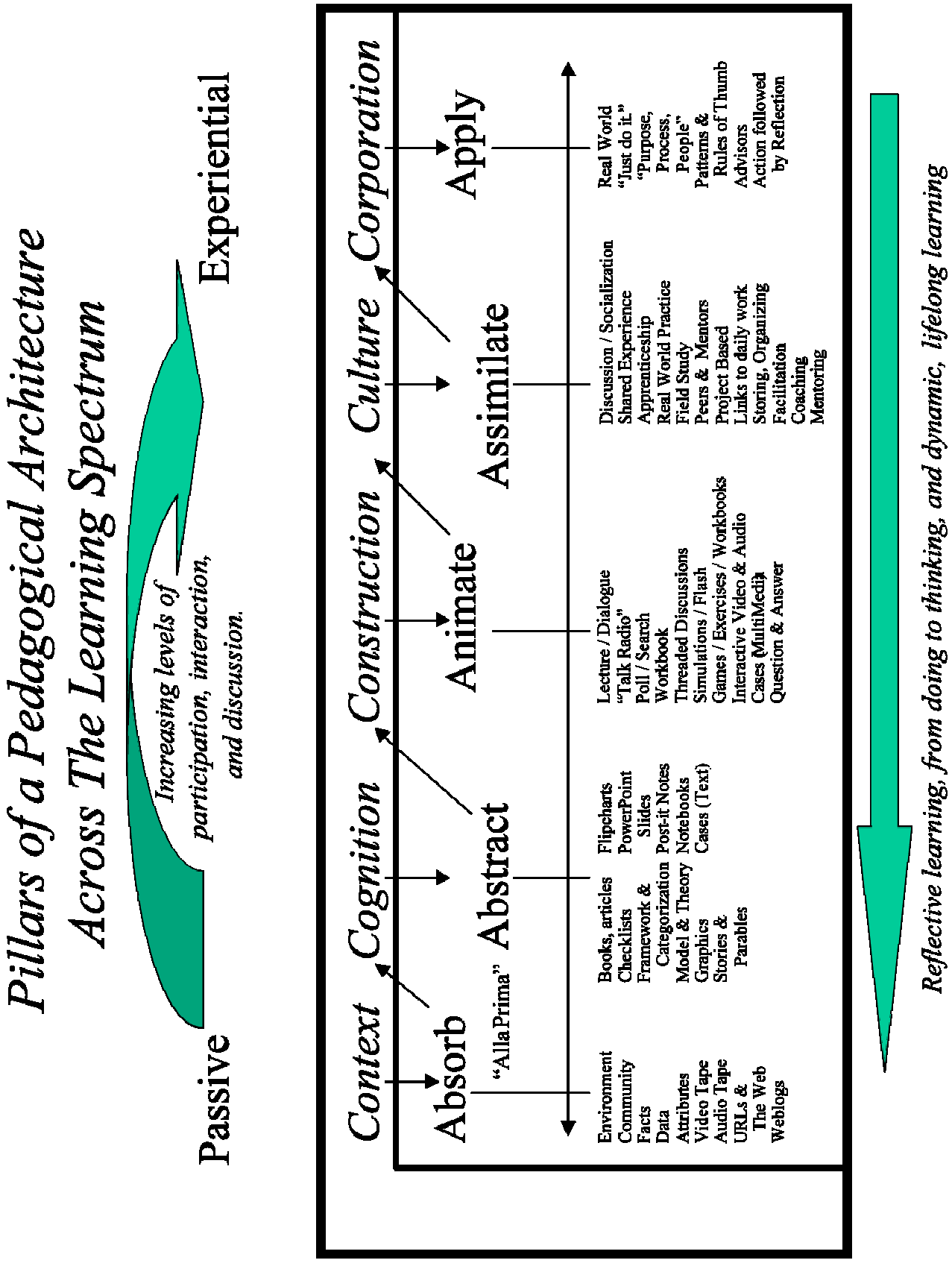
Chris Bartlett observed that the "shelf life" of knowledge is getting shorter and shorter - this "knowledge decay" requires learning. Learning is full of organizational challenges though – as Edgar Schein nicely summarized: "If [leaders are] serious about

changing the company's fundamental assumptions and values, they should expect levels of anxiety and resistance. … Learning only happens when survival anxiety is greater than learning anxiety." [10]

