Types of Learning Strategies Reflection

Instructional Design
Chapters 8-15

Chapters 8-15 in Instructional Design by Smith and Ragan (2005) very helpfully breaks down the different types of learning strategies that instructional designers need to consider when creating their guides for learning. The strategies covered in these chapters include the initial steps of declarative knowledge and conceptual learning, moving towards procedural learning and application of principles and problem-solving. The chapters also cover the cognitive, affective/attitude, and psychomotor skills to be considered. For this reflection, a brief definition, and my thinking and examples about each strategy and skill area are included.

Chapter 8: Declarative Knowledge Learning

The instructional strategy of declarative knowledge learning is often referred to as rote learning. It can be described by the words: explain, describe, summarize and list. This type of learning has three distinct sub-types: learning of labels and names, the learning of facts and lists, and the learning of organized discourse. Labels and names refers to making links between two or more objects or ideas. For example linking Olympia as the state capitol of Washington State. Facts and lists refers to a statement that describes a relationship or a group of statements or elements that need to be remembered together. These need to have some kind of tie-in with prior knowledge to be meaningful. For example, being able to list all the state capitols would need to be embedded into a study of the United States, and given a reason for remembering each. Organized discourse is what you are doing when you read through this paragraph – following a thread of meaning through a passage or text. For this to be effective, it must also be tied to previous knowledge and have some importance to the reader/learner.

Declarative knowledge lies at the heart of teaching and learning. It is the framework to build all of the other instructional strategies. Although it is occasionally disparaged, a learner must have access to and knowledge about facts, lists and discourses as the framework for building further knowledge. As the chapter states, “having a large knowledge base makes it easier to acquire more knowledge.” As a designer, it would be important to list these types of learning separately, so that the facilitator/educator can use them as the scaffolding, linking and organizing steps for other types of learning strategies.

Chapter 9: Concept Learning
Conceptual learning is building on declarative knowledge learning and being able to apply it across a wider body of shared characteristics. The example given in the chapter, knowing your dog is named “Gracie” is an example of declarative knowledge; being able to point to another dog and say “that one is a golden retriever” moves into the realm of conceptual knowledge. Conceptual learning has three types of characteristics associated with it, called attributes. These attributes are:

- Intrinsic attributes, which is a way a concept varies, i.e. a dog can be many shapes, sizes, breeds, colors, ages, but all are can be known as “dog.”
- Functional attributes, which describes how something works, i.e. walking or driving, and
- Relational attributes, which describes how concepts relate to each other, i.e. driving an automobile or walking the dog.

As I read through this chapter, it brought to mind the kind of talking and teaching I did with my daughter when she was a baby/toddler. We began with declarative knowledge and identifying a bird, a flower, a dog, a car. As she began to build her word list, we began to further identify those objects by their attributes. Later, as we began to work on a garden together, we put several different labels together to conceptualize how plants grow, the different types of plants and their needs, and then the enjoyment of what we’d grown. She can now conceptualize the difference between a flower and a vegetable garden, and the different types of things each of those needs. An instructional designer needs to make careful connections between the declarative knowledge and the conceptual knowledge in planning. The conceptual knowledge is the result of the scaffolding, and the learner needs to be able to apply it consistently.

Chapter 10: Procedural Learning

While procedural learning looks like a series of declarative steps, it is how the learner applies the steps in a variety of situations that makes it procedural. Procedural learning is following a series of steps and making decisions to arrive at a conceptual end product. For example, learning how to drive a car is a complex procedure that involves learning the mechanics of how to operate the controls, but then also learning the rules of the road, and putting all of those pieces into motion (scary, when you think about it!). Procedures can be simple, as well, like learning the steps to find the greatest common factors of two numbers.

Procedural learning strikes me as the place where all the facts and lists (declarative), and all the concepts begin to come together in an application setting. This is where you can determine the holes and gaps in a learner’s cognitive processes. I think this is important for educators, and for designers to consider so that each step and decision point is carefully laid out. That way, if a learner is missing a piece of the puzzle, it is easy to fill in that hole and move on.

