

Instructional Strategies

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Editor's Note

This is a condensed version of a [chapter on Instructional Strategies](#) from the book [Experiential Learning in Instructional Design and Technology](#), by Joshua Hill and Linda Jordan. It is printed here under a similar license as the original.

Introduction

A well designed course, whether it be face-to-face, blended, or online, must be well structured with careful attention to instructional strategies in the selection of instructional material, the planning of learning activities, and the selection of media. An **instructional strategy** describes the instructional materials and procedures that enable students to achieve the learning outcomes. **Learning outcomes** are what the student should know, or be able to accomplish at the end of the course or learning unit. Your instructional strategy should describe the instructional materials' components and procedures used with the materials that are needed for students to achieve the learning outcomes. The strategy should be based on the learning outcomes and information from the other previous instructional design steps. You can even base your strategy on how you or others have solved similar problems. You can save time and money by not re-inventing the wheel. However, be careful; a lot of existing instructional material is designed poorly. Use the instructional strategy as a framework for further developing the instructional materials or evaluating whether existing materials are suitable or need revision. As a general rule, use the strategy to set up a framework for maximizing effective and efficient learning. This often requires using strategies that go beyond basic teaching methods. For example, discovery-learning techniques can be more powerful than simply presenting the facts.

This chapter reviews some basic information to help you choose appropriate instructional strategies for the learning outcomes you hope your learners will be able to accomplish. Rather than reviewing specific details about any of the hundreds of instructional strategies that have been developed, this chapter describes considerations that should go into the selection of any instructional strategy.

Goal Analysis

Goal analysis includes classifying the instructional goal into the domain, or kind of learning that will occur. The domains can be *verbal information* where learners state, list, describe, name, etc., *intellectual skills* such as learning how to discriminate, identify, classify, demonstrate, generate, originate, create, etc., *psychomotor skills* where learners make,

draw, adjust, assemble, etc., and *attitudes* such as making choices or decisions. If you used a guide like Bloom's Taxonomy when generating your learning outcomes, you likely have a good handle on the type of learning you hope will occur. Establishing the domain is important in determining what instructional strategies to use in subsequent steps.

Learning Domain Strategies

Each **learning domain classification** (i.e., verbal information, intellectual skills and cognitive strategies, psychomotor skills, and attitudes) is best taught with different instructional strategies.

Verbal Information

Verbal information is material, such as names of objects, that students simply have to memorize and recall.

When teaching verbal information:

- Organize the material into small, easily retrievable chunks.
- Link new information to knowledge the learner already possesses. For example, use statements such as “Remember how”, or “This is like ...”. Linking information helps the learner to store and recall the material.
- Use mnemonics and other memory devices for new information. You may recall that the musical notes of the treble clef staff lines can be remembered with the mnemonic Every Good Boy Deserves Fudge.
- Use meaningful contexts and relevant cues. For example, relating a problem to a sports car can be relevant to some members of your target audience.
- Have the learners generate examples in their minds, such as create a song or game with the information or apply the knowledge to the real world. If the student only memorizes facts then the learning will only have minimal value.
- Avoid rote repetition as a memorization aid. Rote learning has minimal effectiveness over time.
- Provide visuals to increase learning and recall.

Intellectual Skills

Intellectual skills are those that require learners to think (rather than simply memorizing and recalling information).

When teaching intellectual skills:

- Base the instructional strategy and sequencing on [an analysis such as a topic or a procedural analysis](#). Always teach subordinate skills before higher-level skills.
- Link new knowledge to previously learned knowledge. You can do this explicitly (e.g., the bones in your feet are comparable to the bones you learned about in your hands) or implicitly (e.g., compare the bones in your feet to other bone structures you have learned about).
- Use memory devices like acronyms, rhymes, or imagery for information such as rules or principles. You can use the first letters of words to help memorize information. For example, “KISS” means “Keep It Simple Stupid”. General rules can often be remembered through rhymes such as “i before e except after c”. Remember that rules often have exceptions. Tell your learners about the exceptions. Memory devices are best for limited amounts of information.
- Use examples and non-examples that are familiar to the student. For instance, when classifying metals, iron and copper are examples while glass and plastic are non-examples.
- Use discovery-learning techniques. For example, let students manipulate variables and see the consequences.
- Use analogies that the learners know. However, be careful that learners do not over-generalize or create misconceptions.
- Provide for practice and immediate feedback.

