Experiential Strategies for Building Individual Absorptive Capacity

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ABSTRACT

This paper seeks to develop a stronger conceptual base for understanding the process of experiential learning as a means of developing individual absorptive capacity. Organizational absorptive capacity has received considerable attention in the management literature. While individual absorptive capacity is arguably the objective of most management education, it has received very little specific attention. Our model points to the essential role of experiential teaching and learning in developing absorptive capacity, highlighting critical knowledge and skills that can only be learned through personal experience. By describing how individuals absorb knowledge in an organizational setting, it identifies key learning objectives for an integrated experiential curriculum. These objectives include mastery of impersonal information search strategies, interpersonal networking, high-level cognitive processes, a diverse knowledge base, emotional intelligence, single- and double-loop learning, and the acquisition of tacit knowledge. Objectives also include the emotional involvement and personal practice necessary for students to internalize and use these skills in their work. Articulating clear experiential learning objectives enables business school educators to develop strategies for facilitating this learning.

INTRODUCTION

In today's knowledge-driven environment, one of the key elements of competitiveness is an organization's *absorptive capacity*, or a firm's ability "to recognize the value of new, external information, assimilate it, and apply it to commercial ends" (Cohen & Levinthal 1990, 128).

While absorptive capacity refers to an organization's ability to absorb (identify, assimilate, and exploit) knowledge from the environment, the concept can also be applied to individuals who work inside the firm (Da Silva & Davis, 2011). Individual absorptive capacity is the individual's ability to find and recognize the value of new, external information, to absorb it, and to transform and apply as needed it to the needs of the firm. In tracing the genealogy of the absorptive capacity construct, Lane, Koka, & Pathak, 2006) actually trace it to the absorptive capacity of individuals within the firm.

The notion of individual absorptive capacity is particularly relevant to business school educators, because an important component of their mission is presumably to instill this capacity within their students. Certainly, there are some hard, universally applicable skills and concepts that our students must learn for their own sake rather than for the purpose of increasing their capacity to learn (absorptive capacity). These include such things as writing, quantitative analysis, computer skills, and the common body of knowledge attendant to the various business disciplines. However, most of what our students will face when they graduate are problems they have never seen before, and their task will be to mobilize their absorptive capacity to quickly acquire the new knowledge and skills they need to address them.

So it is that the mission of building individual absorptive capacity is central to the business school. Implicitly, it is the focus of much, if not most, of the pedagogical research conducted in support of business curricula. This mission notwithstanding, absorptive capacity has received very little explicit attention in pedagogical discussions. An exception is a paper by Cannon, Feinstein, Friesen, and Yaprak's (2013) in which they propose business simulations as an important tool for
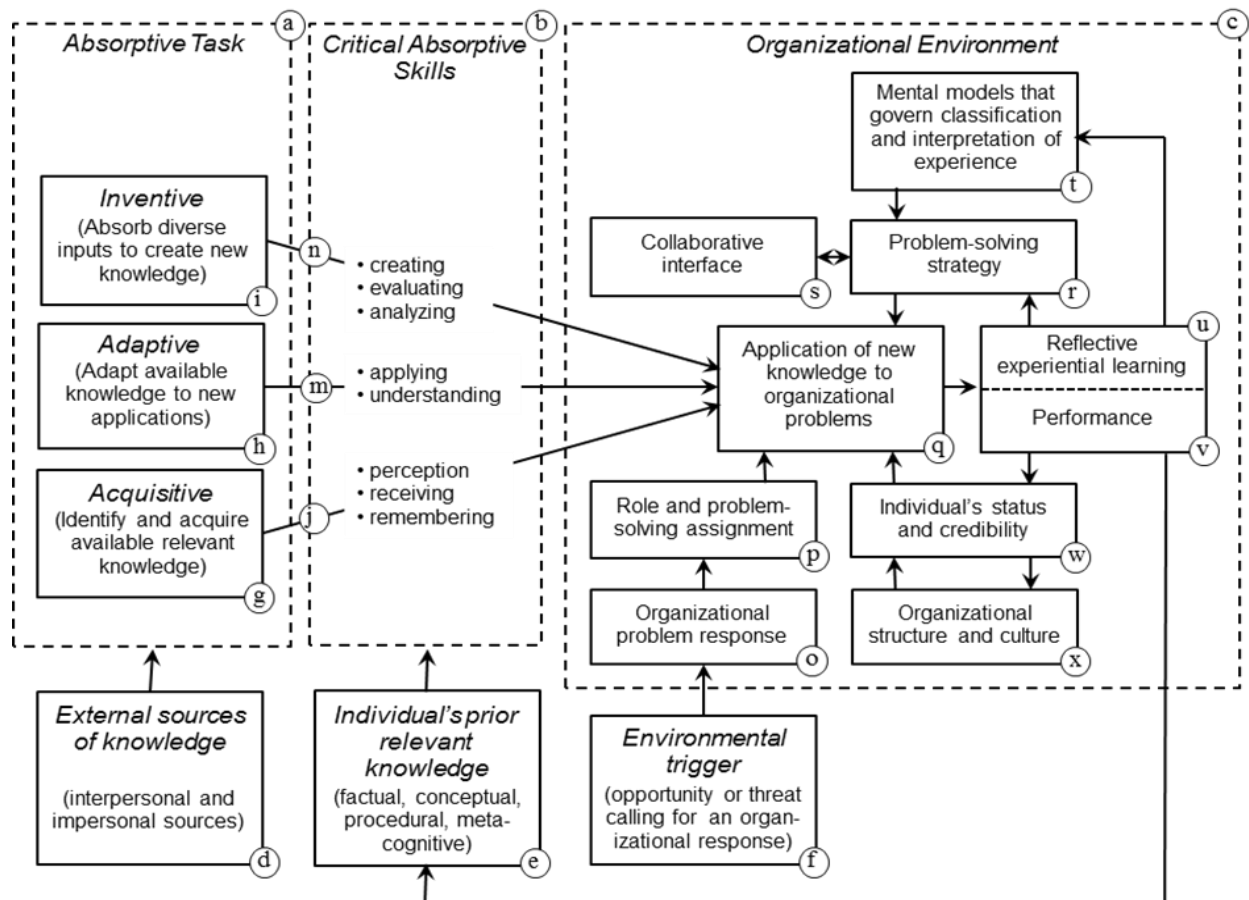
nurturing individual absorptive capacity. Without detracting from the importance of either the paper as an initial foray into this important area of inquiry or of simulations as a means of addressing it, a discerning reader will quickly recognize the need for a much broader treatment of the subject. If building individual absorptive capacity is central to the business school mission, does this imply that simulations should be central to our pedagogical approach? Not necessarily. What, then, does the need to build student absorptive capacity tell us about pedagogy?