Chapter 11: Principle Learning
Taking what learners know and applying it to two or more different concepts using cause and effect is called Principle Learning. Often, these are expressed in “if-then” statements, and exist in every content area. This is where the application of declarative, conceptual and procedural learning comes into play. When exploring principles, a learner can manipulate the variables to see their effect on one another. For example, a basic principle of driving is “if you push on the gas pedal, then the car will go faster; if you push on the brake, the car will slow and/or stop.” By understanding the concepts of driving, and the procedure for driving a car, a learner can apply these principles to make the car go and stop.

As I read through each of the types of learning strategies, I appreciate how the authors are scaffolding my own learning about how these strategies can build on each other. They provide a great framework for helping me clearly define my own instructional design. As far as principle learning, for a designer, it’s important to include lessons that allow for this application to occur, and for practice to occur in a variety of situations. This reinforces the learning and the relationships that exist between concepts.

**Chapter 12: Problem-Solving Instruction**

Although this idea is stated quite a bit in education, the process behind it is quite complex. Problem-solving is defined as combining declarative knowledge, cognitive strategies, and principles in such a way that a learner can solve a previously unexplored issue or problem. There are two types of problem-solving: “well-defined” which have clearly stated goals, and “ill-defined” which have vague or unknown goals or are extremely situation-dependent. Problems can be solved using knowledge representation, solution planning, solution implementation and solution evaluation.

As an instructional designer, it would be very important to determine whether the problem is well-defined or ill-defined, when determining the goals to be met. Providing similar scenarios would be one way to help learners define their problem and began the solution process. It was interesting to read how this process is delineated, when it’s something I do naturally every day (especially as a teacher!).

**Chapter 13: Cognitive Strategy Instruction**

Cognitive strategies are the way learners think and learn about thinking and learning. Thinking strategies are those that involve creativity and discovery, and learning strategies are those that involve planning, organizing and retrieving knowledge. These strategies are all a part of the way a learner acquires new knowledge and processes the information.

An instructional designer has to consider the cognitive strategies possessed by the learner when developing their instruction. Good design includes the direct instruction for the strategies so that facilitators can help fill in missing holes and gaps. It is interesting to read about the variety of cognitive strategies that exist, and think about how they apply to my own teaching. For example, when I do literature circles, we use organizing strategies to group elements of reading, rehearsing strategies to recall characteristics, metacognitive
strategies to make inferences, and elaborating strategies to make connections. When students volunteer to do a lit circle job, they are using affective domain strategies to be actively engaged in the learning task.

**Chapter 14: Attitude Learning**
Attitude learning can be described as the strategies that affect how learners feel about their acquisition of knowledge, and how they apply it. This type of learning has three different components: cognitive - the knowing how, behavioral – application, and affective – the knowing why.

I thought it was interesting that the chapter points out how an instructional designer can determine strategies for teaching about attitude by visiting the organization’s mission statements and overall goals. We found this to be true when we changed our student handbook to reflect a more positive mission statement. Students began to take more pride in the school and their behavior reflected that pride.

**Chapter 15: Psychomotor Skill Learning**
Psychomotor skill learning is what takes place when a learner is required to learn coordinated physical movement, such as learning to type or wash dishes. There are various categories of physical skills: Discrete, which have a definite beginning and ending such as turning on and off a faucet; and Continuous, which although they have a beginning and ending, are more subtle and in a longer continuous motion, like steering a car in a lane. Other elements to consider in psychomotor skills are the type of practice: spaced vs. massed, and whole vs. part. Feedback is also important about both the product and the process.

Although I knew that psychomotor skills are an important factor to consider, I had considered that “writing an essay” might fall into that category. This was a great chapter to help distinguish between the act of performing a psychomotor skill, compared the act of learning how to perform a psychomotor skill. I can see how this would be an important distinction for an instructional designer as they put together all of the strategies needed to apply concepts, principles and procedures for the facilitator and the learner. This would help them distinguish between what is expected, and what new skills would need to be learned.

Reference: