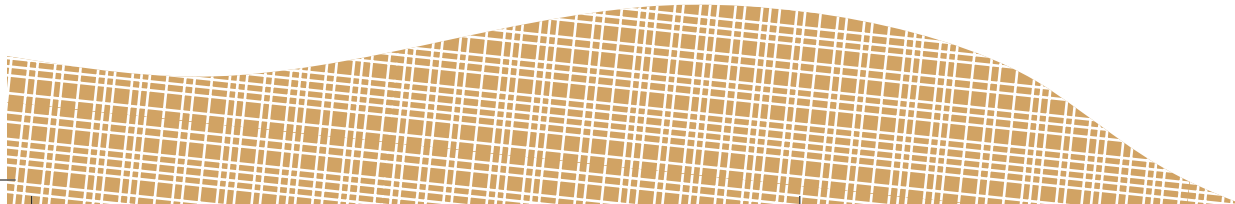


chapter 13

Advance Organizers



This past spring my wife and I (T. D.) spent a few hours walking around our yard with a landscape architect who was helping us develop a plan for gardens and a deck addition at the back of our house. Our yard has lots of beautiful plants, but we were looking for a plan that would help us have the kinds of gardens we have seen on all the popular home makeover shows on television! In many ways, I was just



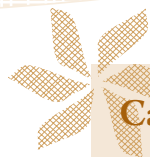
along for the ride. Although I love working outside in the garden and appreciate a beautiful garden when I see one, my knowledge of plants is limited. My wife and the landscape architect walked around the yard pointing at plants, naming them, and talking about their features—leaf formations, blooming periods, growth patterns, and ability to thrive in a variety of environmental conditions. Given that it was early spring and almost none of the plants had flowers or were more than a few inches out of the ground, I was even more impressed than usual. I spent most of the time saying things like “What’s that one called again?” “What does that one look like?” and “Is that a coneflower or a daisy? I never can tell the difference!”

It was clear to me from this experience that my wife and the landscape architect have a deeper understanding of botany—the larger organizing scheme of plant life—than I do. For example, they can take the detail of a leaf configuration and use it to classify a plant and deduce its name. (Even more impressive, both of them can provide the Latin names for these plants!) You have probably had experiences in which the topic being discussed was complex, hierarchical, and part of a larger discipline, but because you understood the hierarchy, you could relate the new information to what you already knew. Connecting new information to prior knowledge made it possible to recall the new information when necessary. However, if your understanding of the bigger picture was limited, and consequently, you learned new pieces of information somewhat randomly, you had fewer ways to attach the new information, which made it difficult to recall at a later time.

This state of affairs represents a significant task for teachers. They must provide their students with large amounts of information in a way that helps the students understand, retain, and recall it. Most teachers know that this task requires fitting the information into a larger framework that can serve to organize it and allow multiple pathways for locating and retrieving it as needed.

Advance Organizers are a model for helping students organize information by connecting it to a larger cognitive structure that reflects the organization of the discipline itself. Developed by David Ausubel, Advance Organizers were a “practical implication of his theory of meaningful verbal learning” (Kirkman & Shaw, 1997, p. 3). Teachers consider the hierarchy of a subject as they plan lessons and prepare an advance organizer that outlines or introduces the more abstract or generalized structure of the subject (for example, what distinguishes a plant from an animal). The information presented in the lessons that follow is connected to this cognitive structure. (Photosynthesis is a process used by plants to produce carbohydrates by using light from the sun and chlorophyll. Plants use this process. Animals do not.)

As you read Case Study 13.1, consider how the teacher has developed the advance organizer, how it has been introduced to the students, and how it serves as a meaningful framework for understanding and retaining the specific information to be covered in the lessons that follow it. You may also want to consider how the academic rationalism perspective helps you understand this model and how the model itself can help you align your work with content standards and benchmarks.



Case Study 13.1: High School, Science

Ms. Wolters is an Earth sciences teacher in a large and urban high school. She has recently become concerned about two things she has heard from her colleagues. Some of her colleagues have said they feel a great deal of pressure to teach large amounts of scientific information to prepare students for the state-mandated testing. More important, they have said that when taking quizzes and tests, students just don't seem able to understand and recall the information taught. Ms. Wolters learned that these teachers have been preparing lists of vocabulary terms for students to memorize and then testing them on the terms. Students have had difficulty applying the terms and recalling their meanings.