We will argue that, while simulations are but a single tool, the broader category of experiential education is particularly well suited to developing effective student absorptive capacity. We will draw on the logic of Bloom's classic taxonomy of educational objectives (Bloom, Englehard, Furst, Hill, & Krathwohl, 1956) to make our case. The taxonomy posits a series of objectives – *knowledge, comprehension, application, analysis, synthesis,* and *evaluation* – arranged in hierarchical order from those achieved through simple study to those that require increasing levels of abstract thinking as a means of utilizing knowledge acquired in one setting to solve problems encountered in another. Our argument is based on

the premise that experiential education exposes students to actual problems, each of which is unique. The experiential learning process grows out of the early work of Kurt Lewin (1947), involving a cycle of forming abstract concepts and generalizations → testing implications of concepts in new situations → concrete experience → observations and reflections, then repeating the cycle (Kolb, 1984). The cycle provides a naturalistic exercise program for the higher-level thinking processes necessary to fuel the cycle. Of course, we could conceive of other activities that would develop higher-level thinking processes, but we are hard pressed to conceive of any that would do so as efficiently and effectively. The naturalistic setting of the experiential process offers the added, and perhaps equally important, benefit of exercising higher-level affective (Krathwohl, Bloom, Bertram, & Masias, 1964) and psychomotor (Simpson, 1974) learning as well, thus providing a more holistic learning experience. Given the holistic nature of actual problem-solving experiences, pursuing a holistic program of exercise provides a particularly useful preparation.

The purpose of this paper will be to identify several high-level absorptive skills, and then present a framework

EXHIBIT 1
VISUALIZING INDIVIDUAL ABSORPTIVE CAPACITY OPERATING
IN AN ORGANIZATIONAL ENVIRONMENT

for designing pedagogical strategies to achieve them. We argue that experiential learning is not a teaching strategy, but the result of an effective experiential educational strategy. In order to establish the link between learning outcomes and educational strategy, we will draw on the concept of customer *co-production* from *service-dominant logic* in marketing theory (Vargo & Lusch, 2004, 2008) and the resulting *co-creation of benefits* (Vargo, Maio, & Akaka, 2008). While pedagogical strategies would generally be considered the province of education, education is inherently a marketing process. Educators seek to exchange education in return for some kind of compensation. The problem is that this conception often leads educators to what marketers would call a "product orientation" (Levitt, 1960). That is, they tend to look at education as a kind of product that operates on students to make them more educated (Allison & Pomeroy, 2000). In the parlance of service-dominant logic, this treats education is an *operant* resource that acts on students as *operands*, transforming them into some different from what they were before. Here, "resource" is simply a general term to represent something that has value in a marketing exchange. An operant resource is one that acts to produce an effect. An operand resource is one through which the effect is produced by the operant. Service-dominant logic treats students as another form of operant resource, interacting with the activities and materials of the educational marketer (also an operant resource) to produce learning as an effect.

Our paper will proceed as follows: First, we will develop a conceptual model of individual absorptive capacity as it expresses itself in an organizational context. Second, drawing on this model, we will discuss the kinds of experiential learning objectives that we propose should be targeted by an effective program of experiential education in business administration. Finally, we will develop a typology of experiential educational strategies through which these objectives might be achieved.

A CONCEPTUAL MODEL OF INDIVIDUAL ABSORPTIVE CAPACITY

Earlier, we noted that we distinguish between experiential learning and experiential education. In the context of our discussion, education refers to the educational resources being marketed to the student. These are operant resources (Vargo & Lusch, 2004), interacting with the student (also an operant resource) to produce learning. Here, our special interest in learning that is critical to the student's individual absorptive capacity.

