Instructional Design for Sociocultural Learning Environments

Scott Grabinger, Ed.D.
University of Colorado at Denver and Health Sciences Center, USA
Scott.Grabinger@cudenver.edu

Cary Aplin
Graduate Student
University of Colorado at Denver and Health Sciences Center

Gitanjali Ponnappa-Brenner
Graduate Student
University of Colorado at Denver and Health Sciences Center

Abstract

To meet the goal of "preparing people for an ever-changing world", instructional programs need to apply strategies that focus on the development of critical thinking, problem solving, research, and lifelong learning. Those goals require a sociocultural approach to instruction emphasizing learning from experience and discourse. Sociocultural instructional designers question the applicability of traditional ID models because their molecular approach focuses on controlling the learner and environment, which often leads to inert knowledge. This article develops a sociocultural ID model and compares views of learning, roles of learners and teachers, instructional strategies, and the use of tools with the traditional ID approach.

Keywords: instructional design, sociocultural learning

Introduction: Instructional Design

Instructional design (ID) models describe a systematic process, typically delineated by phases . They provide a structure to use when designing instructional products and experiences to meet learners' instruction. ID models provide a series of steps to help us communicate with clients to determine project goals, learner outcomes, timelines, and budget. This is a systematic process with roots in behaviorist theory . This is a valuable process particularly useful for teaching concepts, procedures, and basic skills.

On the other hand, there are also learning goals that involve critical thinking, problem solving, and lifelong learning skills (Dunlap & Grabinger, 2003). Achieving these goals requires a different approach to instructional design — a sociocultural approach that emphasizes learning from experience and discourse. It can be challenging for novice and experienced instructional designers to create instructional experiences that reflect a sociocultural approach for it has a fundamentally different view of learning.

Sociocultural Approach

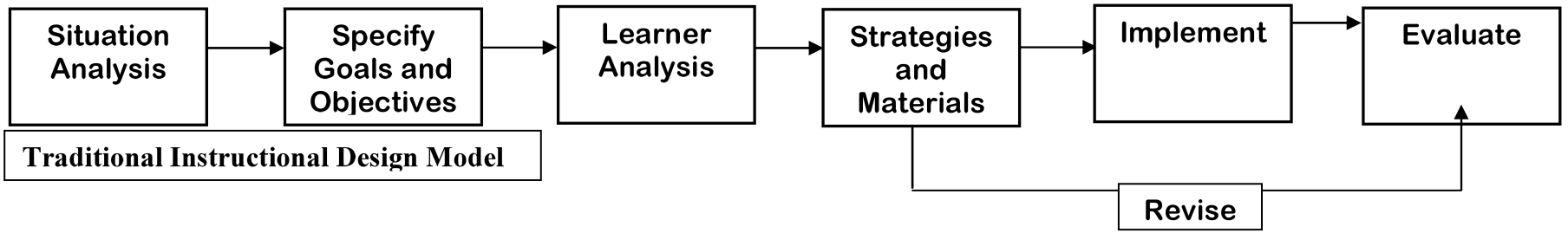
Teaching students takes place through a continual process of constructing, interpreting, and modifying their representations of reality based upon experience and negotiation of meaning with others . Students do not all learn the same things, not do they use the same methods. Rather, they learn by immersing themselves in authentic problems and collaborate with others. Situating learning within authentic environments enculturates learners into the community of practice — the community to which they aspire and work within. The assumption that an authentic learning environment is more important than any explicit teaching in a decontextualized environment raises interesting questions: What does an instructional design model for developing sociocultural learning environments look like? How does the process differ from designing instruction for a didactic teaching environment? How do instructional designers think differently about the design process?

