Prescription for Adult Learning

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I. What is Learning?

While we are all learning from the minute we are born, defining learning and how people learn best is an argument that dates back to the ancient Greeks. Plato believed that all people are born with knowledge and that learning is merely recalling what we already know. For Plato, teaching simply helps the learner remember knowledge (Plato, 380 B.C./2000). Since Plato's time, experts in the field of educational psychology have done quite a bit of studying and research in this field and Plato's theory has been largely discredited. However, the discussion continues.

Learning as a Process of Acquisition and Application

While there is still no clear answer to the question of how people learn, what is clear to many is that learning is a *process* rather than an instantaneous event (Piaget, 1971; Knowles, 1980, Granott, 1998). Unlike a computer, we do not "download" information into our short- or long-term memory. Some process or sequence of events must take place between the learner and the environment for learning to occur. However, there is also disagreement around which processes best facilitate learning (Jarvis, Holford, Griffin, 1998). Therefore, my definition of learning accepts that there is not "one" way to learn anything. It also highlights that there are different processes that facilitate learning at different levels and that application of new knowledge, skills, and attitudes is key to the higher levels. Below is a summary of the primary learning theories that informed the "process" aspect of my definition.

Behaviorism

Ivan Pavlov, Edward Thorndike, John Watson, and B.F. Skinner were among the first to systemically research how we learn (Jarvis et al, 1998). They have been named "behaviorists" because their theories are concerned with observable behavior and believe that learning is a change in behavior

as the result of experience. For behaviorists, the learning process is simply the effect of a stimulus on a learner.

Ivan Pavlov is perhaps most well known for his research on classical conditioning. Observing that dogs salivate at the sight of food, Pavlov tried ringing a bell before showing the food and found that dogs began to associate the sound of the bell with the arrival of food. He noted that the dogs would salivate merely at the sound of the bell (Jarvis et al, 1998).

Edward Thorndike, John Watson, and B.F. Skinner built on Pavlov's theories of classical conditioning. Skinner, in particular, developed the theory of operant conditioning, which entails following a conditioned response with an additional stimulus to encourage or discourage behavior. This additional stimulus could be positive or negative reinforcement of the conditioned response behavior (Jarvis et al., 1998).

In this way, behaviorism solely focuses on the role of the instructor on learning new behavior and does not consider internal mental processes of the learner (Jarvis, 1998). Motivation to learn is paramount, but it is only created by extrinsic stimuli. In this model, a teacher becomes the instructor or deliverer of the conditioned stimulus and all learning can be defined in measurable and observable learning objectives.

These behaviorist theories laid the groundwork for my definition of learning. Specifically, they reinforced my ideas that learning is a process, that it must be applied (for the behaviorists, this means being observable), that it is affected by the environment and those in the environment, and that it's dependent on learner motivation. The following theories rounded out my definition.

Cognitive Theories

In contrast to behavioral theories, cognitive theories focus on what happens in the mind. For cognitive theorists, learning is a mental process that entails assimilating new knowledge with existing knowledge. Unlike behaviorists who focus on the role of the instructor in learning, cognitive theorists

focus on the interaction between the learner and the environment and the instructor's role in creating and enhancing that environment.

Jean Piaget is one of the leading cognitive theorists. He focused on the process of applying new knowledge as it relates to learning. For Piaget, "true learning" entails understanding a concept through one's experiences. He believed that the key to a learner's mental growth is their actions and experiences, both physical and mental. He writes: "intellectual evolution requires that both mind and environment should make their contribution" (Piaget, 1924). "So called" learning includes verbal training, habit formation, and mechanical mastery of a task. For Piaget, this "so called" learning is only helpful when it leads to true learning. In this way, Piaget would say that rote memorization of the steps in a process are not considered learning unless you have actually experienced the process.

Piaget's theories influenced my definition, but I do not hold that there is any learning that is not "true." Instead, my definition focuses on the different "levels" of learning, where acquisition of knowledge would be at the lower end of the spectrum and application would be at higher levels—what Piaget would call true learning. This taxonomy of levels of learning is discussed in more detail later. In addition, Piaget believed that all people are born with a natural curiosity and desire to learn—that motivation to learn is intrinsic.

Lev Vygotsky is another influential cognitive theorist who also focused solely on child development. However, Vygotsky focused on how people in our environment impact the learning process. Vygotsky developed the theory of the "zone of proximal development," which he defined as the "distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers" (Jarvis et al., 1998). Vygotsky focused on the learner's potential rather than his or her actual achievement and how this potential can be enhanced through teamwork, guidance, and coaching from others. However, this doesn't mean that any interaction with a

teacher or peer will help someone learn. In his article, "Vygotsky, the Zone of Proximal Development, and Peer Collaboration," Jonathan Tudge writes:

> Failure to see the zone and the theory as a whole means that it is difficult to differentiate Vygotsky's concept from any instructional technique that systematically leads children, with the help of an adult, through a number of steps in the process of learning some set of skills. The difference for Vygotsky is that the *context* in which the interaction occurs is of crucial importance. (p. 156)

In this way, Vygotsky believed that the environment and those in the environment play key roles in the learning process but simply the presence of others in the environment is not sufficient—experiences must be structured in such a way to aid learning. This belief is key to the second part of my definition of learning, that the environment and those in the environment affect learning.