Following Cannon, Feinstein, Friesen, & Yaprak's (2013) analysis, we conceptualize this learning in terms of the cognitive (Bloom, Englehard, Furst, Hill, & Krathwohl, 1956), affective (Krathwohl, Bloom, Bertram, & Masias, 1964) and psychomotor (Simpson, 1974) educational taxonomies. We will place special emphasis on the cognitive taxonomy as reconceptualized by Anderson and Krathwohl (2001) in which the authors distinguish between a "knowledge" and a "cognitive process dimension (see

EXHIBIT 2
THE THREE DIMENSIONS OF EDUCATIONAL TAXONOMIES

Cognitive Domain	*Affective Domain*	*Psychomotor Domain*
Knowledge, or the ability to recall ideas such as facts, concepts and theories	*Receiving*, or the tendency to recognize and pay attention to important stimuli	*Perception*, or the ability to sense objects, qualities and relationships via sensory organs
Comprehension, or the ability to understand and make intellectual use of knowledge	*Responding*, or the tendency to act in appropriate ways as a result of a stimulus	*Guided response*, or the ability to perform a specific act under the guidance of a teacher
Application, or the ability to map concepts onto actual objects, events or phenomena encountered in the real world	*Organization*, or the arrangement of values into a coherent, stable system	*Complex overt response*, or the ability to perform a complex pattern of acts
Analysis, or the ability to break ideas down into their parts and logical premises	*Characterization by a value*, or the use of values to control one's behavior	*Adaptation*, or the ability to alter an act to meet the demands of a new situation
Synthesis, or the ability to develop new ideas from apparently unrelated parts		*Origination*, or the ability to develop new acts through the application of unrelated skills
Evaluation, or the ability to judge the merit of ideas for given purposes		

Source: Hugh M. Cannon, Andrew H. Feinstein, and Daniel P. Friesen. "Managing Complexity: Applying the Conscious-Competence Model to Experiential Learning*," Developments in Business Simulations and Experiential Learning*, Volume 37, 2010, p. 179.

Cannon & Feinstein, 2005, for a summary). Both dimensions are hierarchical, moving from relatively low-level (albeit important) learning to higher, more complex levels. The knowledge dimension includes *factual, conceptual, procedural,* and *meta-cognitive* levels. The process dimension includes *remembering, understanding, applying, analyzing, evaluating,* and *creating.* Again, all of these levels are important to absorptive capacity. However, the higher levels are the most critical, and their importance increases with the difficulty of the absorptive task. This is particularly true for the process dimension, as illustrated in Exhibit 1. Given the centrality of the educational taxonomies to our discussion, we have included summaries of them in Exhibit 2 and Exhibit 3.

Exhibit 1 portrays the way individual absorptive capacity operates within an organizational context. In order to frame its application more vividly, we will view it from the perspective of a recent business school graduate who is working for a food-service marketer. As a rising star in the organization, she faces a never-ending stream of problems, the resolution of which is a result of the clever use of knowledge. The problems range from eliminating inefficiencies in the employee payroll system by acquiring an "off-the-shelf" software solution, to increasing customer loyalty by adapting an existing customer relationship management system to the particular needs of the company, to developing a new line of theme restaurants by creatively integrating knowledge from the wilderness tourism industry with anthropological studies of Native American food rituals.

Clearly, our star manager is not responsible for working out the technical details involved in any of the aforementioned solutions. However, she functions as a gatekeeper and facilitator, recognizing and acquiring the information needed to put the problem-solving process in motion. In terms of Exhibit 1, she searches for external sources (Box d) to solve her problem, chatting with industry colleagues, a former anthropology professor, and a brother-in-law who owns a company that organizes wilderness camping trips (*interpersonal sources*). She then applies an intensive Google search and subsequent exploration of related materials available from the internet (*impersonal sources*).

In Cohen and Levinthal's (1990) original conception of absorptive capacity, the framework made no distinction among types of information. However, later work by Zahra and George (2002) distinguishes between *potential* (acquisition and assimilation) and *realized* (transformation and exploitation) capacities. Lane, Koka, and Pathak (2006) characterize these capacities in three categories: *exploratory, transformative,* and *exploitative.* Presumably these capacities involve different types of information and/or information processing capabilities. In our model, we begin by classifying the *absorptive tasks* (*acquisitive, adaptive,* and *inventive*), as portrayed in Box a. An individual's relevant absorptive capacities grow out of the interaction between the cognitive processes and knowledge dimensions posited in Anderson and Krathwohl's (2001) revised cognitive taxonomy (Exhibit 3). These are represented in the *Critical absorptive skills* (Box b) and

EXHIBIT 3
THE THREE DIMENSIONS OF EDUCATIONAL TAXONOMIES

THE KNOW-LEDGE DIMENSION	THE COGNITIVE PROCESS DIMENSION					
	1 Remem-bering	2 Under-standing	3 Applying	4 Ana-lyzing	5 Evalua-ting	6 Creating
A. Factual						
B. Conceptual						
C. Procedural						
D. Meta-cognitive						

Source: Adapted from Lorin W. Anderson and David R. Krathwohl. *A Taxonomy for Learning, Teaching, and Assessing.* New York: Longman, 2001, p. 28.

Individual's prior relevant knowledge (Box e). Identifying relevant information in Box g draws on *perception* (line j) from the psychomotor hierarchy (see Exhibit 2) and *receiving* (line j) from the affective hierarchy (Exhibit 2). Adaptive tasks (Box h) incorporate acquisitive tasks (Box g) as well. Inventive tasks (Box i) incorporate both adaptive and acquisitive tasks. Of special significance for our food-service manager (and individual absorptive capacity in general), the required capacities are not necessarily evoked in sequence as the Zahra and George (2002) or Lane, Koka, and Pathak (2006) models would seem to imply. Faced with an acquisitive, adaptive, and/or creative task, the manager has to visualize a holistic end solution with sufficient clarity that she can pursue the necessary information and sell the organization on investing the resources necessary to transform and exploit it.