As Ms. Wolters considered the concerns of her colleagues, she thought back to some of the science courses at the small college she attended. It occurred to her that what had made one of the courses so helpful was the instructor's ability to help her see the bigger picture of the discipline. This allowed her to connect the small bits of information she was learning to the major questions and issues of the discipline. She recalled gaining a good command of the information, and her ability to retain and recall it improved remarkably. She contrasted this with her college chemistry class, which primarily involved memorizing terms and formulas. She had little doubt which class had been the better learning experience.

Ms. Wolters decided to try to resolve the concerns her colleagues had expressed by making use of an advance organizer for the next segment of her Earth sciences course for tenth-grade students. She had recently become familiar with the structure and use of advance organizers and believed they would help her students understand and retain necessary information by connecting it to the larger structure of the content.

Ms. Wolters began by creating a hierarchy for the subject and information to be taught. One of her state's content standards and benchmarks dealt with the geosphere in general and recycling in particular (Michigan Department of Education, 1996, pp. 88–90). As Ms. Wolters wondered what to use for her advance organizer for this topic and how to present it, she considered the details she was required to cover in this unit: specific information about the impact that recycling natural resources has on health, the economy, and the environment. The content included terms like *supply*, *demand*, *conservation*, *natural resources*, *solid matter*, and *economic impact*, as well as the concepts these terms represented. Ms. Wolters then tried to generalize this content to explore the larger concepts and issues that framed the details. Using reference books, the district-mandated textbook, and electronic searches, she began to make lists of questions that seemed to capture the structure of the larger discipline of the Earth sciences and the topic of the geosphere specifically. Ultimately, she settled on the following questions: Can the Earth continue to supply and produce consumable resources, or should alternatives be explored? What are the costs and benefits?

Having determined this general and abstract question, Ms. Wolters next began to consider the structure of the advance organizer itself. She decided to write a short passage about the debates over drilling for oil in the Alaskan tundra region. The students had studied the tundra in an earlier segment of the course and had briefly discussed a newspaper article about drilling for oil in the Arctic National Wildlife Refuge. She knew from the lack of focus and participation during this brief discussion that her students knew little about


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this issue in particular, and it could serve to generalize the content she needed to cover—how the decision to recycle the Earth's solid resources has costs and benefits.

After the students had read the passage she created, she planned to have a brief conversation that would explore the larger question, followed by a presentation on the specific content she wanted to help her students learn. They could then return periodically to the larger question as they considered the detailed information. She wrote the following objective for this lesson:

The learner will use an advance organizer to explore the costs and benefits of recycling.

Ms. Wolters's advance organizer is shown in Table 13.1.

Table 13.1 Advance Organizer on the Tundra

The tundra region is one of the most fragile environments on the face of the Earth. Footprints made in the snow have been known to last for decades. The ground located under the tundra area in the Arctic National Wildlife Refuge in Alaska is known to be a repository of major oil reserves. Recently, debates have raged about drilling for oil in that area. Proponents argue that drilling will have a limited impact on the environment, that few people inhabit the area, and that the drilling will bolster local oil production and limit dependence on oil from other countries. They contend that as long as people in the United States continue to use oil at current rates, this drilling will be essential. On the other hand, opponents cite irreparable environmental damage and a lack of necessity for more oil production. They argue that the United States should emphasize the development of alternative sources of energy and the conservation of natural resources.

The debate on the proposed drilling in the Arctic National Wildlife Refuge illustrates a fundamental issue for all people in the United States. There are costs and benefits associated with finding and using natural resources. Do the benefits outweigh the costs, or vice versa? Consider this question as we spend the next several weeks learning about natural resources and their uses.

Ms. Wolters: Today we are going to start a new unit of study. It will last for the next several weeks. I have just passed out a passage that we are going to use to organize our studies. I'd like you to take a few minutes to read this passage to yourselves. (*All students read the passage. Afterwards, Ms. Wolters resumes the conversation with the students.*) I'd like to get your initial reactions to what you have read here.

Thea: This really bothers me. I mean, what are they thinking? We learned before that the tundra is really fragile, like it says here. Once you mess it up, it's not going to get fixed easily or maybe never. I am totally against this drilling.