Constructivism

Constructivist learning theories build upon cognitive theories. While constructivists vary in their beliefs, the main component is that "learning is always a unique product 'constructed' as each individual learner combines new information with existing knowledge and experiences" (Dick, Carey, and Carey, 2001). For constructivists, the learning process involves intrinsic and extrinsic motivation, social networks, and the learning context. One school of thought within constructivism is social constructivism, which holds that learners construct knowledge through their social interactions with others (Berkeley GSI Teaching and Resource Center, 2005). Situated learning is another area of constructivism, which focuses on the contextual nature of learning. Unlike the two schools of thought described above, constructivists' sole focus is on the experience of the learner; the instructor becomes a resource for learners.

One theorist who has contributed to the theories of constructivism is Malcolm Knowles. In his book *The Modern Practice of Adult Education,* Knowles (1980) refers to Piaget's theories and says:

> Out of this line of thinking came a new emphasis on education as a process of facilitating self-directed learning and a redefinition of the role of teacher as a facilitator of self-directed learning and a resource to self-directed learners. (p. 19)

Motivation

Unlike Piaget and Vygotsky, Knowles focused on the adult learner and found that while learner motivation is a key component in learning, it is not something to be taken for granted in adults. His focus on "self-directed learners" is another way of emphasizing the importance of motivation—in this case intrinsic motivation—for the adult learner. Knowles found that adult learners often feel their youth was the time to learn new skills and that, as adults, motivation to learn can be harder to come by. Knowles (1980) states: "One mission of the adult educator, then, can be stated positively as helping individuals to develop the attitude that learning is a lifelong process and to acquire the skills to self-directed learning" (p. 28). Unlike behaviorists who see all motivation to learn as extrinsic, Knowles actually argues that a focus on extrinsic motivation can be a hindrance for adult learning. He states:

> Adults have been so deeply conditioned by their previous schooling (under the pedagogical model) to perceive the appropriate role of learner to be that of dependent, more or less passive recipient of transmitted content, that even though they may be completely self-directing in all other aspects of their lives, the minute they enter into any activity labeled "education," they sit back, fold their arms, and say, "Teach me." (p. 46)

In their article "Abstraction, the Will, the Self, and Modes of Learning in Adulthood," Juan Pascual-Leone and Ronald Irwin also recognize that self-directedness is an important aspect of adult learning but they also acknowledge that it is not necessarily inherent in adult learners: "Self-directedness cannot always be assumed in adults; it is a prescriptive claim more than a description, and requires in the adult the presence of meta executives appropriate to the task" (44). Nira Granott (1998) also writes

about the importance of motivation in learning. For her, for learning to occur for adults, there must be an "appealing situation" where learners "have a reason for investing the effort to create developing learning. The learning situation must arouse their interest, involvement, and motivation" (p. 30). Creating this situation and arousing learner interest and motivation is therefore an important role of the adult educator. Knowles goes on to say, "… one of the tests of everything the adult educator does…is the extent to which the participants leave a given experience with heightened curiosity and with increased ability to carry on their own learning" (p. 28).

Motivation is a key component to my definition of learning; in fact, it states that all learning is *dependent* upon learner motivation, but also acknowledges that both intrinsic and extrinsic motivation have a role to play. Likewise, environment also affects learning, as it is critically entwined with motivation.

Knowledge, Skills, and Attitudes

Just as there is more than one type of learning process, there are also many types of learning. As stated before, all learning does not happen in the same way, and therefore understanding what is being learned will help determine the best process to help facilitate that learning.

A group of educators led by Benjamin Bloom in the early 1950s attempted to categorize learning by three primary learning domains: cognitive, psychomotor, and affective (Huitt, 2004). The cognitive domain focuses on thinking; affective on interests, attitudes, opinions, and values; and psychomotor on physical movement. These three domains are often referred to as knowledge (cognitive), skills (psychomotor), and attitudes (affective). Bloom went on to define various areas of knowledge within the cognitive domain that build upon each other from simplest to more complex (knowledge, comprehension, application, analysis, synthesis, and evaluation). Taxonomies for the affective and psychomotor domains have also been created.

While there is not universal agreement on these learning domains or the areas within them, Bloom's taxonomy can help an educator determine the appropriate learning process for the type of learning taking place. For example, while behaviorist teaching strategies can be appropriate for learning at the bottom of the taxonomy—such as knowledge— they are likely not appropriate for higher areas such as synthesis and evaluation. What Piaget would call "true learning" happens at the higher end of the taxonomy—such as synthesis and evaluation—and, as Piaget believed, would need to involve application on the part of the learner to take place.

Bloom's taxonomy strongly influenced my definition of learning. I believe that at his lowest level of learning—knowledge—learning can be acquired without application. However, at higher levels of the taxonomy learners must apply the ideas or skills learned. These higher levels of learning are what Piaget would call "true" learning; however, unlike Piaget, I *do* believe that lower levels of learning should be included in the general definition of learning.

Conclusion

Learning is the process of acquiring new knowledge, skills, and attitudes that can be applied in new and familiar contexts. It is dependent on learner motivation, both extrinsic and intrinsic, and is affected by the environment and those in the environment.