Introduction to Differences

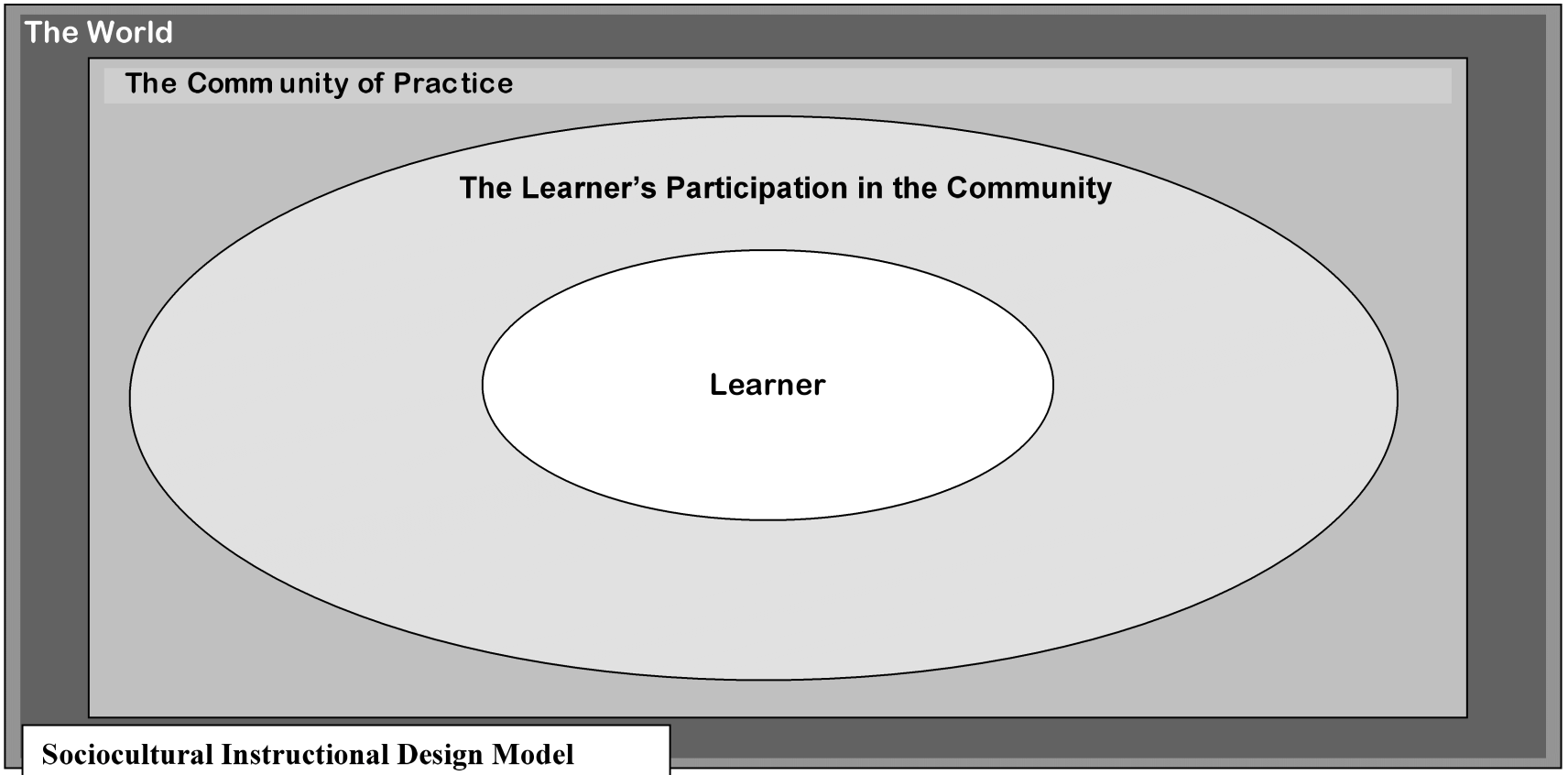
Traditional instructional design (TID) models break instruction down into small pieces (objectives) of knowledge classes (e.g., verbal information, concepts, rules, or problem solving) and recommend prescriptions (strategies, tactics, techniques, and materials) for each classification (see Figure 1). Each of these pieces/objectives is then taught outside of an authentic context, that is, outside the community in which the knowledge and skills will be practiced. These kinds of designs are excellent for learning discrete bits of information, practicing simple and basic behaviors, building complex psychomotor skills, and learning to use applications or processes that require a narrow, prescriptive approach.

A sociocultural approach to instructional design (SCID), in contrast, focuses on large, often ill-defined, units of instruction in contextualize settings. It is an appropriate model when the instructional goals require complex knowledge integration to enable learners to create flexible knowledge structures that facilitate critical thinking, problem solving, and transfer. Where the TID model views learning as a result of controlled responses to exercises and information, the sociocultural approach views learning as a consequence of loosely defined interactions with people, objects, and culture in a collective effort. The SCID takes a more integrated and global perspective of the design process, which is better represented by a contextual diagram than a process diagram. (See Figure 1.)

[NOTE: For purposes of comparison, the models are compared on their fundamental elements: views of learning, roles of learners and teachers, instructional techniques, and use of tools. The text within the manuscript introduces each of the elements while Tables 1,2, 3 and 4 add specific and additional details.]



Traditional Instructional Design Model



Sociocultural Instructional Design Model

Learning Framework

The learning and conceptual framework looks at the heritage of both models, comparing their theoretical and historical underpinnings. See Table 1.

Learning Framework: Traditional Instructional Design

Behaviorist and information processing learning theories provide the basis for traditional ID models. The behaviorist approach emphasizes the learning of a series of observable behaviours that lead to the overall goal — the desired behaviour. The approach posits that once a behaviour is learned, it may be applied and practiced again and again.

Similarly, information-processing theorists (Anderson, 1995; Chi & Cesi, 1987; Glazer, 1990) emphasize the organization of information through phased processes making a distinction between novice and expert thinkers. A novice's knowledge tends to be declarative — information about facts and rules. An expert's knowledge is procedural — the ability to link facts and rules to perform and solve problems. Again, the focus is on smaller, more discrete pieces of knowledge organized into a larger, more complex knowledge structure.

Both of these learning theories lead to instruction that attempts to control the learner's responses and environment, emphasizing the learning of knowledge and skills before one can begin to practice and solve real-world problems. Fundamentally, learning is an exercise in acquisition. Every learner should learn the same thing in the same way at the same time in the decontextualized classroom environment. Knowledge and skills needed for higher order skills including analysis, evaluation, and problem solving but not explicitly related to an authentic environment remains inert and is not readily available for application or transfer to novel situations (Perfetto, Bransford & Franks, 1983; Butterfield & Nelson, 1989; Clark & Voogel, 1985; Whitehead, 1929).

Learning Framework: Sociocultural Designs

Thus, constructivist, social, historical, and cultural models of learning (Bull, Kimball, & Stansberry, 1998; Cunningham & Duffy, 1993; Dijkstra, 1997; Duffy & Jonassen, 1992; Grabinger, 1996; Staupe & Hernes, 2000; Willis, 2000; Willis & Wright, 2000; Winn, 1993) have increasingly provided guidance to the teaching and learning process. These models question the applicability of TID models to the learning of complex higher order thinking skills because their molecular approach focuses on controlling the learner and environment leading to inert knowledge . In a sociocultural view of knowledge and learning, the learning goal is enculturation as legitimate members of a community of practice. Brown, Collins, & Duguid (1989) state

Given the chance to observe and practice in situ the behaviour of members of a culture, people pick up relevant jargon, imitate behaviour, and gradually start to act in accordance with its norms. These cultural practices are often recondite and extremely complex. Nonetheless, given the opportunity to observe and practice them, people adopt them with great success. (p. 37)

Enculturation results from interactions among people, objects, and culture in a collective effort to solve problems, create products, or perform service . Learning, then, is transformative rather than acquisitive. This emphasis on immediate participation within the community helps develop flexible knowledge structures that facilitate problem solving and transfer in new situations .