Psychomotor Skills

Psychomotor skills are those that require learners to carry out muscular actions.

When teaching psychomotor skills:

- Base the instructional strategy on an analysis such as a [procedural analysis or a critical incident analysis](#).
- Provide directions for completing all of the steps.
- Provide repeated practice and feedback for individual steps, then groups of steps, and then the entire sequence.
- Remember that, in general, practice should become less dependent on written or verbal directions.
- Consider visuals to enhance learning.
- Consider job aids, such as a list of steps, to reduce memory requirements. This is especially important if there are many procedures or if the procedures are infrequently used.
- After a certain point, allow learners to interact with real objects or do the real thing. How much can you learn about swimming without getting wet?

Note that some skills involve other learning-domain classifications. For example, when learning how to operate a camcorder, many of the skills are psychomotor. However, deciding how to light an image is an intellectual skill. Also, note that the required proficiency level can affect the instructional strategy. There is a big difference between being able to imitate a skill and being able to automatically do a skill.

Attitudes

Attitudes involve how a student feels about the instruction, whether they will value or care about the material presented to them.

When teaching attitudes:

- Base the instructional strategy on the instructional design steps done earlier.
- If you can, show a human model to which the students can easily relate. One consideration is that it may be better if the model is of the same socioeconomic group.
- Show realistic consequences to appropriate and inappropriate choices.
- Consider using video.
- Remember that attitudes taught through computer technology are not guaranteed to transfer to the real world. If appropriate and possible, consider arranging for practice opportunities to make the choice in real life. Alternatively, use role-playing to reinforce the attitudes taught.

Note that it can be difficult to test whether the attitudes taught have transferred to real situations. Will learners behave naturally if they know that they are being observed? If learners have not voluntarily permitted observations, then you must consider whether it is ethical to make the observations.

Strategies to Sequence Learning Outcomes

Another aspect of your instructional strategy will be to determine the sequence of how the learning outcomes will be taught. In general, to best facilitate learning you should sequence the learning outcomes from:

- easy to hard
 - You could teach adding fractions with common denominators and then with different denominators. Your lesson could first deal with writing complete sentences and then writing paragraphs.
- simple to complex
 - As an example, teach recognizing weather patterns and then predicting the weather.
 - Cover replacing a washer and then replacing a faucet.
- specific to general
 - You could teach driving a specific car and then transfer the skills to driving any car. Similarly, you could cover adjusting the brakes on a specific mountain bike and then generalize the procedure to other mountain bikes
 - Note that some students like to learn through an inductive approach (that is, from the general to the specific). For example, students could be presented with a number of simple examples, and based on those, be asked to generalize a rule. That general rule can then be applied to solving specific examples. Since some students will not enjoy an inductive approach, do not use it all of the time. Rather consider an inductive approach as a way to provide some variation and occasionally address other learning preferences.
- concrete to abstract
 - As an example, teach measuring distances with a tape measure and then estimating distances without a tape measure. Cover writing learning outcomes and then evaluating learning outcomes.
- the known to the unknown
 - You could do this by starting with concepts learners already know and extending those concepts to new ideas. In other words, build on what has been previously taught.

Each of these methods of sequencing learning outcomes enables students to acquire the needed knowledge base for learning higher-level skills. Note that these guidelines are not black and white rules.

Strategies to Motivate Students - The ARCS Model

As described by Keller, motivation can be enhanced through addressing the four attributes of Attention, Relevance, Confidence, and Satisfaction (ARCS). Try to include all of the attributes since each alone may not maintain student motivation. Your learner analysis may have provided useful information for motivating students. You should build motivational strategies into the materials throughout the instructional design process. This is challenging since each learner is an individual with unique interests, experiences, and goals.

Attention

Gain attention and then sustain it. You can gain attention by using human-interest examples, arousing emotions such as by showing a peer being wheeled into an ambulance, presenting personal information, challenging the learner, providing an interesting problem to solve, arousing the learner's curiosity, showing exciting video or animation sequences, stating conflicting information, using humor, asking questions, and presenting a stimulus change that can be as simple as an audio beep. One way to sustain attention is by making the learning highly interactive.

