Feedback for Practice Exercises:

1. Teaching is generally associated with lecture or tutoring, activities performed by the teacher. Instruction is generally considered broader than teaching and includes the arrangement of learning activities (events) that facilitate learning. These learning activities may be presented by a teacher or they may be mediated. Intentional learning is the function of any educational system, in order to accomplish many goals that would take much longer without instruction. In summary, teaching is one mode of instruction.

2. Planned instruction considers the whole range of instructional events that facilitates learning. It is a guide for replicable (reliable) instruction, including learning aids, media, live instruction, and evaluation.

3. A systems approach to instruction is a set of steps in designing instruction that includes analysis of the learning goals, task analysis, specification of the learning outcomes, and development of materials including trial and revision based on learner feedback (formative evaluation).

4. The socio-cultural context of learning has to do with the student’s social and cultural environment. Variables like rate of instruction, use of illustrations, and mode of presentation are no longer isolated in an attempt to determine how they are affecting the learning situation. Recent research suggests that the social-cultural context of learning may be as important a factor as other more discrete components of the learning situation. The inclusion of socio-cultural principles in ISD attends to the multidimensional nature of learning.

5. Situated cognition is one example of a principle that might be derived from socio-cultural models. With socio-cultural models, learned capabilities are acquired in a particular context and the perceived utility of that context has implications for later retrieval and evaluation.

6. The conditions of learning are all events, internal and external to the learner, that affect learning. Different types of learning require different conditions or events.

7. A model attempts to show the relationships among the components of a system. A model of learning shows the components of the process called learning. A learning model is a convenient structure for formulating hypotheses about how external events of instruction affect internal information processing. The learning model used in the text is called a cognitive processing model, meaning that new learning is determined in large part by what the learner already knows, and the executive processes or learning strategies possessed by the learner.

8. External events of instruction are a series of activities or instructional stimuli that facilitate internal information processing. The events presented in the text follow the stages in the information processing model.
9. The five types of learning outcomes are:

   (1) Verbal information - labels, facts and organized knowledge
   (2) Intellectual skills - discriminations, concepts, rules, and problem solving
   (3) Cognitive strategies - learning strategies employed by the student
   (4) Attitudes - internal states that affect choice decisions
   (5) Motor skills - coordinated muscle movements

10. Intellectual skills represent five different types of learning outcomes that build on each other in a cumulative manner. Intellectual skills are said to be "hierarchical" because each type of outcome is composed of skills from a lower level, e.g., concepts are composed of discriminations, rules are composed of concepts, and problem solving involves the application of rules.

**Criteria for Evaluating the Application Exercise:**

Does the philosophy reflect three or more of the following?

1) That different types of learning outcomes require different types of instruction.

2) That planned instruction will be more effective than unplanned instruction.

3) That the systematic design of instruction requires consideration of the type of learning outcome desired and the skills possessed by the learner.

4) Learning is aimed at individuals. Instruction is oriented toward the individual even though it may be presented in group settings.

5) Designed instruction should be based on a model of how people learn. Instructional design must consider the conditions of learning necessary to ensure that the desired effects occur.

6) The systematic design of instruction involves a number of steps including the definition of desired learning outcomes, a strategy for obtaining those outcomes and evaluation to measure their attainment.

**Example of a student answer to the application exercise by Jennifer Willis:**

Chapter 1 asserts that instruction should be planned so as to maximize on both the internal and external condition that affect learning. To do so, it is possible to use a systematic approach that helps bring these factors into play, while allowing for differences that occur in terms of the learners and the content to be taught. In order to account for learner differences, the students or target audience should be understood before instruction is designed.

Second, objectives should be formulated; with the emphasis on determining precisely what type of learning will take place. The type of learning, like the type of learner, has a direct impact on the type of instruction to be delivered.

Next, the systematic design process should begin to take into account the internal processes that are assumed to take place during learning. To affect these internal activities, the instruction should be structured, and activities devised, which reflect the
various external events of instruction. Learning must also be traced back so that prerequisites are defined, either so they can be taught or so they can be reviewed and brought to the forefront of the learner's awareness before new learning takes place. This sequence is especially important for intellectual skills, which were discussed in their own section of the text. The hierarchical relationship of these various skills requires that they be learned in a precise order and the instruction must take this into account. Once this sequencing has been completed, learner assessment must be provided for and it should follow directly along the lines of the instructional objectives. In addition, assessment of the instruction is a critical factor.

Because of the number of variables already mentioned, there is room for error in designing instruction. Therefore, a good systematic approach will provide for a way to evaluate the course before, during, and after it is implemented with its target audience, and make revisions based on the evaluation. The use of a systematic approach guides the designer in dealing with these various issues and, hopefully, results in highly effective instruction.