This leads us to the right-hand side of Exhibit 1, where an *environmental trigger* (Box f), consisting of some kind of opportunity or threat, activates an *organizational problem response* (Box o), and the organization makes a *role and problem-solving assignment* to our manager (Box p). Now, within the *organizational environment* (Box c) her job is to shepherd the knowledge she has acquired through the organization's exploratory, transformative, and exploitative processes (Lane, Koka, & Pathak, 2006), depicted as the *application of new knowledge to organizational problems* (Box q). To do this, she draws on her own *mental models* (Box t) consisting of personal assumptions, or frameworks (Kim 1993) that govern her classification and interpretation of experience (Carley & Palmquest, 1992). These set the boundaries of her *problem-solving strategy* (Box r). The boundaries are expressed through both the goals and procedures she establishes for the problem-solving process (Shank & Abelson, 1977).

Typically, a manager such as our food-service star will develop and implement her problem-solving strategy in consultation with other key members of the organization (represented by o*rganizational interface* in Box s). Her level of success is revealed in both her *reflective experiential learning* (Box u) and her actual *performance* (Box v). Her learning provides feedback for making any corrections that might be needed in her problem-solving strategy, following Kolb's (1984; Kolb & Kolb, 2005) theory of experiential learning, adapted from Lewin's (1947) concept of action research, Dewey's (1938) theory of experiential learning, and Piaget's (1970) model of learning and cognitive development. To the extent that this fails to address the problems she encounters, she might reconsider her basic mental models, following what Chris Argyris (1976, 2002) refers to as double-loop learning. The Lewinian experiential learning cycle (what Argyris would call single-loop learning) not only converges on a final solution for the organization's problem, but it also generates additional learning, as does double-loop learning. This learning is captured on both the mental models the manager uses in her on-going decision making, but also in

the larger store of knowledge that helps determine her overall absorptive capacity (represented in *Individual's prior relevant knowledge,* box e).

Of lesser importance to our discussion, but enormous importance to our star manager, is the impact of her *actual* performance (Box v). This affects her *individual status and credibility* within the company (Box w). It interacts with *organizational structure and culture* (Box x) to determine her ability to sell her ideas to those who command the resources involved in the company's larger absorptive capacity, facilitating or dampening her ability to use her own absorptive capacity in future organization problem solving. In this context, the organizational structure refers to the formal title and responsibilities the manager is given, her access to other managers who may command necessary resources, and so forth. The organizational culture refers to the values, norms, and informal relationships that also help determine the allocations of company resources.

DEVELOPING EXPERIENTIAL STRATEGIES

Let us now turn our attention to the implications our understanding of individual absorptive capacity might have for developing an experiential business curriculum. That is, what should we do to help business students develop absorptive capacity so they can step into organizations as we have just imagined with our hypothetical star food-service manager? We have summarized our conclusions in Exhibit 4. The exhibit is relatively self-explanatory, including references to the specific boxes in Exhibit 1 from which each objective emerges. The Exhibit develops a general educational strategy for achieving each objective. Finally, it provides a brief example of the kind of experiential exercise that might be embedded in the curriculum to help implement the associated strategy. Given the self-explanatory nature of the Exhibit, we need not discuss it specifically, box by box as we did for Exhibit 1. Our purpose here will be to briefly walk through the theoretical themes that underlie the objectives, strategies and exercises, seeking to provide general principles that can be used in the development of additional exercises.

Theme 1: The Role of Knowledge

The first theme has to do with the role of knowledge, which we may conceptualize in terms of the knowledge dimension summarized in Exhibit 3. Exhibit 5 elaborates, breaking the general categories down into useful and descriptive sub-categories. Again, the exhibit is relatively self-explanatory, which makes sense, given our ubiquitous exposure to knowledge. The most troublesome category is meta-cognitive knowledge, which is recursive in nature. That is, it refers to itself; it is cognition about cognition (Flavell, 1979). The concept is profound, because it enables us to think about ourselves as data, a uniquely human capability. The question is how the various levels of