Table 1: Assumptions Behind Instructional Design Models

ID Components	Traditional Instructional Design	Sociocultural Instructional Design
Assumptions about Learning	• Based on information processing and behaviorist learning theories. • Emphasizes the creation of new behaviors through knowledge acquisition and practice. • Learning occurs in decontextualized learning environments. • The primary goal of learning is the acquisition of knowledge and skills to correct errors in performance or create new behaviors that may be applied later. • Takes a molecular view of learning goals, focusing on the smaller components of the goal. • Learning and teaching is a process that can be controlled. Successful teaching and learning comes about through the precise arrangement of information, practice, and testing. • Learners practice basic skills from verbal information to evaluation in a decontextualized environment. The components that lead to authentic practice are put together later. • Learners must become novices before they become experts. They must learn and practice "the basics" before they can participate in an authentic community of practice. • Each learner learns the same things in the same way at the same time.	• Based on cognitive, sociocultural, and constructivist learning theories. • Emphasizes the development of complex skills and knowledge structures through collaborative and generative learning strategies. • Learning occurs within authentic communities of practice. • The primary goal of learning is development of the abilities to use authentic cognitive, affective, and strategic skills and knowledge. • Takes a broad view of learning focusing on participation in a community of practice. • Learning and teaching is a continuous process that is mediated by the learner's prior knowledge, experience, and personal goals; the learning environment; strategy selection; and interpersonal interactions. • Learners practice higher order thinking and problem-solving skills in a form of cognitive apprenticeship that can be applied immediately in an authentic context. • Learners are considered members of a community of practice and work within the community from the beginning of the learning experience. • Each student constructs his/her own meaning.

Learner, Designer, and Teacher Roles

Roles: Traditional ID

See Table 2.

Students in traditional environments respond to stimuli: they listen and acquire knowledge. The process begins when teachers and designers analyze their students for traits that will affect the design of instruction. For example, if the students are young, then instruction may be simplified. The TID model assumes that there is a "best" way of organizing and presenting information from the teacher (master) and student (novice) for acquisition. When a student asks a question, the teacher provides the answer. Students make few decisions about what and how to learn, instead waiting to be told what to do. Students all work on the same content, tasks, and exercises at the same time. If the TID finds the *best way*, then students will respond appropriately and the instruction will work and all students will learn. If the instruction works, it can be repeated with the same results with different students. The distinction between an authentic community and a decontextualized classroom is clear — there is little overlap. If the instruction doesn't work, then it must be modified to find the best way.

Roles: Sociocultural ID

The learner's experience is the central component in sociocultural design. Rather than looking at the learner as something to be managed by tasks within a classroom environment, sociocultural designers believe that learning comes from the learner's participation in the community of practice. The designer makes it possible for learners to transform themselves into participating members of the community. The learning environment takes advantage of each student's abilities and prior knowledge and experience by making it possible for students to work on meaningful projects within the community. The difference between the authentic community of practice and the learning environment is fuzzy — if there is a difference at all.

Teachers interact with students at a metacognitive level rather than an informational level promoting meaningful discourse. For example, if a teacher education student asks the question, "I had an angry parent at parent-teacher conferences last night. How do I handle a confrontational situation with a parent whose child is failing my class and won't be able to play sports?" In a traditional environment, the teacher would answer, "The best way to diffuse a crisis is by reflecting the emotions of the angry parent in a calm and detached manner;" or "Well, if you are threatened, call security."

However, in a dialogue between teacher and learner, the sociocultural teacher may ask a series of questions that would help lead the learner to finding the solution like, "How did you handle it last night?" "What were the parent's reactions?" "What do you think you might have done to calm the parent down?" "Have you encountered anything like this before in your life?" "Have you seen other people deal with this? What did they do?" "What resources might you use?" "You know, Rachel had the same problem. Have you talked to her about how she handled it?" and so on. The objective is to encourage the learner to think through the problem rather than to expect to receive "the answer". Carrying on a dialogue tells the student that she/he is an equal member of the community.