If we review the definition of learning we see that it encompasses ideas from various disciplines. Learner motivation is a key aspect of this definition, as well as the interaction between the learner, the environment, and those in the environment. While it can be frustrating that there is no "right" answer to the question "What is learning?", the possibilities for teaching and learning can be very liberating and energizing. The role of the educator is to review the learning theories and domains of learning and choose the appropriate instructional strategy for that particular learner in that particular context.

II. Observation Report

Cook Street Culinary School of Denver: An Example of Learning in Action

Learning is the process of acquiring new knowledge, skills, and attitudes that can be applied in new and familiar contexts. It is dependent on learner motivation, both extrinsic and intrinsic, and is affected by the environment and those in the environment.

This definition of learning could be seen in action during an evening cooking class at the Cook Street Culinary School of Denver. Cook Street offers cooking classes for professional and recreational chefs through day and evening courses. The school's Web site advertises its courses as participatory, saying, "Roll up your sleeves! … Every class we offer is hands-on with full student participation. Most classes culminate with a full meal and wine tasting" (Cook Street Culinary School of Denver, 2005).

I observed an evening course at the school targeted to recreational chefs. It was the fourth in a four-class series entitled "Classic Techniques: Essentials." On the night I observed there were 15 adult learners between the ages of 25 and 65 participating. An experienced chef taught the course with the help of an assistant. While this adult learning experience demonstrated various aspects of my definition of learning—including the acquisition and application of new knowledge, skills, and attitudes and the importance of the environment, those in the environment, and learner motivation—it also could benefit from application of appropriate adult learning theories.

Learning Knowledge, Skills, and Attitudes

The focus of this class was on new knowledge and cooking skills. Table 1 summarizes some of the knowledge, skills, and attitudes covered over the course of the class.

Table 1

Knowledge, Skills, and Attitudes Addressed During Cook Street Class		
Knowledge	Skills	Attitudes
• Five rules of roasting • Grades of red meat and where to buy them • Soup styles • Types of pan sauces • Definition of a gratin • Uses for compound butters	• Slicing potatoes for a gratin • Roasting nuts • Making an au jus • Making a butter sauce	• Feelings towards the grades of meat

The three-hour class consisted of four main activities. First, the chef discussed and demonstrated the knowledge and skills learners would be applying that evening (45 minutes). Next, learners applied the knowledge and skills by cooking with the two chefs and their fellow learners (105 minutes). Learners also participated in a wine tasting (10 minutes), and, finally, they served and enjoyed the meal they had prepared together (20 minutes).

When learners cooked the meal for the evening, they demonstrated the three attributes of developing learning as described by Nira Granott (1998) in her article "We Learn, Therefore We Develop." First, learners demonstrated a growth trajectory by using knowledge and skills established in the previous three courses to prepare the meal—each class built upon the ones before it. For example, one learner was asked to dice a bowl of shallots, which required that she use the knife skills she learned in a previous class. Other learners were asked to blanch vegetables, which was also a skill taught in a prior class.

The second attribute of developing learning, fundamental restructuring, could be seen as learners made a pan sauce from the roast beef they were preparing. One learner asked, "So could you do the same au jus technique with a turkey?" Her focus shifted from the steps involved in making the au jus to ways she could build upon that knowledge. This could also be seen as an example of self-scaffolding, the final attribute of developing learning. Another example could be seen as two learners

were planning to prepare a dinner together at a later date. They discussed when and where to buy ingredients and how to plan the meal, extending their application beyond the learning event.

These examples also reinforce my definition of learning. Learners could be seen applying the knowledge and skills they learned and planning to do so in new contexts.

Physical Environment

In his book *The Modern Practice of Adult Education*, Malcolm Knowles (1980) writes about the importance of the physical climate in adult learning experiences. He writes:

> The physical environment should be one in which adults feel at ease. Furnishings and equipment should be adult-sized and comfortable; meeting rooms should be arranged informally and should be decorated according to adult tastes; and acoustics and lighting should take into account declining audiovisual acuity. (p. 46)

The class was taught in a large open kitchen with a semi-circle bar that faced an open cooking area. There was a large island in the center of the kitchen with ample counter space for many people to prepare food simultaneously without being crowded. The food preparation and cooking areas were easily accessible by learners. Each learner had a place along the bar with eating utensils and glasses for water and wine. As students entered the class they were asked to sign in and choose a seat along the bar. A table in the back of the room offered coffee, cream, sugar, fruit, cheese, and bread for learners to enjoy. Low music was playing in the background and the lighting was soft but bright enough to read by and see what happened in the kitchen. There were also lights directly over each learner's seat at the bar. Aprons were provided for each learner placed on each chair. There were many locations where learners could wash their hands before participating, meaning that no student needed to wait in line at any time. All of these physical features of the classroom created an environment where learners appeared to feel welcome and comfortable.

In addition to the overall physical environment, the instructor took time at the beginning of class to establish a welcoming climate for learning. Learners asked questions of the chef as they arrived, moved behind the bar into the cooking area without being asked to talk to him, and talked amongst themselves as they ate appetizers and drank coffee. Knowles (1980) highlights the importance of this type of climate setting. He writes:

> I see the setting of a climate that is conducive to learning as perhaps the single most critical think I do as a facilitator of learning… It is at this point that participants get the feeling that they are seen as unique individuals who are respected and cared about for their individuality, or as a part of an anonymous mass. (p. 224-225)

One way Knowles recommends setting this climate is by greeting learners individually. The instructor greeted each learner as they arrived and made conversation about topics unrelated to the course, such as the upcoming ski season.