Corry: Right. Besides what it will do to the Earth, think about all the animals that live in the tundra. What will the drilling do to the environment they live

in? This could cause some of those animals to lose their habitat and die. I'm with Thea on this one.

Willie: Well, I don't want to see the environment wrecked any more than anybody, but I have to admit, I'm tired of high gas prices. I can barely afford to drive my car. So maybe I would be willing to give up some land so that we can have more oil and bring down the price of gas. Maybe the cost isn't too high if you figure out how much we need the gas.

Manuel: Besides that, I don't think it would hurt the animals that much. Alaska is a big state, and they could find other places to live. I'm with Willie. Let's go ahead and drill. It will be worth it.

Ms. Wolters: So here is what I have heard so far. Some of you think that the cost of damage to the environment and wildlife is too high. Others of you believe that the benefits of being able to have more oil to make gasoline for driving are worth the cost. Any other thoughts?

Carla: Well, I'd be willing to drive less or maybe carpool with friends more if I thought it would help us avoid this kind of damage. I just don't think it's right.

Vera: Yeah, but you know oil isn't just used for gas. Lots of the plastic things we use are made with stuff they get from oil, so it would take a lot of changes in the way we live if we didn't drill for more oil. I don't want to hurt animals or the environment, but I have to be honest too. I'm not sure I want to change the way I live over this. Maybe the cost is worth it.

Ms. Wolters: This is a big question, and I don't think we'll be able to address it fully today. As I mentioned to you earlier, we will be using it to organize our studies for the next several weeks. Here's what I mean. We are going to be talking about things like recycling natural resources and products that are made from them. We are also going to talk about the costs—only this time I mean in dollars and cents. We are also going to look at health issues related to our use and perhaps abuse of natural resources. And as we do all that, I'd like us to keep coming back to this passage and asking ourselves how the things we are learning fit with it. I also jotted down your initial reactions so that we can come back to those too. Now I'd like you to turn to page 276 in your textbook. In this section we are going to read about the production of plastic products and the roles of natural resources and recycling. Remember to keep asking yourself about the costs and benefits as you read this passage.

Ms. Wolters concludes this introduction to the advance organizer. For the lessons that follow, she has exercises and activities planned that will focus on the specifics of this unit. Most specifically, the students will read and learn about recycling, economics, supply and demand, and health issues related to use of these natural resources. She will display the

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advance organizer on a classroom chart and will direct students often to the way the information they are learning relates to the larger question of costs and benefits.

Case Study 13.1: Post-Lesson Reflection

Ms. Wolters was very pleased with the use of the advance organizer and how it will serve as a framework for her students as they explore detailed information on the use of the Earth's resources. She believes that the organizer and its introduction contained enough familiar information about the tundra that her students could connect with it. She also believes that it was abstract and general enough that it will serve as a scheme for their learning. Her goal was not to teach her students about the oil drilling debate in Alaska, but rather to use the question of costs and benefits to anchor their thinking about upcoming course information. She wanted the organizer to strike a balance between the familiar and detailed, on the one hand, and the abstract and general, on the other. She believes her advance organizer and her introduction of it met this requirement.

As she constructed the advance organizer, Ms. Wolters also tried to capture the larger issues and questions that organize and guide this particular field of study. Rather than starting there, she began with the more detailed information that was part of the curriculum to be covered and worked her way up the hierarchy.

In addition, Ms. Wolters wanted to make sure that the advance organizer did not just provide an overview of the subjects to be studied or an introduction of details that she planned to cover. Rather, she wanted this organizer to be and do what its name implies—provide her students an organizational framework for the facts, figures, other details, and vocabulary they will encounter in this unit of study. This is why she explicitly reminded them, as they began reading from their text, to “remember to keep asking yourself about the costs and benefits as you read this passage.”

Finally, Ms. Wolters was also aware that simply having her students read the advance organizer would not serve her entire purpose. She knew that a discussion would be needed to teach the organizer itself and overtly help students see how it would be used in the future. Without this discussion, she feared her students might not use the advance organizer or understand its purpose. Returning to the organizer in the future will further help the students see how it can help them organize their thinking about the details of ongoing course activities.