Table 2: Roles of Learners and Teachers

ID Components	Traditional Instructional Design	Sociocultural Instructional Design
Roles of Learners and Teachers	• The instructional designer determines specific goals and objectives from two primary sources: 1. The correction of inappropriate behaviors and errors (e.g., arithmetic errors, failure to identify a geologic formation, rude treatment of a customer, etc.) that can be fixed through the delivery of information and practice of new skills. 2. The need for new behaviors not previously learned.	• The instructional designer sets broad goals for a unit of study. Goals come from: 1. Real problems, cases, or projects within the community of practice to which the learner belongs. 2. Learner problems and aspirations within their community of practice.
	• Learners have little or no role in determining the goals of the learning unit.	• Learners are collaborators in the learning process and have an equal role in setting goals.
	• Designers prepare information and practice activities within a controlled environment that lead to ideal behaviors needed to demonstrate learning.	• The teacher helps each learner work in a personal way toward his/her own goals.
	• All learners receive the same information and perform the same practice activities. Though designers generally treat all learners alike, they do attend to general (e.g., intelligence, SES, and age) and specific characteristics (e.g., attitude, prior knowledge, and experience).	• Learners can be responsible for their determining their personal goals and the learning processes to achieve those goals based on their own prior knowledge and experience. Each learner has individual weaknesses that can be strengthened.
	• Learners assume traditional roles: listening and reacting to the teacher and the assignments. They make few decisions about what to learn, how to study, and which resources to use. The designer assumes responsibility for the learning process.	• Learners assume a critical role in their own learning and in the learning of their peers. They make most of the decisions related to what to learn, how to study, and which resources to use.
	• Teachers pass on information to the learner. The clearer the information the more the learner will acquire.	• Teachers help learners solve problems, determine goals, gather resources and participate in the community.

Characteristics of Instruction and the Environments

The use of materials, character of the environments, and approach to instructional strategies point up differences between SCID and TID. See Table 3.

Environments: Traditional Designs

In traditional course designs, instruction is a matter of creating the proper environment and materials that can be passed on to the learners to help them respond appropriately (learn). Teachers and designers select instructional strategies and materials based on the goals, objectives, and learners. By responding to the strategies and materials, the students acquire information and skills. Recall that the objectives are based on learning small pieces of knowledge (e.g., verbal information, concepts, rules, or principles) — so small that it wouldn't make sense to try to learn them in an authentic environment. For example, an aerospace engineer learns the rule for determining the amount of lift of a specific airfoil (wing). The teacher prescribes a mnemonic as a memorization strategy and provides practice using the formula through word problems. The instruction is successful if the engineer can repeat and use the formula in a test. However, to facilitate transfer, we need to take this to another step and provide the real environment in which the rule will be used.

TID assumes that each learner learns in the same way and follows the same strategies as every other learner — strategies prescribed by the teacher. Therefore, there is practically no dialogue among the students or between the students and teacher. Interactions between students and teachers are usually confined to questions and answers that pass on more information to the student.

Evaluation is a critical strategy within traditional learning environments and points out whether students have learned what they were supposed to learn. But, since the learning occurred out of context, so does the evaluation. The evaluation focuses on the smaller objectives rather than whole performance (as seen with the engineer in the preceding paragraph). Evaluation may indicate the mistakes of acquisition, but does not always provide information to remedy the errors.

Environments: Sociocultural Designs

Conversation, discourse, talking, chat, dialogue, exchange, banter, discussion, communication, dissertation, critique, and *exposition* are all synonyms for the primary learning strategy in a sociocultural environment — discourse. The activation of discourse is everything — the chief mechanism for learning. Discourse governs most of the thinking about instructional strategies and decisions and about which tools to use. As described above (Learner, Designer, and Teacher Roles section), conversation between learner and teacher is more than passing on and acquiring information — it is thinking through problems.