EXHIBIT 4
STRATEGIES FOR DEVELOPING INDIVIDUAL ABSORPTIVE CAPACITIES

Objectives	*Strategy*	*Example*
Impersonal search capabilities. Develop skills and habits relating to finding information on the Internet and through other archival sources (Box d	Build fact-finding assignments into every aspect of the curriculum.	Begin classes with a brief discussion of what students were able to find on the Internet and elsewhere relating to the topic of the class.
Interpersonal networking. Learn to nurture and utilize interpersonal networks as a source of new knowledge (Box d of Exhibit 1).	Encourage students to consult with personal sources as part of their learning activities.	Require students to identify and consult with personal sources prior to completing program assignments.
Cognitive processes. Exercise a full range of thinking skills as tools for processing information to address acquisitive, adaptive, and inventive tasks (Box b of Exhibit 1 and Exhibits 2 and 3).	Orchestrate assignments to address and reinforce a full range of cognitive processes, using debriefing techniques to help students understand what they are doing.	Embed "What did we just do?" exercises throughout the curriculum, where teachers guide students in analyzing the cognitive processes used in solving a particular problem.
Diverse knowledge base. Acquire a large and diverse base of knowledge (Box 3 of Exhibit 1).	Encourage students to look for relevant information from a diverse range of sources, "connecting the dots" between general education requirements, general cultural awareness, the fruits of intellectual curiosity, and business.	Include "Did you know?" discussions in classes, where students are rewarded for finding and sharing diverse, but relevant information, such as the etymology of the word "finance," showing how people's thinking evolved over time.
Interpersonal skills (emotional intelligence and shared mental models). Develop the self-awareness, self-regulation, social skill, empathy, and motivation, as well as the understanding needed to work effectively in groups (Box s of Exhibit 1).	Incorporate emotional and task-related interpersonal reflection into the curriculum, supported by a carefully developed culture of mutual trust and respect, non-judgmental attitudes, and emotional honesty..	Embed "What just happened?" discussions throughout the curriculum, where teachers guide students in analyzing the emotional and interpersonal dynamics along with the task-related content of experiential activities.
Single-loop learning. Develop the skills and habits necessary to learn from experience by reflecting, conceptualizing, experimenting (Boxes q, u, and r of Exhibit 1).	Encourage students to incorporate single-loop learning into their experiential problem-solving approach, reflecting on experience, conceptualizing issues, experimenting with new approaches, and repeating cycle.	Include brief review of single-loop cycle prior to experiential exercises and follow up with analysis of actual applications in debriefing process.
Double-loop learning. Develop the skills and habits necessary to learn from the experience of learning, evaluating mental models and the associated objectives, assumptions, and personal/ social norms (Boxes q, u, t, and r of Exhibit 1).	Encourage students to incorporate double-loop learning into their experiential problem-solving approach, identifying and evaluating the assumptions embedded in the single-loop cycle in light of actual experience.	Include brief review of double-loop cycle prior to experiential exercises, following up with analysis of actual applications in the debriefing process, focusing on situation-specific issues and common problems of denial and overcompensation.
Tacit knowledge. Internalize knowledge and skills so they can be applied effectively on an intuitive, or instinctual, basis. (The need to process Boxes g, h, & I in Exhibit 1 quickly and instinctively).	Review curriculum to ensure that targeted skills are addressed and reinforced, along with experiential feedback, throughout the program.	Assign an on-going cross-functional committee to review curriculum, pedagogy, and student performance on a regular basis.

knowledge fit into our strategies for nurturing individual absorptive capacity in our students.

If we return to Exhibit 1, we note the critical role played by prior relevant knowledge in Box e. What does this mean, and why is it so important? What do Cohen and Levinthal (1990) mean when they say, "The premise of the notion of absorptive capacity is that the organization needs prior related knowledge to assimilate and use new knowledge. Studies in the area of cognitive and behavioral sciences at the individual level both justify and enrich this observation. Research on memory development suggests that accumulated prior knowledge increases both the ability to put new knowledge into memory, what we would refer to as the acquisition of knowledge, and the ability to recall and use it" (p. 129)? They argue that the accumulation of knowledge requires the development and organization of categories into which the knowledge fits. This provides a basis for understanding new knowledge, by comparing and contrasting it with prior knowledge. New insights and understanding comes from evaluating the degree of fit with various established categories and determining how the categories would have to be modified to make a better fit.
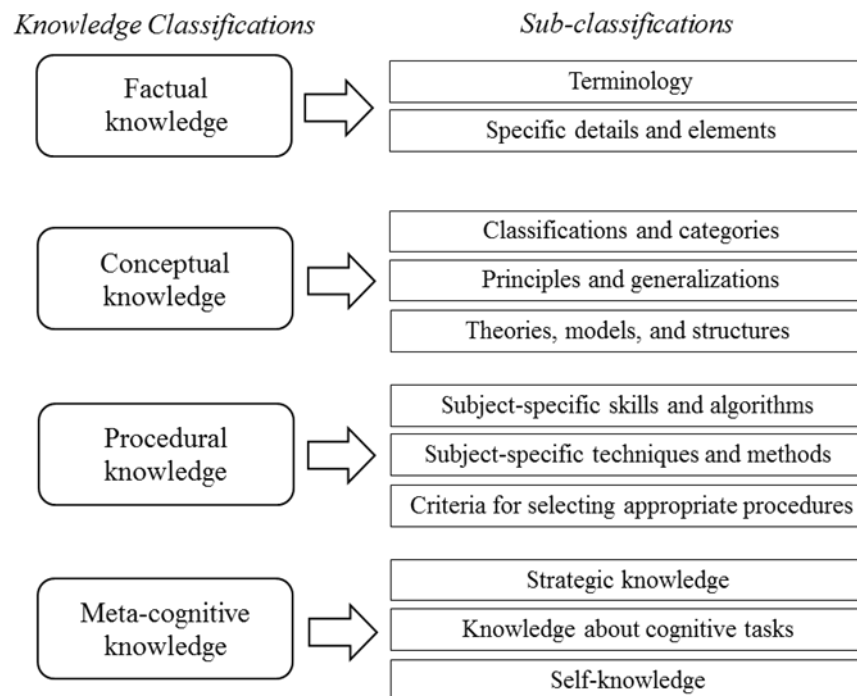
Sweller (1988) provides some valuable insights. He suggests that problem-solving ability consists of two fundamentally different, and often conflicting problem-solving skills. The first is a "means-end" analysis approach, where the problem solver searches for information that will logically narrow the range of feasible alternatives until only one remains. The second involves "schema acquisition," using heuristic approaches to identify potentially useful pieces of knowledge that might provide useful problem-solving insights. This involves accumulating new knowledge and sorting it into relevant categories (schemas, or schemata), following the process describe in the previous paragraph. Sweller argues that means-end problem solving can use so much cognitive capacity that it inhibits learning (schema acquisition). If both means-end analysis and schema acquisition are essential to absorptive capacity, how do our students solve this problem? Exhibit 1 suggests three approaches. One we have just mentioned, to encourage them to acquire as much diverse information as possible (Box e). The next two involve developing efficient information acquisition skills. Their efficiency would be expressed in a relatively low consumption of cognitive capacity, thus facilitating their use with intensive means-end analysis. Box d portrays two of these: using modern archival search tools such as Google, and the other is to develop a large network of human resources with whom one may quickly exchange knowledge.

Theme 2: The Role of Cognitive Processing

Note from our discussion of knowledge that schema acquisition involves much more than just exposing oneself to new knowledge. It involves continually scanning networks of schemata, looking for analogous structures and modifying or creating new ones as necessary. This involves

EXHIBIT 5
AN ELABORATION OF KNOWLEDGE TYPES IN BLOOM'S REVISED TAXONOMY

From Lorin W. Anderson and David R. Krathwohl. *A Taxonomy for Learning, Teaching, and Assessing*. New York: Long-

cognitive means-end analysis, seeking to narrow the range of alternative categories until only the one with the best fit remains. In terms of Exhibit 1, we see this operating throughout the model.

First, Box b draws on the cognitive processes portrayed in Exhibit 3, along with some of the affective and psychomotor processes from Exhibit 2, to reconcile the new knowledge flowing from Box d to address the absorptive tasks portrayed in Box a. The end result is to bring the new knowledge to bear on the organizational problems portrayed in Box g. Second, we have referred to Kolb's (1984; Kolb & Kolb 2005) experiential learning cycle, which we have associated with Argyris' (1976, 2002) cycle of single-loop learning. This is portrayed in Exhibit 1 as the cycle of activities represented in Boxes q, u, and r. A third application involves Argyris' (1976, 2002) concept of double-loop learning. This is portrayed as the cycle involving Boxes q, u, t, and r. Fourth, we have noted the collaborative interface among individuals in the organization involving a learning cycle between Boxes s and t. We might note yet another set of processes operating behind the scenes in the interaction between the individual and the organizational structure and culture portrayed in Boxes w and x.

In order to illustrate the role of cognitive processing, let us return to our star food service manager. Recall that her final assignment was to develop ideas for a series of theme restaurants. Company executives had been stymied by the competitive environment in the food-service industry, with new restaurants coming and going, with virtually no viable cuisine unexploited. Our manager was asked to research the problem. In discussing the matter with a number of friends and professional colleagues from various industries, our manager began to encounter ideas that related to food and restaurants, but did not neatly fit. For instance, she talked to people about the eating experiences they had on cruises where the food was one of the major attractions, but it was packaged as part of a different kind of product. Then she talked to people who had been on rafting trips and wilderness adventures, camping, safaris, and self-guided road trips to different countries. Again, food was part of a different kind of product, but in these cases, food gained much of its attractiveness from the larger experience rather than the other way around (as in the case of the cruise). The authenticity of the eating experience became much more important.

Drawing on Sweller's (1988) framework, our manager's cognitive processing involved a cycle of schema acquisition and mean-end analysis to classify and evaluate the new information. From the perspective of the various educational taxonomies (Exhibit 2), schema acquisition draws heavily on *knowledge*, *comprehension,* and *application*, while means-end analysis tends to lean more heavily on higher-level processes, such as *analysis* and *evaluation* (accounting for Sweller's finding that means-end analysis is particularly demanding on cognitive

capacity). However, as we can see from a comparison of the original cognitive taxonomy portrayed in Exhibit 2 and the revised version in Exhibit 3, *synthesis* (corresponding to *creative* processing in the revised taxonomy) has come to be seen as involving the highest order of processing – the synthesis of schema acquisition and analysis/evaluation required to develop new schemata.

The dynamics of cognitive processing become even more interesting when we view them through the lens of double- versus single-loop learning. One could view our manager's theme-restaurant experience as an application of single-loop learning, where she experimented with each idea (in her mind, in this case), reflected on it, conceptualized it, and developed a new experiment to test her new conceptions. But compare this with the company executives who were having trouble coming up with new ideas. They were constrained by the way they thought about the restaurant industry. It was not about entertainment or experience; it was about food. Furthermore, to think of it differently was inconsistent with the fundamental assumptions and values around which they had built their careers. For them, success in the project required double-loop learning, because it required a fundamental change of values and assumptions.

Now, consider the problems our manager would have in her interactions with other members of her organization. Given the orientation of the company's top executives, we would expect an organizational culture to have developed around their assumptions and values regarding the nature of their industry. This would impact on her effectiveness in two ways: First, it would reduce her credibility (the interaction between Boxes x and w in Exhibit 1). Second, it would impact on her ability to work effectively with the other members of the organization who would be tasked with developing and executing the strategy she was suggesting because they would be unlikely to share the mental models (Box t) through which her strategy had to be viewed in order for it to make sense. This would make effective communication very difficult (Carley & Palmquist, 1992; mohammed & Dumville, 2001). To resolve these problems, she would have to again apply her absorptive capacity, this time searching for and transforming meta-cognitive schemata that would enable her to instigate a change effort within the organization, fostering double-loop learning with respect to the fundamental assumptions and values regarding the nature of the industry. We will revisit this problem in the next section.