Constructing Advance Organizers

Unlike many of the models that we have described in this text, the Advance Organizer model does not have prescribed stages or procedures. As discussed by Kirkman and Shaw (1997), “The specific construction of advance organizers will

depend on subject matter, learners, and the desired learning outcome” (p. 5). However, some guidelines for the construction and use of advance organizers can be discussed. In addition, we will consider the roles of teachers and students as they use advance organizers.

Advance Organizers Defined

Although some have suggested that an operational definition of advance organizers does not exist, others seem more comfortable with the way that Ausubel defined them:

appropriately relevant and inclusive introductory materials . . . introduced in advance of learning . . . and presented at a higher level of abstraction, generality, and inclusiveness than the information presented after it. The organizer serves to provide ideational scaffolding for the stable incorporation and retention of the more detailed and differentiated materials that follow. Thus, advance organizers are not the same as summaries or overviews, which comprise text at the same level of abstraction as the material to be learned, but rather are designed to bridge the gap between what the learner already knows and what he needs to know before he can successfully learn the task at hand. (Ausubel, 1968, as cited in Kirkman & Shaw, 1997, p. 3)

In some respects, Ausubel has defined advance organizers by saying what they are not: “summaries or overviews.” As demonstrated in Case Study 13.1, Ms. Wolters did not introduce the topic of recycling and its impact on health, the economy, and the environment by presenting the students with a summary or overview of these topics. Rather, she selected the tundra and the debate about drilling for oil—a subject not to be included in the unit of study—for their ability “to provide ideational scaffolding for the stable incorporation and retention of the more detailed and differentiated materials that follow.” There may be times when beginning a unit of study with an overview or summary of the information you will be tackling makes sense. However, that is not the purpose of an advance organizer as defined by Ausubel and others (Relan, 1991).

The heart of Ausubel’s definition of an advance organizer is its ability to “provide ideational scaffolding.” Ausubel believed that all content areas have a structure or hierarchy. The advance organizer helps students see the governing questions, issues, and propositions that are reflected in that hierarchy. If students understand the basic outlines of the structure, they are able to fill in the “cracks” appropriately and effectively with new and related information as it is presented to them.

In addition, an advance organizer serves as an introduction that is “presented at a higher level of abstraction, generality, and inclusiveness than the information presented after it.” The students in Ms. Wolters’s class were asked to consider the costs and benefits of drilling in the Arctic National Wildlife Refuge as a way to consider the larger question of the costs and benefits of the use of natural resources from the geosphere, the solid matter in the Earth. Ms. Wolters constructed the advance

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Advance Organizers provide a structure or scaffolding that allows students to organize information about the subject under consideration.

organizer in a generalized fashion, allowing the students to use the larger question to frame their study of specific information. Her advance organizer fits well with Ausubel's call for the use of abstraction and generality.

In summary, an advance organizer may best be defined by what it does. It allows students to develop an understanding of the structure behind a subject or content area—the hierarchy. It introduces students to that structure at a general, abstract, and inclusive level. In short, it is a versatile instrument for helping students understand and recall information by seeing how it fits with the larger structure of the subject.

Ausubel's definition of advance organizers does not include strict operational guidelines for constructing them (Kenny, 1993). According to McEneaney (1990), Ausubel did not always follow his own definition strictly when constructing advance organizers for his own research into their efficacy. Perhaps the key is flexibility and consideration of the learners and the content.

Types of Advance Organizers

According to Kirkman and Shaw (1997), there are two categories of advance organizers: **expository** and **comparative**. "Expository organizers function to provide the learner a conceptual framework for unfamiliar material, and comparative organizers are used when the knowledge to be acquired is relatively familiar to the learner" (pp. 3–4). Familiarity with the new material is key to determining which type of organizer you will want to use. The concepts that Ms. Wolters hoped her students

would understand, about the geosphere in general and recycling in particular, were largely unfamiliar to them and called for the use of an expository organizer. You will want to use a comparative organizer when the subject is familiar—although not the same—to the learner. It helps the learner distinguish between familiar concepts or subjects.

An advance organizer, whether expository or comparative, can take many forms. Ms. Wolters used a **text-based advance organizer** with a short discussion. In Case Study 13.2, the teacher uses a **visual advance organizer**. Given his students' reading abilities, he wants to ensure that all his students can participate fully, so the use of enlarged photographs and discussion is sensible. Others have developed advance organizers that are strictly oral, and some have made use of videos and computer programs. When Ausubel developed the Advance Organizer model in the 1960s, many of the technologies that are currently available had not yet even been conceived. The range of formats for constructing your advance organizer is wide and adaptable.

Guidelines for Constructing an Advance Organizer

Constructing an advance organizer is the task of the teacher. The teacher determines the structure of the discipline, content, or subject to be mastered and then develops the organizer. Some guidelines for this process may be helpful. Kenny (1993) cites characteristics or guidelines proposed by Mayer (1979) when Mayer reinterpreted Ausubel's theory.

Table 13.2 Advance Organizer Guidelines

1. Short set of verbal or visual information.
2. Presented prior to learning a larger body of to-be-learned information.
3. Containing no specific content from the to-be-learned information.
4. Providing a means of generating the logical relationships among the elements in the to-be-learned information.
5. Influencing the learner's encoding process.

SOURCE: Mayer, 1979, as cited in Kenny, 1993, p. 3.

When constructing an advance organizer, keep the content short. Because the organizer serves to introduce and frame the information that is to follow, it need not be lengthy. The advance organizer text Ms. Wolters constructed was only a few paragraphs long. Its use and the conversation that followed were completed in a short time.

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The advance organizer should not include any of the specific information that will be presented later. This is in keeping with the idea that the organizer itself should deal with the subject or content at a more abstract and general level. Ms. Wolters never mentioned recycling or the other specific concepts she intended to present—either in the text of her organizer or in the introductory discussion.

Finally, the advance organizer should be designed to allow learners to see the logical relationships between the structure of the discipline or subject and the information to be presented later. Such a design will also enhance opportunities for learners to both understand and recall the details presented later.

Procedures That May Facilitate the Use of an Advance Organizer

Some specific procedures may help your students use an advance organizer in an efficient and productive way.

1. Read a text-based advance organizer orally to your students.

Some researchers (Rinehart, Barksdale-Ladd, & Welker, 1991) found that the teacher's reading the text and discussing it with students improved students' recall of information.

2. Add visuals to your advance organizer.

Visuals can include drawings or photographs, or pictures by themselves can serve as the organizer. Researchers Chun and Plass (1996) had success with videos as advance organizers.

3. Use concept maps or other forms of graphic organizers as advance organizers.

Concept maps and graphic organizers are variations of advance organizers (Story, 1998). Often used throughout a unit of study, they can be designed by the teacher for use as an advance organizer. Willerman and Mac Harg (1991) found that the use of a concept map in this way had significant and positive results for their learners.

4. Teach the advance organizer and remind students to use it often.

Students must understand the purpose of the advance organizer. Once this is understood, it is most effectively used if students are reminded to connect their new learning to it. As stated by one group of researchers (Groller, Kender, & Honeyman, 1991), "Students need to be taught how to use, monitor, and evaluate their use of advance organizers in order to use these to their advantage" (p. 473).

Roles of Teachers and Students in Using an Advance Organizer

The general roles of teachers and their students are clear in both the construction and introduction of an advance organizer. Initially the teacher is at the center in

both of these activities (Downing, 1994). The teacher alone constructs the advance organizer because the teacher has the necessary understanding of the discipline. The teacher is also able to determine the prior knowledge of the learners (Jackman & Swan, 1994).

However, students do have an important role when the advance organizer is being introduced. Although some teachers may elect to limit student participation in the presentation of the advance organizer, others do not (Downing, 1994). Indeed, in both of the case studies in this chapter, students were active participants, sharing ideas and understanding. We encourage you to find ways to actively engage students physically and intellectually as you introduce and use advance organizers.

As you read the case study below, look for the features of construction and use of advance organizers outlined in this section.



Case Study 13.2: First Grade, Social Studies

Mr. Brehm is a first-grade teacher in a rural elementary school that serves students from a surrounding agricultural community. This is his first year teaching, and he is eager to organize his new curriculum so that his students can connect what they are learning to larger themes rather than teach information in a more isolated and fact-driven manner. In using the textbooks and curriculum documents he has been given, he notes that one social studies content standard says “describe, compare and explain the locations and characteristics of economic activities, trade, political activities, migration, information flow, and the interrelationships among them” (Michigan Department of Education, 1996, p. 36). Specifically, the benchmarks for this grade level call for learning how neighborhoods or communities include housing, commerce, transportation, and communication systems, as well as their interrelationships with each other and the environment.

To meet the content standards and benchmarks, Mr. Brehm has decided to construct an advance organizer around a theme he has labeled “Our Neighborhoods.” Next he looked at the larger issue of what constitutes a study of communities and how communities can be reflected in housing, commerce, communications, and transportation. For example, he knows that the students in his class are very familiar with the flat expanses of land surrounding the school, but he is not certain that they understand that the moderate climate, many nearby lakes, and access to highways and a large city nearby have all interacted to make their neighborhood an ideal setting for a farming community. It is this sense of community that is implied by the content standards for this grade level, and he wants to help the students use this larger idea of interdependence with the physical and social environment as a framework for their exploration of the housing, transportation, communication, and commerce patterns.

After much consideration, Mr. Brehm has decided to use photographs and illustrations for his advance organizer. He has found several photographs of animals and insects in their

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environments. Using animals and insects will allow him to use something that the students are familiar with, given that they have spent considerable time studying various animals and insects in their science unit, to consider the larger concept of communities as places that reflect interdependence between the environment and those who live there. The animal and insect photos will allow the students to talk about human issues abstractly as they discuss how animals and insects travel, use their environment for finding food, and develop their housing. Mr. Brehm's goal is not to teach about the animal environments but rather to use them in a general way to help the students organize the larger concepts related to a community. His intention is to use this advance organizer as a frame for the details his students will learn about their own neighborhood, as a community they live in. Mr. Brehm has the following objective for today's lesson:

The learner will use an Advance Organizer to discuss the concept of community.

The dialogue below illustrates how Mr. Brehm introduced this visual advance organizer at the beginning of his "Our Neighborhoods" theme.

Mr. Brehm: Today I want to show you some pictures I have of animals and insects and where they live. Let's look at this picture of bees and their nest. (*He shows them the large picture he has—a procedure he will use throughout this introduction to this advance organizer.*) Does it look like this nest is a home for one bee?

Steve: No, there's a whole bunch of bees living in that big nest. It looks just like the one that was in the tree at my house, and there were tons of bees living in it.

Mr. Brehm: Do you mean that all these bees can live in one nest? (*Children nod in agreement.*) Well, wouldn't they all bump into each other all the time? The nest isn't that big, and there are a lot of bees.

Courtney: Well, they must be able to hear each other because they sure do make a lot of noise. So maybe that's how they know how to get around each other.

Jamila: Yeah. I think they know how to talk to each other or something because one time my dad hit a nest with a stick, and all the bees came after him. It was like they were telling each other to come after him.

Mr. Brehm: Very interesting. I was wondering how they got this big nest to live in. Did they just borrow it, or did they make it?

Dave: Oh, they definitely make them. Last summer we kept getting hornets on our hammock, and my mom said it was because they were using the rope to make their nests. We had some big nests on our barn too.

Mr. Brehm: So how did they get the rope to their nests?

Dave: Well, I'm not sure, but I think that they carry them in their mouths while they fly.

Mr. Brehm: Well, let's take a look at another picture. *(He shows them a photo of a group of prairie dogs with their heads sticking out of holes in the ground.)*

Dakota: Oh, I know that one. Those are prairie dogs. Remember, we saw some of those at the zoo during our field trip last month?

Mr. Brehm: Yes, I do remember. Now what I'm wondering about is why all these prairie dogs live so close together. I mean, with all that land around them, don't you think they'd rather live by themselves or at least have a little more space?

Jorge: But Mr. Brehm, remember what that lady from the zoo said? She told us that prairie dogs protect each other. They make a warning noise if some other animal is around that is going to hurt them. So they live close to each other so that they can protect themselves.

Annie: And didn't she say that they share food with each other too? I'm not really sure about that, but I think that's what she said. But if they do, they'd want to be close together so that they can share.

Mr. Brehm: I've got another picture to show you. *(He shows them a picture of a group of monkeys. One is holding a baby and appears to be the mother. In front of her is another monkey that appears to be making a vicious face at another nearby monkey.)* What do you think is going on here?