Additionally, discourse among learners and other members of the community are equally important as discourse between learner and teacher. Students work together to help each other learn and grow as members of the community. They share their findings, problems, and data via the tools that encourage discourse. Conversations with the community helps them enculturate to the community of practice.

A sociocultural approach does not eliminate the need for other types of learning strategies including mnemonics for memorization, practice for rules, or outlining for organization. However, the learners choose which strategies are applicable to their needs when they need them, motivating learning.

Performance-based assessment is another important strategy to develop lifelong learning skills and enculturation within the community. Assessment is both ongoing and summative. It provides specific, constructive information about improving learner performance. Learners are not penalized for making mistakes; rather a mistake is an opportunity to learn. Performance-based assessment does not ask learners if they have memorized terms or procedures. Positive, constructive participation indicates that the terms or rules or principles were learned. Performance-based assessment prepares the learner for a continuing, evolutionary, and growing role in the community, because in a community of practice, constant change is desirable and a sign of learning and growth.

Table 3: Characteristics of Instructional Environments

ID Components	Traditional Instructional Design	Sociocultural Instructional Design
Characteristics of Instruction and the Environments	• Learning often takes place in a decontextualized environment. Learners must learn the basics before engaging in more complex and authentic behaviors. • All learners perform the same activities. • Learning is an individual responsibility and activity. • Teaching strategies transmit information in small, simplified chunks leading to practice of desired behaviors. • Teachers interact to correct knowledge and practice deficits. If the correct strategies are used, then all learners will learn. • Evaluation takes place at the end of instruction. • Evaluation takes place in the classroom rather than in an authentic situation. • Evaluation often focuses on giving a grade based on memory as reflected in the ability to pass a test. • Insufficient learning or failure indicates a problem in the learning environment because the instructional strategies failed to pass on the necessary information. Failure is undesirable because it may lead to a habit of inappropriate behaviors. • Instruction is successful if learners have mastered the objectives.	• Learning occurs through interaction with the environment and others. Learning is complex and authentic from the beginning of the learning process. • Learners participate in activities according to their needs, strengths, weaknesses, and aspirations. • Collaboration and discourse with other members of the community play a major role in learning. • Teaching strategies focus on creating discourse among teachers, learners, and other members of the community. • Teachers focus on interacting at a metacognitive level with the learners. They help students analyze their learning deficits through questioning. • Assessment and evaluation is an ongoing process taking place throughout instruction. • Assessment of learning takes place by observing actual practice within the community. • Assessment is paired with detailed, constructive feedback aimed at improving performance. • Insufficient learning or failure is regarded as an opportunity — even desirable — because it leads to the refinement of learning through discourse and practice. Corrective feedback is a standard part of the evaluation process. • Instruction is successful if learners have reached the goals established at the beginning and have become enculturated into the community of practice.

Use of Tools

The use of tools in both environments is characterized primarily by who uses tools, the teacher or the learner. See Table 4.

Tools: Traditional Designs

In TID, tools and materials support the teaching and learning processes. Teachers use tools primarily to pass information on to the learners with the assumption that if they pass it on clearly then it will be learned. The military and industry designed overhead, film, filmstrip, slide, and opaque projectors to help military and industrial trainers deliver information. Schools adopted them for the same purpose.

Students use tools to solve decontextualized problems. For example, calculators support learning in math, physics, science, and chemistry. Word processors support learning in languages and social sciences. Video cameras support learning in the arts. When it is important for students to learn to use tools for job performance, then the tool becomes a focus of instruction rather than a means to an end — another form of decontextualization.