One overall description of the many facets and aspects of learning covered in ALW is captured in our "Pillars of A Pedagogical Architecture." (See EXHIBIT 1.) This model suggests a continuum from *absorbing* information to *abstracting* it, and through increasing levels of active engagement and *animation* to *assimilate* and actually *apply* what is learned. The learner moves from *passive* to *experiential* learning and then returns through *reflection* to achieve an ever-deeper understanding of the target subject matter and knowledge domain.

The clients of on-line learning programs are unlikely to have such mental models in mind when they request education. In fact, relatively few educational programs are designed on a deep understanding of how people actually learn. One of the enduring competitive advantages of high performance face-to-face educational experiences has been the intuitive grasp that professors have of the learning process. The challenge to us all is to extend this capability for delivering experiential learning into the interactive realm, even with all its attendant distinctions from the classroom.

EXHIBIT 1 – Pillars of a Pedagogical Architecture



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Endnotes

[1] Elliot Aronson, *The social animal*. 8th ed. New York: Worth Publishers, 1999.

[2] This is not to say that all individuals *prefer* to learn in groups. As research on thinking style preferences, notably the Myers Briggs Type Indicator, has demonstrated, some individuals much prefer to learn by themselves. However, we suggest that when the skills to be learned are those that are to be performed in group contexts (as management skills must be) those skills are best learned in a context that has some of the same rich stimuli as real world situations.

[3] See the authors' description of Program for Global Leadership in Brian DeLacey and Dorothy A. Leonard. "Case Study on Technology and Distance in Education at the Harvard Business School." *Harvard Business School Working Paper Series*, No. 02-026, 2001.

[4] See Etienne Wenger, Richard McDermott, William Snyder, *Cultivating communities of practice : a guide to managing knowledge*, Boston: Harvard Business School Press, 2002.

[5] See for example: Chris Dede, Pam Whitehouse, and Tara Brown L'Bahy, "Designing and Studying Learning Experiences That Use Multiple Interactive Media To Bridge Distance and Time," to be published in *Current Perspectives on Applied Information Technologies* Vol. 1: Distance Education, Charalambos Vrasidas and Gene V. Glass, Eds., Harvard Graduate School of Education, March, 2002.

[6] Bransford, John. D., Ann L. Brown, & Rodney R. Cocking (Eds.), *How people learn: Brain, mind, experience, and school*. Washington, D.C: National Academy Press, 2000.

[7] See "Simulations evolve as training tools," *Boston Globe*, August 5, 2002, as well as *The North America Simulation and Gaming Association* at http://www.nasaga.org/about.htm for the recent, rapid adoption of simulation for learning in business.

[8] See for example, Pamela M. Auble, Jeffrey J. Franks and Salvatore A. Soraci, Jr.; "Effort toward comprehension: Elaboration or 'aha!'?," *Memory & Cognition,* 1979.

[9] See the following: "Absorptive capacity: A review, re-conceptualization, and extension." *The Academy of Management Review,* Zahra A. Shaker, Gerard George. Briarcliff Manor; 27, 2, April 2002.
Bransford et. al. state: "To develop competence in an area of inquiry, students must: (a) have a deep foundation of factual knowledge, (b) understand facts and ideas in the context of a conceptual framework, and (c) organize knowledge in ways that facilitate retrieval and application." P. 16, in Bransford, et. al., *How people learn: Brain, mind, experience, and school.*

[10] "The HBR Interview with Edgar Schein: The Anxiety of Learning," *Harvard Business Review*, March 2002.