Theme 3: The Role of Effective Interpersonal Skills
We have already discussed the role of interpersonal skills as a requisite tool for working with the other members of an organization that are usually required to realize the fruits of an individual's absorptive capacity (Boxes r, s, and q of Exhibit 1). Argyris' (1976, 2002) concept of double-loop learning figures prominently in this discussion, because it addresses the problem of adjusting

the underlying assumptions contained in an individual's mental models in order to better fit the realities of a situation. We have also noted the importance of shared mental models for effective communication and group efficiency (Mohammed & Dunville, 2001). However, a key element in the theory of double-loop learning is people's natural resistance to changes in the underlying assumptions that guide their behavior. The change involves the higher levels of affective as well as cognitive learning, as characterized in Exhibit 2. That is, it involves learning new ways of responding to, organizing of, and characterization of concepts by values.

In order to address learning along the affective taxonomy of educational objectives, we will draw on the theory of *emotional intelligence*. Emotional intelligence is "…the ability to perceive emotions, to access and generate emotions so as to assist thought, to understand emotions and emotional knowledge, and to reflectively regulate emotions so as to promote emotional and intellectual growth" (Mayer & Salovey, 1997, p5). While a number of different theories of emotional intelligence have been proposed over the past two decades (see Mayer, Roberts, & Barsale, 2008), they all involve reasoning about emotions and using emotions to enhance reasoning. Of particular relevance to our discussion is the fact that this ability expresses itself in both understanding of one's own emotions and how they influence decision-making and understanding the emotions and decision-making of others (George, 2000).

In order to visualize how this applies, let us return to our star food-service manager. Imagine that there are key executives and team members whose mental models are getting in the way of their accepting her suggestions. Her awareness and understanding of her own emotions (emotional intelligence) will help her manage her own responses to an extremely frustrating and seemingly senseless situation. Her ability to understand the perspective of her executives and team members will not necessarily make their resistance any more palatable, but it may provide insights that will help her explain the situation in terms they will understand, facilitating a double-loop intervention. Certainly, her empathy with their emotional responses will win trust and credibility, establishing that she is not an enemy, but merely an insightful manager trying to do the job to which she was assigned.

Theme 4: The Role of Unconscious Competence

Our final theme addresses the fact that the skills comprising individual absorptive capacity often involve very fast, intuitive judgments. We see this at the interface of Boxes a and b in Exhibit 1. The manager must quickly sort through available information and intuit what sources might be needed for a better solution. As we noted earlier in conjunction with our discussion of Sweller's (1988) paper, there is a distinction between the schema-acquisition and means-end modes of problem-solving. To play the role of gatekeeper, the manager must quickly move back and forth between these two modes, first gathering, then sorting

and classifying, then identifying other sources that might prove fruitful for more useful ideas. The problem is that the cognitive load placed by rigorous problem-solving interferes with schema acquisition. Accumulated knowledge (Box e of Exhibit 3) frees up capacity, since it is even more readily accessible than impersonal and human sources.

This picture is incomplete when we consider the possibility of *tacit learning* (Polyani 1966), or *implicit learning*, leading to *tacit knowledge* (Reber 1989). Implicit learning takes place below the level of consciousness, rapidly, and without much apparent effort. The resulting knowledge can be complex, voluminous, and very difficult to communicate. Presumably, much of the absorption and categorization of schemata occurring during schema acquisition draws on the principles of implicit learning. While conscious cognitive processing effort can interfere, as Sweller (1988) suggests, schema acquisition appears to evoke principles of unconscious cognitive processing with relatively little cost, or with a cost that is bundled with that of the schema acquisition process.

The critical question with which we must grapple here is what, if anything, we can do to enhance the implicit learning capability. Reber (1989) provides a clue by making the distinction between "primitive" and "sophisticated" unconscious processes. He argues that primitive learning simply happens, unrelated to conscious effort. It involves the acquisition and classification of information, such as happens with words and grammatical rules in natural language acquisition. However, it does not provide meaning or complex problem-solving capabilities. Sophisticated unconscious learning – what Reber associates with intuition – does provide complex problem-solving ability. In contrast to primitive implicit learning, sophisticated implicit learning can be communicated relatively easily. Furthermore, it depends strongly on prior knowledge, regardless of its (implicit or explicit) source. This suggests that it can be fueled by encouraging students to acquire a broad range of knowledge. As we have seen, knowledge incorporates the full range of human experience, including thoughts as well as actual events. In other words, conscious problem-solving exercises and reflective debriefing (single- and double-loop learning) should contribute to a student's capacity for implicit learning and sophisticated intuition.

This provides the rationale for Cannon, Feinstein, and Friesen's (2010) argument in support of the concept of the conscious and unconscious competence cycle (Howell, 1982). Exhibit 6 illustrates the principle. It views learning along two dimensions, *consciousness* and *competence*. It roughly parallels Kolb's (1984; Kolb & Kolb, 2005) experiential learning cycle. The initial effect of experience and reflection is to illustrate how the student's initial intuition is generally insufficient to address the experiential problem, moving the student from *unconscious incompetence* to *conscious incompetence*. The student then engages in a process of deliberate problem-solving,

conceptualizing the problem in light of his/her experience and additional knowledge s/he might have acquired to address the problem, moving from *conscious incompetence* to *conscious competence*. The premise of tacit knowledge is that no two problems or experiences are exactly the same, thus requiring the student to engage in implicit learning, contributing to his/her stock of tacit knowledge (Eraut, 2000). Over time, the process generates sufficient tacit knowledge and enough sophisticated implicit learning ability to generate reliable intuition, moving the student from *conscious competence* to *unconscious competence*.
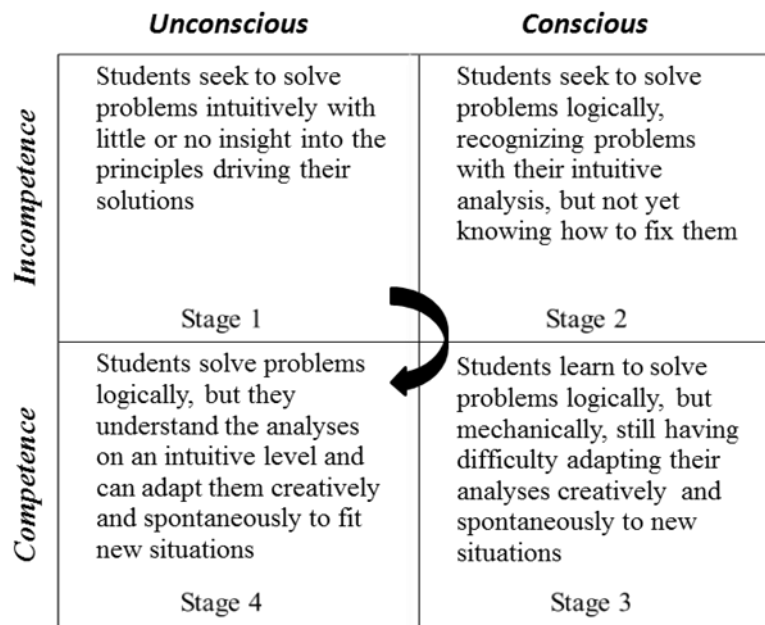
SUMMARY AND CONCLUSIONS

While organizational absorptive capacity certainly depends on individual capacity, the two are not the same. That is, the whole (organizational capacity) is not the sum of the parts (Cohen & Levinthall, 1990). Exhibit 1 helps understand why. Individual capacities enable people to act as conduits for information, and proactively energize and channel the organizational resources that comprise the organization's capacity. However, the nature of an organization is to specialize and divide labor. If we compare Lane, Koka, and Pathak's (2006) organizational model with our individual model (Exhibit 1), we see strong parallels, but the organizational model is more structured and specialized. While their capacity is expressed in three stages -- exploratory, transformative, and exploitative – individual managers tend more often to function as gatekeepers, a task that requires them to address their corresponding stages (what we have called acquisitive, adaptive, and creative) more or less simultaneously, visioning the possibilities, and then bringing their ideas as strategies to the organization for elaboration.

The point of mentioning this is to highlight the importance of being able to harness expert intuition, or what Cannon, Feinstein, and Friesen (2010) call unconscious competence. First, this suggests the need for enhancing student opportunities to developing tacit knowledge through continuous experiential learning, cycling through Kolb's (1984; Kolb & Kolb 2005) learning cycle, and to a lesser extent Argyris' (1976, 2002) double-loop learning to acquire tacit skills, but another part is learning to work backward, focusing on the conceptualization portion of the cycle. Second, tacit knowledge changes the dynamics of organizational learning. Because tacit knowledge is difficult to codify and communicate, it puts greater emphasis on personal interactions within the firm (Lam, 2000). This, in turn, creates a need for targeting practical skills in the area of interpersonal dynamics in the business curriculum, as suggested by our discussion of emotional intelligence and working with mental models through double-loop learning.

As a final note, the overriding theme in the strategies suggested in Exhibit 4 is to immerse students in an experiential learning culture that reinforces the principles we are trying to teach. In practice, this is often very difficult to do in the context of today's business school

EXHIBIT 6
THE THREE DIMENSIONS OF EDUCATIONAL TAXONOMIES

	Unconscious	Conscious
Incompetence	Students seek to solve problems intuitively with little or no insight into the principles driving their solutions *Stage 1*	Students seek to solve problems logically, recognizing problems with their intuitive analysis, but not yet knowing how to fix them *Stage 2*
Competence	Students solve problems logically, but they understand the analyses on an intuitive level and can adapt them creatively and spontaneously to fit new situations *Stage 4*	Students learn to solve problems logically, but mechanically, still having difficulty adapting their analyses creatively and spontaneously to new situations *Stage 3*

Source: Hugh M. Cannon, Andrew H. Feinstein, and Daniel P. Friesen. "Managing Complexity: Applying the Conscious-Competence Model to Experiential Learnin*g," Developments in Business Simulations and Experiential Learning*, Volume 37, 2010, p. 177.

organizations. Simon (1967) addressed this almost 50 years ago, arguing that business schools need to incorporate the values and culture of both industry and academe. He notes that, "Organizing a professional school or an R & D department is very much like mixing oil with water: it is easy to describe the intended product, less easy to produce it" (p. 16). The distance between business culture and the culture of the business schools appears to be widening as schools become scientific in their scholarly orientation. Simon, one of the most renowned scholars of his generation, was not arguing against a scholarly orientation, but merely its melding with the business culture it was designed to serve. This is a classic situation calling for Argyris' double-loop learning, applied to developing synergy between organizations with differing cultures (Argyris, 1967). This is a case of, "Physician, heal thyself!" We are the physicians, and our mandate is not only to heal ourselves, but to model the process for our students, so they can learn from example as well as personal experience.

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