Relevance

Relevance helps the student to want to learn the material by helping them understand how the material relates to their needs or how it can relate to improving their future. For example, when teaching adult students how to solve percent problems, having them calculate the gratuity on a restaurant bill may be more relevant than a problem that compares two person's ages. You can provide relevance through testimonials, illustrative stories, simulations, practical applications, personal experience, and relating the material to present or future values or needs. Relevance is also useful in helping to sustain attention. For material to be perceived as being relevant, you must strive to match the learner's expectations to the material you provide.

Confidence

If students are confident that they can master the material, they will be much more willing to attempt the instruction. You will need to convince students with low confidence that they can be successful. You can do this through presenting the material in small incremental steps, or even by stating how other similar students have succeeded. Tasks should seem achievable rather than insurmountable. You should also convince students who are overconfident that there is material that they need to learn. You can do this by giving a challenging pre-test or presenting difficult questions.

Satisfaction

Satisfaction provides value for learning the material. Satisfaction can be intrinsic from the pleasure or value of the activity itself, extrinsic from the value or importance of the activity's result, for social reasons such as pleasing people whose opinions are important to them, for achievement goals such as the motive to be successful or avoid failure, or a combination of these. Examples of intrinsic satisfaction include the joy or challenge of learning, increased confidence, positive outcomes, and increased feelings of self-worth. Examples of extrinsic satisfaction include monetary rewards, praise, a certificate, avoidance of discomfort or punishment for not doing it, and unexpected rewards. Some evidence suggests that extrinsic motivation, such as a certificate for completing a course, does not last over time. Nonetheless, it is better to assume that some students need extrinsic motivation. To be safe, try to provide your learners with both intrinsic, which should have more of the focus, and extrinsic rewards. If the intrinsic motivation is high for all learners, you will not need to plan as much for extrinsic motivation. Note that satisfaction can be provided by enabling learners to apply the skills they have gained in a meaningful way. Remember to let the students know that the material to be learned is important. Consider increasing extrinsic motivation through quizzes and tests.

Strategies for Sequencing Instructional Events

As Robert Gagné described, that **instructional events** (gaining attention, informing the learner of the learning outcome, stimulating recall of prerequisites, presenting the material, providing learning guidance, eliciting the performance, providing feedback, assessing performance, and enhancing retention and transfer) represent what should be done to ensure that learning occurs. If you address each instructional event, you will have a solid foundation for creating effective instructional materials. You will need to determine what will be done for each instructional event for each learning outcome.

You can learn more about sequencing instructional events from another chapter in this textbook, [Robert Gagné and the Systematic Design of Instruction](#).

Conclusion

The emphasis in this review of instructional strategies was on getting the fundamentals right. Regardless of what revolutionary tools or teaching approaches are being used, what we know of how people learn does not change a great deal over time, and we do know that learning is a process, and you ignore the factors that influence that process at your peril.

For learning leading to successful outcomes, it is important to remember that most students need:

- well-defined learning goals;
- instructional strategies linked with the appropriate learning domains;
- a proper sequencing of instructional events; providing a clear timetable of work, based on a well-structured organization of the curriculum;
- appropriate and engaging learning activities; with regular feedback
- manageable study workloads appropriate for their conditions of learning;
- a skilled instructor; regular instructor communication and presence;
- a social environment that draws on, and contributes to, the knowledge and experience of other students;
- other motivated learners to provide mutual support and encouragement.

There are many different ways these criteria can be met, with many different tools.

Remember these key takeaways when designing your instructional strategies:

- Learning domain classification (i.e., verbal information, intellectual skills and cognitive strategies, psychomotor skills, and attitudes) are best taught with different instructional strategies.
- Teach learning outcomes in the order that best facilitates learning.
- The four attributes of the Keller’s ARCS Motivational Model are; Attention, Relevance, Confidence, and Satisfaction. Including all of the attributes may increase student motivation.
- The unique interests, experiences, and goals of each learner influence motivation.
- Instructional events include; gaining attention, informing the learner of the learning outcome, stimulating recall of prerequisites, presenting the material, providing learning guidance, eliciting the performance, providing feedback, assessing performance, and enhancing retention and transfer. (as reviewed in the chapter [Robert Gagné and the Systematic Design of Instruction](#)).

Application Exercise

You have been tasked with designing a university orientation course for freshmen community college students. Everyone at the institution is aware that students feel an orientation course is not necessary and that it is a waste of their time. Explain what portion of the ARCS Motivational Model might be applied into the design of the course to help students understand why this course is important for their success.



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