Course Structure

For the first 45 minutes of the class the instructor described what they were going to cover that evening. However, he did not ask students if they had been applying the techniques used in previous classes between class meetings or any other questions relating to the content; in fact, he didn't ask any questions at all for the first 30 minutes of class. This focus on the instructor without any input from learners is what Knowles (1980) would refer to as "traditional pedagogical practice" where "the function of the teacher is defined as 'to teach.' The teacher is expected to take full responsibility for what happens in the teaching-learning transaction. The learner's role tends to be that of a fairly passive recipient of the teacher's instruction" (p. 48). After the chef talked for 30 minutes, three students did ask questions, but this question phase only lasted for two minutes. The instructor did review the topics

from the previous class session by asking learners questions about the material for two minutes after his lecture.

After 45 minutes, the instructor asked, "How are you doing? Ready to get out of your chairs?" "Yes!" was the enthusiastic response from learners. Without additional prompting, all the learners washed their hands and began applying the techniques demonstrated by the instructor during his lecture. Learners' excitement at the chance to begin participating in the learning process is consistent with Knowles' theories about adult learners. He writes (1980) that adult educators should place an "emphasis on experiential techniques" such as skill-practice exercises as opposed to the "transmittal techniques so prevalent in youth education," such as the lecture that constituted the first 45 minutes of this class session.

However, while it could be argued that some students appeared uninvolved during the lecture stage of the class and there might be a more engaging way to cover that information, learners did apply the knowledge and skills demonstrated during this section as they cooked later. This highlights the first part of my definition of learning, that learning is the *process of acquiring new knowledge, skills, and attitudes that can be applied in new and familiar contexts*. The lecture stage of the class established a baseline of knowledge—at the "knowledge" level on Bloom's taxonomy—while the application activity moved that learning to higher levels of learning.

Motivation

The second half of my definition of learning states that learning *is dependent on learner motivation, both extrinsic and intrinsic, and is affected by the environment and those in the environment*. Adult psychologists also highlight the importance of motivation; Nira Granott (1998) writes that there must be an "appealing situation" where learners "have a reason for investing the effort to create developing learning. The learning situation must arouse their interest, involvement, and

motivation" (p. 30). This class was an excellent example of the importance of both intrinsic and extrinsic motivation in an adult learning experience. In my estimation, there were many motivating reasons learners had to take the course, including learning new knowledge and skills and the ability to participate in the cooking process with experienced chefs, enjoy a wine tasting, and enjoy a meal at the end of the class.

Let's examine the participatory nature of the class. The School's Web site highlights the fact that its classes are highly participatory, and I would argue that learners likely expect that when they register for classes at this school. The School describes the class as one that will "increase your efficiency in the kitchen while honing your skills in this fun and challenging four class emersion course" (Cook Street Culinary School of Denver, 2005).

The importance of participation was highlighted as I observed two particular learners in the class. At the start of the class all learners were present except for two. These last two learners arrived ten minutes after the start of the class. They were a male/female couple and were attending the class together. During the lecture stage of the class the male student, who we will call Learner 1, sat at the bar looking down at his hands. He yawned repeatedly, played with his pen, scribbled on his paper, and did not look at the instructor or the demonstrations. He did not make eye contact with the instructor or his peers. His partner tried to engage him, but he did not pay any attention to her. Likewise, the instructor did not make any attempt to engage him. These observations led me to believe that Learner 1 was not happy to be attending the class. I began to wonder if his partner had "dragged" him there.

However, a striking thing happened as soon as learners were asked to participate. Once learners got up from their chairs and began cooking, Learner 1 was one of the most involved students. He jumped at the chance to participate when asked by the instructor and made efforts to observe and be a part of all aspects of the cooking process, which was not true for all learners in the class.

Learner 1's stark shift in observable engagement once the "application" phase of the class began highlights the importance of application and motivation to my definition of learning. While we do not know for sure that Learner 1 was "bored" during the lecture phase of the class, his active involvement in the cooking process and the stark change in his demeanor are good indicators that this is true. Malcolm Knowles (1980) writes about learner's need for a new experience as a motivator for learning. He says, "People tend to become bored with too much routine, too much security. When their need for new experience is frustrated, they tend to develop such behavioral symptoms as restlessness, irritability, impulsiveness, or indifference" (p. 85).

In addition to being able to participate in the cooking process, another likely motivator for learners was the ability to enjoy a delicious meal at the conclusion of the class. As mentioned previously, the School's Web site advertises this by saying, "Every class we offer is hands-on with full student participation. Most classes culminate with a full meal and wine tasting" (Cook Street Culinary School of Denver, 2005). At one point, the instructor was encouraging everyone to try making a crepe by saying, "If you want to have dessert, you need to make a crepe!" Even though this challenge was superficial, as every learner enjoyed dessert regardless of whether they participated in the cooking process, after his prodding two students who had not made a crepe did do so.

Determining Whether Learning Occurred

The Cook Street cooking class did not conduct a formal assessment to determine if learning occurred for individual learners. In fact, if any one learner did not wish to participate they did not have to and they still would have been able to enjoy the meal at the conclusion of the class. That said, the instructor and his assistant did conduct informal assessments. They both checked in with learners to see how they were progressing. In addition, learners demonstrated the skills they learned as they applied them in the cooking process and when an individual learner struggled with a skill, the instructor would

demonstrate the correct approach and watch to see that the learner could then apply the skills on his or her own.

Conclusion

The Cook Street cooking class was an excellent example of adult learning in action, both as an example of best practices and areas for improvement. Examples of some of these areas are listed in the table below.

Best Practices	Areas for Improvement
• Welcoming and comfortable environment • Ability for learners to apply knowledge • Use of experiential techniques • Learner autonomy	• Lack of needs assessment • Lengthy didactic instruction without learner involvement • Lack of focus on creating a self-directed learner • Not acknowledging learners' past experience • Not having learners self-assess their ability level

The class highlighted the importance of application in the adult learning process but also showed that "lower" levels of knowledge help in that application. It highlighted the importance of learner motivation and an appealing learning environment in engaging learners and making them feel comfortable and welcome. However, the class was not structured in a way to explicitly build on learners' past experience or help learners develop goals for future learning.

III. Definition of Learning Needs

The Cook Street Culinary School addresses many different types of needs during its courses for recreational chefs, including organizational needs, individual needs, and learning needs.

Organizational Needs

The Cook Street Culinary School has its own needs for this class. First and foremost, the School needs to make money. To do this, they want students to register for additional classes or recommend the class to others. Therefore, the School's ultimate goal is that learners leave the class happy with their experience so they want to return. In this way, the School wants the class to meet learners' individual needs as well as their learning needs.

Individual Needs

Students come to this class, Classic Techniques: Essentials, with many different individual needs. Without talking to each student, it is hard to determine these; however, we can make some assumptions. First, the class started at six o'clock—just in time for dinner. We can assume that learners are hungry when they arrive or will be hungry at some point during the evening. To respond to this, the School provides food and coffee. Second, students likely want to have a pleasant experience in the course where they feel comfortable and welcome. To accomplish this, the School has built a learning environment that is comfortable and inviting. Even simple features contribute to this, such as multiple sinks to wash their hands so no student had to wait in line. This attention to the environment is consistent with sound adult education practice, as described by Knowles. He writes (1980):

> The physical environment should be one in which adults feel at ease. Furnishings and equipment should be adult-sized and comfortable; meeting rooms should be arranged

informally and should be decorated according to adult tastes; and acoustics and lighting should take into account declining acuity (p. 46)

Learners also had individual social needs. Four of the 15 students came in pairs; the remaining 11 students did not appear to know other students outside of class. We can assume, therefore, that some students in the class likely had a desire to meet new people and socialize with others in the class. To facilitate this, the School created a comfortable atmosphere where learners could talk before and during class. All these factors combine to meet learners' need for a pleasant experience.

Learning Needs

In addition to organizational and individual needs, the Cook Street Culinary School needs to meet the learning needs of its students for the class to be successful. The School identified specific topics this fourth class would cover (see Table 1). These topics were established by the school and do not change. One way to determine if these topics met students learning needs is their interest and engagement in the class. Out of the class of 15, 8 asked questions while they were in a large group. They asked many more questions as they cooked and worked individually with the chefs, but those were impossible to measure. In addition, all 15 students participated in the cooking portion of the class.

Table 1

Knowledge, Skills, and Attitudes Addressed During Cook Street Class		
Knowledge	Skills	Attitudes
• Five rules of roasting • Grades of red meat and where to buy them • Soup styles • Types of pan sauces • Definition of a gratin • Uses for compound butters • Characteristics of wine	• Slicing potatoes for a gratin • Roasting nuts • Making an au jus • Making a butter sauce	• Feelings towards the grades of meat

I also observed additional learning needs that students had. For example, one student struggled with her knife skills and asked the instructor how to chop a bowl of shallots. Other learners expressed interest in that topic so the instructor demonstrated correct knife skills to the entire class.

In addition, instructor continually made reference to how learners could use certain techniques when they entertain at home. This was not a stated learning need, but as recreational chefs it can be assumed that most learners would be applying these skills as they cook for friends and family (as opposed to in a professional situation). Learners asked multiple questions in this vein, such as, "So could you prepare all these ingredients ahead of time and then just throw it in the oven?" While students needed to learn how to apply these skills at home, their *desire* to efficiently entertain at home is an individual need—not a learning need.

Learners also had individual learning needs that they brought up with the instructor; for example, one learner asked how to prepare an abundance of butternut squash.

In addition, as a class about cooking, learner had learning needs stemming from all five senses as well. Learners needed to know how things were supposed to feel, taste, and smell. For example, as learners made the potato au gratin, they pushed the potatoes down to determine if it felt wet enough or if it needed more cream. Learners also smelled and tasted the different dishes as they cooked.

Another learning need was the reasons behind the cooking techniques demonstrated. As instructors described how to prepare each dish they also described the reasons for doing so; for example, the chef showed how to blanch green beans and told the class to boil the beans with the top off. He went on to tell learners the reason: because if you leave the top on the beans will lose their vibrant green color.

The Cook Street Culinary School's cooking class met many needs during the three-hour class I observed, including organization needs, individual needs, and learning needs. Without a better assessment of learners, however, it is difficult to determine if there were needs that were *not* met.

IV. Prescription for Adult Learning

This prescription for adult learning is based on my observation of the Cook Street Culinary School's class and presents a redesign for that class. This redesign is based upon the identified areas for improvement and my definition of learning, as follows:

Learning is the process of acquiring new knowledge, skills, and attitudes that can be applied in new and familiar contexts. It is dependent on learner motivation, both extrinsic and intrinsic, and is affected by the environment and those in the environment.

Class Description

As described in Section II, Observation Report, this class is the fourth in the School's "Classic Techniques: Essentials" series. It is meant for recreational chefs and is offered in the evenings. A summary of the class logistics is below.

Class Summary

Age of Learners	Number of Learners	Instructors	Length of Class	Time of Class
16-25	15	1 primary 1 assistant	3 hours	6 p.m. to 9 p.m.

Class Design

Objectives

All learners in Cook Street's "Classic Techniques: Essentials" class will accomplish the following during class:

1. Identify the reasons behind the four rules of roasting by applying them to a prime rib.
2. Correctly assemble an individual potato au gratin.
3. Compare the panade soup style with other styles.

4. Identify the correct flavor and consistency of an au jus pan sauce.
5. Identify ways to use a compound butter.
6. Correctly make a crepe.

Below is a summary of the activities planned for the class. A detailed discussion and rationale follows.

Class Design

Activity	Time Required
Activity 1: Needs Assessment	15 minutes
Activity 2: Didactic instruction and demonstration	15 minutes
Activity 3: Practice—Each learner will practice preparing the dishes demonstrated in the previous activity	90 minutes
Activity 4: Analysis—As learners taste the dishes, they will analyze techniques used and how they can be applied in new contexts.	30 minutes
Activity 5: Evaluation—Discussion about what was learned, what they thought went well, and their plans (goals) to apply these techniques in new contexts.	15 minutes

Activity 1: Needs Assessment

Time: 15 minutes

The instructor will begin the class by asking, "Has anyone tried making any of the dishes we made last week at home? If so, how did it go?" A follow-up question will be, "Did you learn anything new about that technique as you were doing it at home?" Since this is the fourth in a 4-class series, learners have been building upon their cooking skills in each subsequent class. Asking learners about success or challenges they experienced applying new skills at home will help the instructor assess additional support or instruction they might need in the current lesson. This will also give the instructor a chance to celebrate learner's success, thereby helping decrease any negative feelings about their performance. Kanfer and Ackerman (1996) write: "During the early phase of skill acquisition, when

individuals first confront the task and task demands are high, emotion-control instructions had a positive impact on performance, specifically among lower-ability individuals" (p. 163). Talking about their experiences will also allow students to learn from others' experiences.

Next, the instructor will ask, "Does anyone have any experience with the techniques or dishes we're going to cover tonight?" Follow-up questions will be, "Has anyone tried making any of these dishes at home? How did they turn out?" This discussion has multiple purposes. First, it will help the teacher determine learner's ability level and their feelings about their past performance, therefore assessing their cognitive, psychomotor, and affective learning needs.

Second, it will also allow learners to showcase their experiences. As adult learners, it is important to place emphasis on learner's past experience and demonstrate that the teacher knows they are important and valid. Knowles (1980) writes, "Because adults define themselves largely by their experience, they have a deep investment in its value. And so when they find themselves in situations in which their experience is not being used, or its worth is minimized, it is not just their experience that is being rejected—they feel rejected as persons" (p. 51).

Finally, this question will help learners begin to self-assess their level of expertise with the knowledge and skills to be covered. Knowles (1980) describes "conditions for learning" as features that make a learning environment more conducive to learning. One condition he describes is that "learners feel a need to learn." He recommends teachers create this condition by helping the learner "diagnose the gap between their aspirations and their present level of performance" and helping "the learner identify the life problems they experience because of the gaps in their personal equipment" (p. 57). Asking about learners prior experiences with the learning objectives is meant to accomplish just that.

Finally, this discussion will help the instructor identify current beliefs—or generalizations—learners might have about the topics to be covered that evening. Understanding learners' current knowledge structures that relate to the learning content will allow the instructor to build upon them

later. This approach is particularly important for adult learners, as they come to all learning situations with a large amount of past experiences behind them. To aide instruction, new information should build on preexisting knowledge structures (Ackerman 1998). In fact, success in applying new techniques might *depend* on an instructor understanding previous experiences. Meyer and Talbot (1998) have hypothesized that "old adults are…more likely to process the information and make a decision based on their prior knowledge and not on the information given to them in the task" (p. 194).

Activity 2: Didactic Instruction and Demonstration

Time: 15 minutes

While my observation of this class might have made it seem that having learners practice cooking techniques is the most important aspect of the evening's instruction, learners must be exposed to information before they can apply it. To make the best use of time, the instructor will provide key information about the content through didactic instruction; however, this phase will be shorter than the original class (down from 45 minutes to 15).