Tools: Sociocultural Designs

Experts in a community of practice use tools to perform their jobs every day. We are all grateful that surgeons have microscopic video cameras, aerospace engineers have calculators and wind tunnels, and firemen have ladders and hazardous materials suits. In one sense, tools are the most important part of a project. This convergence of tools, practice, and theory enables teachers and students to discuss, plan, create, and implement unique strategies for providing instruction within a unique environment.

Table 4: Use of Tools

ID Components	Traditional Instructional Design	Sociocultural Instructional Design
Use of Tools	• Tools support the teaching and learning process. • Teachers use tools to transmit information and demonstrate concepts. Clearly transmitted information leads to successful learning. • Learners use tools to participate in classroom-based activities. • Teachers view learner use of tools as a means to an end. Tools enable learners to contribute to the community. • If a tool is the object of instruction, then using the tool is taught as a separate piece of instruction rather than in its practice-based context.	• Tools support the teaching and learning process. • Tools are enablers of theory-based instructional strategies within the unique community of practice. • Learners use tools to participate within the community, to learn, and, ultimately, to improve the community. • Teachers view learner use of tools as a means to an end. Tools enable learners to contribute to the community. • Tools are not objects of instruction. Rather, tools help learners participate as equals with the community of practice.

Conclusion

So far, this paper has looked at the assumptions behind the ID processes, the roles of teachers/designers and learners, strategies, and tools. However, the particular context that has motivated this discussion comes from my work with adult, part-time learners; learners who want to learn what they need as fast as they can to apply within their community of practice. This learner poses unique challenges that can be met by a sociocultural approach to teaching and learning.

Many of us who work with mature, part-time students often complain about their lack of "dedication" to learning. We describe them as too busy to be good students, more interested in parking than actually attending class, not wanting to read or do homework, prone to whining instead of discussing, and failing to go "above-and-beyond" the class requirements. We plead, try rewards and punishment, bring in food, etc. Fundamentally we are still caught up in the TID approach, and thinking, "If I just find the right combination of rewards, punishments, materials, and assignments, it will be better. If I can just create a better environment, learning will burst forth." But, in reality, we are looking at controlling the environment rather than empowering and respecting the learner. Rather than complaining about them, we should choose to respect them. Rather than creating a learning environment that manipulates and controls behaviors, we need to create environments in which learners have equal responsibility for managing their learning.

A sociocultural approach provides meaningful ways to design instruction with a high degree of generalizability for adult learners. Adult learners need to feel valued as participants within a community where their prior knowledge and experience is respected and integrated into the instructional process. They rely on learning materials and resources that exist in the community and learn to contribute as individuals and to work collaboratively. The sociocultural part of Figure 1 reflects layers of context that become focal points of interactions. The learner is immersed within those contexts.

Do not underestimate the importance of involving students in their own instructional designs. Rather than force square pegs into a round hole, we make a square hole. It isn't that adult learners don't want to read, come to class or write papers. They'll read, write papers, and discuss issues as long as they believe that these activities will help them achieve their goals. They want to manage their own behaviors and make decisions about what and how they should learn. They also want to be part of a rich community of practice that will support them in reaching their goals. This does have profound implications for education. The teacher must find a way to use the learners' goals to meet the teaching goals. This also has implications for the course-based approach to instruction. Three-credit hour semester-based courses seldom meet the needs of adult students. Universities need to provide goal-based scenarios in more flexible time units to capitalize on what motivates adult students. This, however, is a topic for another paper.

In application, the design distinctions drawn here between TID and SCID are not as clear. They are fuzzy and often interact and blend together in creating the most efficient and effective learning environments. For example, one of the popular strategies in SCID approaches is problem-based learning (PBL). Howard Barrows, one of the developers of PBL was once asked if he ever lectured (seemingly a TID approach to teaching). He replied, "No, but I often give explanations to groups of students" (Barrows, personal communication). He was, in fact, lecturing. But, rather than provide a lecture out of context with the students seeing no immediate need, he waited until the students asked for the information and were motivated to listen. It is a subtle, but important distinction, like many of the features of the instructional design models discussed here.

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