

Module 4: Design (P3: Instructional Strategy)



This document contains the content from the interactive instructional unit for the module.

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Introduction

Thus far in the instructional process, you have analyzed the learner and the context, completed a task analysis, and written a goal statement and corresponding objectives. You have also planned the assessments. The next step is to plan and to design the instructional strategy.

Objectives

By the end of this unit, you should be able to:

Unit Objectives:

- Describe important aspects to consider when designing instructional strategies for the distance education environment
- Create instructional strategies that align with instructional objectives and that are appropriate for the distance education environment and learners' developmental stage



By the end of this unit, what would you like to learn? Write your personal objectives.

Personal Objectives:

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Instructional Strategies

Gagne (1988) refers to instructional strategies as the "bricks and mortar" of the "architecture" of the course (i.e. planning and analysis). Creating a strategy does not refer to the actual development of instructional material, but an outline or storyboard that outlines the instructional activities and how they will assist learners in accomplishing the objectives (Gagne, 1988). Dick, Carey, and Carey (2005) use the term *Instructional Strategy* to describe the process of sequencing and organizing content, specifying learning activities, and deciding how to structure and deliver content. They state that effective instructional strategies are based upon all the information accumulated as part of the instructional design report to this point.



Dick, Carey, and Carey: Instructional Strategy



Dick, Carey, and Carey (2005) identify four elements of an instructional strategy:

1. Content Sequence and Clustering
2. Learning Components
3. Student Groupings
4. Selection of Media and Delivery Systems

We will briefly consider each of these.

Dick, Carey, and Carey: Content Sequencing and Clustering

Content sequencing refers to determining the order in which objectives should be addressed in a lesson or course. The task analysis may be helpful in determining what skills or related or need to be learned prior to other skills.

Clustering refers to determining how objectives will be presented, individually or in clusters.

Sequencing and clustering should be determined by the following factors: (a) learners' age, (b) complexity of the material, (c) the ability to vary activities to meet the objective, and (d) the time required to complete the instructional tasks.

Note that Horton (2006) describes this process as spotting related objectives (pp. 23-25) and sequencing (bottom up, top down, sideways; pp. 27-31).

Dick, Carey, and Carey: Learning Components

The first step in developing an instructional strategy is deciding upon learning components.

There are several principles and theories that are useful to consider when determining learning components.

Let's briefly take look over a few of them.

- Gagne's Nine Events of Instruction
- Davidson-Shiver and Rasmussen's Framework

Additionally, read the Horton (2006) text on turning objectives into learning objects and activities. Note how accomplishing certain objectives require distinct types of activities- absorb, do, and connect. Also, ensure that you read about the concept of reusable learning objects (RLO). See Activity 4.7 for additional information.



Think About It Activity 4.7

A Reusable Learning Object is a type of online instruction that provides a digital educational resource that can be reused, scaled and shared from a central online repository in the support of instruction and learning. Each RLO supports a single learning objective, which is streamlined into a digital library of RLOs. They vary in size, scope and level of granularity ranging from small chunks of instruction to a series of combined resources to provide a more complex learning experience.

*Take a virtual field trip to the following web sites to learn about and view Reusable Learning Objects (RLO). Reflect upon the pros and cons of using RLOs; discuss the pros and cons with you team members. Also, talk to your team members about how you may use RLOs for your ISD project. Note that sometimes links break. If you find this to be the case below, you can always Google “Reusable Learning Objects (RLO)” and find numerous recourses. If this is a topic in which you would like to further explore, you can find a plethora of books on the topic (e.g. *Creating a Reusable Learning Objects Strategy: Leveraging Information and Learning in a Knowledge Economy*; *Reusing Online Resources: A Sustainable Approach to E-learning (The Open and Flexible Learning Series)*; *Learning Objects for Instruction: Design and Evaluation*)*

Links:

- The RLO-CETL is the Centre for Excellence for the design, development and use of learning objects. The site is sponsored by London Metropolitan University, the University of Cambridge and the University of Nottingham. Access the site at: <http://www.rlo-cetl.ac.uk/>
- Web and Instructional Technology Services reusable learning object site is sponsored by St. Petersburg College. Access the site at: <http://it.spcollege.edu:8500/edtech/instructorResources/RLO/>
- Blackboard has a reusable objects. Access the tutorial at: www.blackboard.com/quicktutorials/reusable_objects.htm

Gagne’s Nine Events of Instruction

Gagne (1965) purported that effective instruction influences internal processes; he stated instruction is "a deliberately arranged set of external events designed to support internal learning processes" (pg. 11). He identified events that support this process. Gagne derived these events from an understanding of the following cognitive processes:

1. *Attention*: Determines the extent and nature of *reception* of incoming stimulation.

2. *Selective Perception* (sometimes called *pattern recognition*): Transforms this stimulation into the form of object-features, for storage in short-term memory.
3. *Rehearsal*: Maintains and renews the items stored in short-term memory.
4. *Semantic Encoding*: Prepares information for long-term storage.
5. *Retrieval*, including *search*: Returns stored information to the working memory or to a response generator.
6. *Response Organization*: Selects and organizes performance.
7. *Feedback*: Provides the learner with information about performances and sets in motion the process of *reinforcement*.
8. *Executive Control Processes*: Select and activate cognitive strategies; these modify any or all of the previously listed internal processes.

Gagne's corresponding events, respectively, include:

1. Gaining attention
2. Informing learner of objectives
3. Stimulating recall of prior learning
4. Presenting the stimulus material
5. Providing learning guidance
6. Eliciting the performance
7. Providing feedback about performance correctness
8. Assessing the performance
9. Enhancing retention and transfer



Depending on time content, and other factors, not all events occur for each lesson. If you desire to read more, read Gagne's book, *The Conditions of Learning*.

Davidson-Shiver and Rasmussen's Instructional Strategy Framework

When discussing web-based instructional design, Davidson-Shiver and Rasmussen (2006) identified 4 components of Instructional and Motivational Strategies with subcomponents for each. In addition to instructional strategies, they purport that motivational strategies, methods for encouraging participation, perseverance, and satisfaction, should be considered. Davidson-Shiver and Rasmussen (2006, pp. 209-223) suggest the following components for each lesson, unit, or module (Note: The subcomponents can be reordered, combined, or omitted):



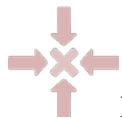
Orientation to Learning- The orientation stage of the lesson sets the stage for the instruction, outlines expectations, and facilitates the learners' understanding of how to proceed through the unit of instruction. It includes:

- Provision of an overview or advanced organizer
- Statement of objectives
- Explanation of relevance of instruction to the learner

- Opportunity to recall prior knowledge, skill, or experience that relates to the instruction
- Directions on how to start, navigate, and proceed through instruction

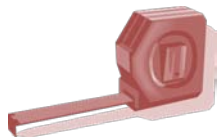
*It is important to recognize that creating showy site that gain students attention, but are unrelated to the instructional purpose and content is a waste of time and money (Bonk, 2004). Suitable strategies that could be included in the orientation section include:

- Relevant audio or video clip
- Graphic describing the topic
- Opening question or case
- A story that illustrate the topic or purpose of the instruction
- A text based or graphic based preview of the lesson



Instruction on the Content - The instruction stage of the lesson is the “meat” of the lesson; it is where the information is presented or constructed. Practice and feedback are provided.

- Present instructional content
- Provide learning cues
- Present opportunities for practice
- Provide feedback on practice performance
- Provide review of and close of unit



Measurement of Learning – The measurement stage does NOT refer to the creation of assessments, for it is assumed that assessments are created prior to instructional activities. In this stage, an outline for where assessment will be integrated is created. The designer makes sure that the assessments and timing are appropriate. This includes diagnostic, formative, and summative assessments.

- Assess performance (or progress toward mastering goals and objectives)
- Provide performance scores to the learner (or indicate progress)

During this stage, it is considered a good idea to create an assessment timeline. For example:

Timing	Assessment
First / Beginning of the course	Diagnostic assessment
Every lesson or module	Formative Assessment of accomplishment of complex module or lesson objectives

End of Course

Summative Assessment of overall goal



Summary and Close –The summary and closure stage is to provide a sense of closure and direct learners’ attention on primary goal of instruction.