This form of instruction holds true to the first part of my definition of learning: *Learning is the process of acquiring new knowledge, skills, and attitudes that can be applied in new and familiar contexts*. In this case, learners will be focusing on new knowledge and skills at the lowest end of Bloom's taxonomy, "knowledge" (Huitt 2004). However, subsequent activities will allow learners to apply and practice these techniques, thus expanding their knowledge to higher levels. Juan Pascual-Leone and Ronald Irwin (1998) support this approach to instruction in their article "Abstraction, the Will, the Self, and Modes of Learning in Adulthood." They write:

> Whenever it is sufficient to the learner, [didactic instruction] is justified due to its efficiency. Efficiency in communication within this paradigm, however, is only possible when the learner can supply at each turn relevant experiential examples: experiential/infralogical schemes and

enough empirical knowledge (often acquired via reality learning) to make meaningful the didactic communication. (p. 59)

As we will discuss later, this didactic instruction will be followed by activities that allow learners to practice these skills.

As the instructor describes these techniques, s/he will emphasize that "anyone" can make these dishes at home if they know the techniques. This emphasis on the fact that learners "can do it" is also consistent with Pascual-Leone and Irwin's theories. As stated in Section III, Learning Needs, one learning need students have is the desire to apply these techniques at home. Pascual-Leone and Irwin (1998) go on to say, "Further, an affective motivation is needed to make the learner persist in the attempt to comprehend intuitively and internalize the meaning of didactic instruction" (p. 59). This activity will also include imitation instruction, or demonstrations. For at least part of the time, learners will be asked to gather around the central demonstration area and watch as the instructor demonstrates skills, including how to cut a potato to the correct thickness with a mandolin and how to tell if the gratin has enough cream. Each demonstration will be a technique that learners will need to apply as they cook the meal for the evening. As the instructor demonstrates techniques, he or she will also verbally describe the steps and the reasons behind each to support learner's cognitive learning needs related to the task.

Activity 3: Practice

The practice phase of the class will be less structured than the rest of the class. One of the challenges of the practice phase of the instruction for this class is that every student cannot help prepare each dish; for example, there is only one roast and 15 students. For this reason, there will be many parallel activities taking place during the practice phase that address the learning objectives for the

class. Wherever possible, activities have been structured to allow as many people to participate in the cooking of each dish as possible. These activities are described in the table below.

Practice Activities

Learning Objective	Activity
Class Activities	
Identify the reasons behind the four rules of roasting by applying them to a prime rib.	After the instructor has described the rules to the entire class, s/he will ask for volunteers to form teams and be responsible for each of the following "rules" of roasting: 1) prepare the roast; 3) sear the roast; and 4) "tent" and let it rest for 30 minutes. [note: the second "rule" requires bringing the roast to room temperature, which must be done before class.] Team members will discuss their rule at the end of the evening and discuss any questions they had.
Compare the panade soup style with other styles.	After the instructor has described the soup to the entire class, s/he will ask for volunteers to prepare the soup. Learners will prepare the soup and discuss how this soup differs from one they made in a previous class. These students will report their ideas to the entire class at the end of the evening and solicit ideas from the remaining students.
Identify ways to use a compound butter.	The instructor will ask for volunteers to be responsible for making the compound butter. As the instructor describes what compound butters are and how to make them, students will make the butter in front of the class. As the students are preparing the butter, students who are not participating in making the butter will discuss other ways the butter could be used at home.
Individual/Group Activities	
Correctly assemble an individual potato au gratin.	Each learner will be given an individual gratin dish, be given a turn slicing potatoes for their gratin, and asked to make a gratin.
Identify the correct flavor and consistency of an au jus pan sauce.	After the roast comes out of the oven, the instructor will demonstrate how to make an au jus from the roast's juices. A small portion of unmodified pan juices will be reserved so each learner can taste it and compare it to the au jus to identify how the flavor is enriched.
Correctly make a crepe.	After the instructor demonstrates how to make a crepe batter, each leaner will be given a turn at the stove making a crepe using the correct technique.

These activities will make every learner responsible for a part of at least one dish in addition to the dishes they make individually. As students work, instructors will provide assistance along the way. This activity is what Pascual-Leone and Irwin (1998) call "mediated instruction," which they describe as, "In mediated learning mentors manipulate situations and/or conduct interventions to reduce the

misleadingness of the task, but the main—not the only—learning process remains that of reality learning" (p. 60-61). They describe reality learning as instruction where "the person engages in unaided problem solving, temporally constrained by the speed of processing allowed by the actual real situation" (p. 56). This approach to learning is appropriate for adult learners as it encourages self-directedness and allows learners to establish and focus on their own educational goals.

As learners work in small groups to prepare the dishes, the instructors will also walk around answering questions and monitoring progress. One focus of this monitoring will be on learners' frustration levels. Paying attention to learners' emotional status during skill acquisition and providing assistance and positive feedback is one way to help learners' emotion control. Kanfer and Ackerman (1996) write, "During the early phase of skill acquisition, when individuals first confront the task and task demands are high, emotion-control instructions had a positive impact on performance, specifically among lower-ability individuals" (p. 163).