- Enhance and enrich learning
- Provide remediation for unmet objectives
- Provide opportunities for retention

Davidson-Shiver and Rasmussen’s Instructional Strategy Planning Chart Example

Example Instructional Strategy Planning Chart using the 4 components of Davidson-Shiver and Rasmussen (2006) identified Instructional and Motivational Strategies

Component	Instructional Strategies	General Lesson Examples
Orientation		
Overview or Advanced Organizer	Text description of a lesson or a course; graphical organizer; overview vodcast or podcast; course welcome	<ul style="list-style-type: none">• A welcome statement that describes the topic of the course; 1 graphic• A 1-2 minute podcast to overview the topic, explain the “why” (goals and objectives) of the lesson, and illustration/ story
Objectives	List; demonstration of outcomes; icebreaker; syllabus	<ul style="list-style-type: none">• A list• A 1-2 minute podcast to overview the topic, explain the “why” (goals and objectives) of the lesson, and illustration/ story
Relevance of instruction to the learner	Illustration; icebreaker; game	<ul style="list-style-type: none">• Icebreaker that asks students to create a KWL chart on lesson topic and why they are interested in the topic• A 1-2 minute podcast to

		overview the topic, explain the “why” (goals and objectives) of the lesson, and illustration/ story
Prior Knowledge	Advance organizer; pretest; blog to share relevant story	<ul style="list-style-type: none"> • Icebreaker that asks students to create a KWL chart on lesson topic and why they are interested in the topic
Navigation	Navigation tutorial; sitemap; detailed text directions; student guide	<ul style="list-style-type: none"> • Flash-based navigation tutorial that show students how to navigate the lesson and explains the various components • A discussion forum for technical problems and logistical questions • Directions for how to access university tech support.
Instruction		
Content and Information	Direct instruction via text, audio, video streaming; case studies, interactive tutorials, simulations, games, modeling, reading assignment, web search, webquest, learning units, student led discussions or presentations, discussion prompts/ Socratic dialogue	<ul style="list-style-type: none"> • Text- based interactive lesson • Software tutorials • Links to websites • Recommended readings
Learning Cues	Guiding graphics or audio, Guided learning, mentorship, emphasize text (e.g. bold), Audio annotation, highlight documents visually or auditory	<ul style="list-style-type: none"> • Visuals to highlight key lesson point • Relevant examples • Reflection questions to tap prior knowledge
Practice	Games, role-play, Webquests, virtual field trips, drill, Synchronous Q&A, portfolios, projects, debates, exercises, papers, reflective blogs/ journals, case studies, professional development, reciprocal teaching	<ul style="list-style-type: none"> • Collaborative project • Q&A panel with field experts
Feedback	Guided practice via e-conferencing, automatic feedback from LMS or	<ul style="list-style-type: none"> • Peer assessment and feedback

	other software, review podcast, instructor audio feedback on paper, peer review	<ul style="list-style-type: none"> • Instructor audio feedback on collaborative project
Summary and Review	Instructor or learner summarization (e.g. e-mal, announcement, or discussion post), podcast or vodcast wrap-ups; end of lesson transitions	<ul style="list-style-type: none"> • One minute podcast summary and transition created by the instructor
Measurement		
Assess	Quizzes, tests, essays, commercial programming tools (e.g. Java, CGI, Pascal), project drafts	<ul style="list-style-type: none"> • A KWL activity (diagnostic; beginning) • Rough draft submissions (informal, formative; middle) • Final Project submission (summative; end)
Advise	Checklists, rubrics, e-mail or chat feedback, self-check guidelines, commercial tools	<ul style="list-style-type: none"> • Completed rubric and audio feedback on rough drafts, within one week of submission • Peer assessment of final project • Completed rubric, audio feedback, and grade on final project. Instructor advisement sessions to review final grade.
Summary and Closure		
Retain	Graphic or text summaries and reviews, wrap ups remarks, most important points audio summary, Final example or story	<ul style="list-style-type: none"> • End of lesson audio wrap up • Students will share their final projects with one another
Remediation	Review assessment and correct errors, direction to review instructional materials, suggestion to visit remediation service (e.g. writing center)	<ul style="list-style-type: none"> • Learners with low scores will be encouraged to review lesson notes again • Learners with poor writing will be directed to the university writing center
Enhancement and Enrichment	Additional exercise, reading web resource, discussion about how topic related to the future	<ul style="list-style-type: none"> • Learners will complete an end of course blog reflection on how they will use their skills in a future career.

Table information adapted from: Davidson-Shiver and Rasmussen (2006)

** The example provided above are general. In the ID process plans should start general and then become very specific. An example of specific plans to present content may include:

After the main objective is stated (audio), the text based lecture will: (a) Define Instructional design, (b) identify 3 main theories of instructional design, and (c) explain the primary features of the 3 main theories.

An example of a specific plan for practice may include: Direct students to select one learning or ISD theory and direct them to reliable online resources to learn about the selected theory. Instruct students to reflect upon the theory's strengths and weaknesses for ISD and to suggest its applicability to a specific ISD project. Use blogs for reflections. Remind students about discussion forum for technical and logistical problems.

Dick, Carey, and Carey: Instructional Strategy

Dick, Carey, and Carey: Student Grouping

The third element of an instructional strategy is a description of student grouping; that is, how will students be grouped? When deciding upon grouping, consider:

- requirements for social interaction explicitly stated in the objectives
- requirements for social interaction in the performance environment
- the importance of collaboration in the learning environment (read Palloff and Pratt's Collaborating Online: Learning Together in Community to learn about the importance of community in the online environment)
- the restraints of the delivery system (e.g. more time needs to be allotted for online collaboration than F2F collaboration).
- personal philosophy of learning
- Can you think of other important considerations?



Dick, Carey, and Carey: Delivery and Media Selection

Delivery and media selection is the fourth and final element of an instructional strategy.

The delivery system refers to the systems necessary to allow a particular instructional system to operate as it was intended and where it was intended. Examples include:

- Classroom
- Correspondence
- Television broadcasting
- Videotaping

- Videoconference
- Computer-based
- Web-based
- Mobile

Once the delivery system is specified, media are chosen for instructional deliver and activities. Dick, Carey, and Carey (2005) define media constitutes the physical elements in the learning environment with which learners interact in order to learn something.

Media selection, and media development considerations, within a distance education environment will be discussed in detail in the next module.

ISD Project: Plan the Instructional Activities



"Materials themselves do not teach but provide a medium that with appropriate use can support learning," (Oliver, Herrington, & Omari, 1996). Accordingly, the instructor must incorporate the organization, presentation, and integration of materials into the distance education environment. Although the instructional medium can change from paper based to classroom-based, to online delivery, to mobile delivery, all effective course materials need to maintain basic elements that support solid instructional design. Keep in mind that all courses and lessons should contain:

1. Preinstructional Activities (prerequisites & objectives),
2. Information Presentation (content),
3. Learner Participation (practice),
4. Assessment (based on objectives),
5. Follow-Through (summary, review).

Now that we've discussed various elements of instructional strategy, it is time to create an instructional strategy. You should not create your instructional strategy in a vacuum, rather, your strategy should be informed by all of the materials you have generated to this point. This includes your analysis, objectives, and assessments.

Dick, Carey, and Carey (2005) suggest that you follow a sequence when you are creating your instructional strategy. Their process has five steps. In your ISD report, these steps should be addressed in narrative and chart form. Note that these correspond with Davidson-Shiver and Rasmussen (2006) 4 components of Instructional and Motivational Strategies.

1. Sequence and cluster objectives.
2. Plan preinstructional, assessment, and follow-through activities for the unit, workshop, or lesson
3. Plan the content presentations and student participation sections for each objective or cluster of objectives.
4. Assign objectives to lesson or time period and estimate the time required for each.
5. Review the strategy to consolidate media selections and confirm or select a delivery system.

As you plan your instructional strategies, first decide on the sequence in which you will address the objectives and cluster your objectives for instructional purposes as needed.

The sequence and the size of clusters should be appropriate for the length of time available for the lesson or workshop and appropriate for the characteristics of the learners. Since you are only developing one lesson or workshop, you may only have one cluster. However, you may still have small groupings of objectives that you want to divide up into different types of activities (e.g. review, practice)

Once you have the sequence of objectives and have clustered them, you will plan your activities- preinstructional activities, assessment, and follow-through activities. As you do this, you will also want to make decisions about student groupings. Dick, Carey, and Carey (2005) suggest that you plan activities by using a narrative using the following outline. It is also helpful to then place the narrative in a storyboard or course planning chart that clearly demonstrates how the objectives and assessments and activities are aligned.

(Note: Download the example planning chart via the instructional unit.)

1. Preinstructional/Orientation Activities

- a. Motivation: Explain how you will gain and maintain learners' attention and maintain it throughout instruction.



Keys to Successful Distance Education Courses Design: Plan to Orient the Learners

When planning preinstructionals and orientation activities, remember to plan to provide:

An overview and/or an orientation of the lesson or course.

A clear explanation about how to navigate course or how the course materials are organized.

A list of priorities, responsibilities, and expectations (including the amount of time that is expected to be devoted to the lesson/ course. Learners often hold the misconception that if a lesson, workshop, or course is online or taken in a distance education format that it will take a significantly less amount of time to complete.).

Providing this extra organizational information can prevent students from feeling "lost" or "overwhelmed" by the materials, as disorientation can significantly limit instructional outcomes. (Oliver, Herrington, & Omari, 1996)

- b. Objectives: Explain how you will inform the learners about the objectives (e.g. what they will be able to do) and explain their relevance and importance.
- c. Orientation to Learning: Explain how you will sets the stage for the instruction, outlines expectations, and facilitates the learners' understanding of how to proceed through the unit of instruction.
- d. Student Groupings: Explain how you will group students for the preinstructional activities (e.g., individualized, small subgroups, whole group).

2. Assessments

- a. Pretest : Identify whether or not you will implement a pretest, explain what you will test for, and how you will use the results you
- b. Practice Assessments: Identify and explain any practice or rehearsal assessments you plan to implement. Identify where they will be located and how they will inform the instruction.
- c. Posttest / Final Assessment: Explain when and where the posttest will be administered.
- d. Student Groupings: Student Groupings: Explain how you will group students for the assessment activity (e.g., individualized, small subgroups, whole group).

*** Only one assessment item is required to assess each objective or cluster of objectives; however, multiple assessments are also acceptable. See Horton text on tests for some assessment ideas.

3. Follow-Through / Summary and Close Activities

- a. Describe memory aids, factors to be employed to facilitate performance transfer, review plans, or summarizations that will be developed to facilitate retention of information and skills.
- b. Student Groupings: Student Groupings: Explain how you will group students for the follow – through activity (e.g., individualized, small subgroups, whole group).



Key to Successful Distance Education Course Design: Plan for Student Participation

Equally important to the role of the instructor is the role of student communication. Ensure that you plan ample opportunities for student participation and collaboration. The Instructional Design Tip Site published by Blackboard suggests planning the following:

Weekly Discussion Questions or Problem Sets. Require each student to post one answer to the assignment and also to reply/comment on at least one other student's answer.

Group Assignments. Divide students into small groups and assign a collaborative project, paper, or presentation.

Online Journals. Require students to keep an online journal of their learning experiences and reflect on both the content and online experience. Make this available for all students to view and comment on.

Online Fieldtrips. Provide the opportunities/assignments for students to perform research online, visit related sites, and report experiences to the rest of the class.

Online Guest Speakers. Arrange for a subject matter expert to answer student questions in a chat or discussion board.

Open Forum. Provide a chat or open discussion area for students to communicate without the constraints of an assignment. This will promote friendly relationships.

***Note that the actual information you will present is not listed here.

The next step is to plan the content presentations and student participation sections for each objective or cluster of objectives. Again, Dick, Carey, and Carey (2005) suggest that you plan by using a narrative using the following outline (All descriptions should be congruent with the objectives):

1. Content Presentation

- a. Content: Describe the content that will be presented for each objective. .
- b. Examples: Identify and describe examples and non examples.
- c. Student Groupings: Explain how you will group students (e.g., individualized, small subgroups, whole group).

2. Student Participation

- a. Practice: Describe practice exercises that will be employed. .
- b. Feedback: Describe how feedback on practice will be given.
- c. Student Groupings: Student Groupings: Explain how you will group students (e.g., individualized, small subgroups, whole group).

Finally, you need to take time to review your sequence and clusters of objectives, preinstructional activities, assessment, content presentation, student participation, and student groupings and, then, media selections, which will be covered in the next module. Using all of this information and considering your overall timeframe, you assign objectives to lessons or time periods. When developing a course that extend over a significant period of time (semester long planning), it is acceptable to spread objectives and corresponding preinstructional activities, assessments, etc. over a period of time. For example, the first lesson may obtain preinstructional activities, while the last lesson may contain the assessment and/or follow-through activities. Since you are designing a lesson or workshop this step should be short. Also note that the lessons may not include or include a modified version of the elements of the instructional strategy discussed.

In addition to assigning objectives to lessons or time periods, you need to estimate the time that each element planned with take. Take for example your module “To Do” Lists. This is to ensure that what is planned is reasonable for the timeframe allotted for the learners in which it is planned.

Final Note: As you develop your instructional strategy remember that you should not write out your entire lesson, but think through the entire lesson before you develop it. This section is clear and concise.

ISD Project: Additional Consideration

As you complete this aspect of your ISD report, you should note that that there are additional considerations such as class size, interactivity, and feedback (e.g. balancing students desire and what is reasonable for the instructor).

- Horton (2006) discusses some of these issues throughout the text.
- Davidson-Shiver and Rasmussen (2006) discuss these issues as they relate to web-based design.

- Moore discusses the importance of interaction in his theory transactional distance (see Moore, M. "Theory of transactional distance." Keegan, D., ed. "Theoretical Principles of Distance Education (1997), Routledge, pp. 22-38. <http://www.aged.tamu.edu/research/readings/Distance/1997MooreTransDistance.pdf>).
- And, Orapin et al (2007) apply his theory to design (see Orapin, D., Gray, D., & Williams, M. (2007). *Transactional distance theory applied when designing international accounting online courses*. The Texas Journal of Distance Learning [Online serial], 4(1). 13-24. Retrieved from <http://www.txjdl.org/articles/v4i1/duangploy/duangploy.pdf>)

Distance Education Application: Building a Sense of Community to Prompt Interactivity

Conrad and Donaldson (2004) recognize the importance of instructional strategies that promote collaboration, community, and engagement in the online environment. They state that “[e]xperienced online instructors have found that interaction is actually the essence of the course. The rest of the course will go much more smoothly if care is taken to promote ...the engagement process” early in the course (p.10). They continue by stating that the process should be fostered throughout the course.

For example:

Introductory discussion forums such as *Truths and Lies* and *One Thing that Describes Me* help learners discover interesting information about their fellow students in an interactive responsive manner. Requiring learners to create a homepage where they can post a picture and provide a brief personal description is another activity that helps learners become familiar with one another. Once learners get to know one another through introductory activities, educators can plan dyad and small group activities to promote social presence. For example, the educator may choose to do small discussions on a discussion forum and then summarize their discussion for the entire group.

Conclusion

Once your strategy is complete you should have the prescriptions necessary to develop your instructional materials. After we finish discussing media selection in the next module, your strategy will be complete. You will, then, move onto the next steps in the ISD process, development. That is you will take your plan and make it a reality.

As we end this unit, you should be able to:

- Describe important aspects to consider when designing instructional strategies for the distance education environment
- Create instructional strategies that align with instructional objectives and that are appropriate for the distance education environment and learners' developmental stage

By the end of this unit, you will have also hopefully met your personal objectives.

Personal Objectives:

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Let's end this unit with a reminder of the importance of instructional strategy. Gagne (1988) states:

The planning of an instructional strategy is an important part of the instructional design process. It is at this point that the designer must be able to combine knowledge of learning and design theory with his experience of learners and objectives. Needless to say, creativity in lesson design will enhance this other knowledge and experience. Perhaps it is this component of creativity that separates the art of instructional design from the science of instructional design. It is clear that the best lesson designs will demonstrate knowledge about the learners, the tasks reflected in the objectives, and the effectiveness of teaching strategies. (p. 28)