Application

This activity aligns with the first half of my definition of learning: ***Learning is the process of acquiring new knowledge, skills, and attitudes that can be applied in new and familiar contexts***. The learner acquired knowledge during didactic instruction that they will now apply. This focus on practice is also consistent with Knowles' adult learning theories. He states, "Andragogy assumes that a teacher cannot really 'teach' in the sense of 'make a person learn,' but that one person can only *help* another person learn" (Knowles, 1980).

Collaboration

The practice phase of the class will allow learners to work in teams to accomplish tasks. Having students work in groups also compliments the latter part of my definition of learning: ***Learning is affected by the environment and those in the environment***. Learners can learn a great deal from each other in many ways. First, as mentioned earlier, learners bring a vast amount of previous experience

with them to a learning situation and have varying skill levels. As Vygotsky describes the "zone of proximal development," students can learn and progress with help from their more capable peers (Jarvis et al, 1998). In addition, there are theorists who believe learning starts with social interactions. Nira Granott (1998) writes in her article *We Learn, Therefore We Develop*, "Cognitive processes may even start at the social, interpersonal plane and only then be transformed into the intrapersonal plane" (p. 28).

Autonomy

Learners will also be given a great deal of autonomy during this practice phase. In her article focusing on developing learning in adults, Granott (1998) writes, "Educational theorists have highlighted the importance of structuring learning experiences with the learner in mind, allowing the learner free choice in the learning activities, and seeing growth and learning as something that learners do, not something that is done to them." She goes on to argue the importance of autonomy: "Learners should have the autonomy to define and choose their own problems, goals, strategies, and change their activity throughout the process." To allow learners this autonomy, they will be able to choose the dishes they would like to prepare, the learners they would like to work with, and their level of participation.

Activity 4: Analysis

Time: 30 minutes

At the end of the evening, learners will get to experience the results of their labor by sitting down to taste the meal they prepared. As they taste the dishes, the instructor will ask questions about the various dishes to support the learning objectives. Also, groups who were responsible for the various dishes will talk about the process they went through and questions they may have. A summary of this analysis is described below.

Learning Objective	Activity
Identify the reasons behind the four rules of roasting by applying them to a prime rib.	Team members will discuss the purpose of their rule, any questions they have, and how these rules could be applied to other pieces of meat.
Compare the panade soup style with other styles.	Learners will compare the panade soup style with one they made in a previous class and will report their ideas to the entire class.
Identify ways to use a compound butter.	Learners will discuss other ways the compound butters could be used in other dishes.
Identify the correct flavor and consistency of an au jus pan sauce.	Learners will identify how the au jus sauce differs from gravy.

Learners will also be given time to talk and socialize with their peers while they eat to satisfy their individual needs as described in Section II.

Activity 5: Evaluation

Discussion About What Was Learned, What They Thought Went Well, and Their Plans (Goals) To Apply These Techniques In New Contexts

Time: 20 minutes

The instructor will ask, "Name one thing you learned tonight." This will help learners see the progress they made. Knowles (1980) writes, "Andragogical theory prescribes a process of self-evaluation, in which the teacher devotes energy to helping the adults get evidence for themselves about the progress they are making toward their educational goals" (p. 49).

Next, the instructor will ask, "Which dish will you make again? Will you do anything different next time?" Knowles (1980) argues that it is important to help learners see how they can apply new knowledge in new contexts. He (1980) states, "Numerous recent studies on the transfer of learning and the maintenance of behavioral change indicate the desirability of … building into the design of learning experiences provision for the learners to plan—and even rehearse—how they are going to apply their learnings to their day-to-day lives" (p. 50). Having learners focus on how they will apply what they

learned in the future will also help learners self-scaffold their learning to more advanced knowledge. Granott (1998) describes bridging, a self-scaffolding mechanism, as learners "creating target levels for future development" (p. 22). At the start of the class, the learners would not have had clear targets for future learning, but as the class continues learners will fill in goals for how they can apply what they learned. In other words, it will help encourage learners to become self-directed learners.

V. Conclusion

While the differences in instruction between the class I observed and the one I designed may appear subtle, the changes in instruction are key to tapping into the skills, strengths, and needs of the adult learner. The table below summarizes some of the key changes in my revised instruction that relate to the needs of adult learners.

Features of the Revised Design That Address Adult Learning Theory	**Activities Where These Features Can Be Found**
Assessment of learner's needs	Activity 1, 3, 4, 5
Focus on helping learners' emotion control	Activities 1, 3
Opportunities for learners to describe and showcase their past experience	Activity 1, 3, 4
Shorter didactic instruction with a focus on affective needs	Activity 2
Activities and discussion to help learner "self-scaffold" knowledge to new levels	Activity 1, 3, 4, 5
Opportunities for learners to develop goals for future learning	Activity 5
Opportunities for learner to self-assess learning	Activity 5

In a nutshell, the new activities are meant to build upon the experiences of the learners in the class and allow the instructor the opportunity to highlight, respect, and build upon those experiences. As Knowles would say, the focus of this instruction is not on "making" students learn; rather, it is about creating an environment and structured activities that provide an opportunity for learners to construct meaning and develop goals for future learning while providing the appropriate amount of support to help them get there.

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Appendix A:
Observation Instrument

Appendix B:

Completed Observation Instrument