Nancy: It looks like that one monkey is really mad at the other one. He has a pretty mean face.

Keegan: You know, I saw a show about monkeys on television once, and these two monkeys were fighting because the one monkey didn't want the other one near the girl monkey with their baby. My dad said that in the monkey world, they have a kind of rule that if you are a boy monkey, you can't go near someone else's wife and baby. But he did say that monkeys don't really get married like people do. Anyway, I think that might be why he's mad—because the other monkey broke the rule.

Mr. Brehm: So you are saying that even insects and animals might have rules for how they have to behave, like the rules we have here in our classroom?

Keegan: Well, they don't write them down or anything, but they seem to have them somehow.

Mr. Brehm: There's one more photograph I want to show you. *(He shows them a picture of a large ant hill covered with ants.)* What do you think all these ants are doing?

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- Lindsay:* It looks like they are working. Look at how some of them are carrying stuff. They look like movers or something carrying stuff into their house.
- Megan:* Yeah, I was watching an ant hill with my friend one time and we saw them carrying stuff into their hill. It was little stuff, but it must have been heavy for them.
- Mr. Brehm:* So you're saying that ants work. Do you think any of the stuff they are carrying is like furniture or something for their house? *(He laughs.)*
- Jon:* No, but I saw some ants carrying little bits of sand one time and I think that they were building their house. Maybe that's what they are doing.
- Mr. Brehm:* So you mean that they are using things around them to build their house? *(Jon nods.)* OK. Well, I have learned a lot from these pictures today. I learned how bees make houses, how monkeys follow rules, and how prairie dogs protect each other and maybe even share food with each other. It sounds to me like some of these animals live in neighborhoods, just like we do. Of course, our neighborhood has people living with each other. And I would like you to think with me for the next few weeks about how our neighborhood works like some of these animal and insect neighborhoods. For example, how do we talk with each other, protect each other, use the land to make food and houses, and things like that? When people work with each other, help each other, and play with each other, we call that a community. I want to spend a lot of time talking during the next few weeks about what makes our neighborhood a community. We'll use our animal and insect friends to help us along the way.

As the lesson ends, Mr. Brehm sends the students to assigned centers. Each center represents a dimension of communities that he wants them to understand. For example, one center has a telephone and tape-recorded instructions for practicing how to call various emergency numbers. Another center is a grocery store where students can make grocery lists and "purchase" needed items.

Mr. Brehm will engage the students in many activities over the next several weeks to teach them about the specific content related to community commerce, transportation, and other aspects listed in his curriculum. He will post the photographs and remind the students occasionally of the connections between what they are learning about human communities and what they learned from this organizer about the concept of community interactions and interdependence.

Case Study 13.2: Post-Lesson Reflection

As a result of the use of his visual advance organizer and ensuing discussion, Mr. Brehm believes that his students have a framework for the concept of community, not just details without a unifying anchor. For example, as the students begin to learn about things like

using a telephone to call 911 in an emergency situation, they will be able to connect this to the ideas introduced in the organizer—that community members have ways to protect each other and communicate. He believes that when his students learn the specific content of this unit, they will have a greater understanding of the content itself and better recall later because the information has been moved into long-term memory in a connected fashion, as a result of his use of this advance organizer.

When Mr. Brehm was developing this advance organizer, he was mindful of the fact that many of his students are emerging readers. As a result, he considered whether a text-based advance organizer would be the most accessible for all his students. He elected instead a visual organizer that could easily be used by all his students. He included discussion, both to ensure that all his students could benefit from the organizer and to teach the organizer itself.

Another issue that Mr. Brehm considered in developing his organizer was whether students would be passive or active as it was used. His goal was to involve students as actively as possible. He was aware that the use of advance organizers can be a receptive activity for students. He believed that the use of pictures and the ensuing discussion allowed him to structure the lesson in a manner that was **developmentally appropriate** for this group.

Brief Background of Advance Organizers

According to Kirkman and Shaw (1997), “the concept of advance organizers to facilitate learning was first introduced by Ausubel (1960) as a practical application of his theory of meaningful verbal learning” (p. 3). Ausubel and his associates conducted a number of studies to provide support for his theories and the use of advance organizers (Ausubel, 1960; Ausubel & Fitzgerald, 1961; Ausubel & Fitzgerald, 1962; Ausubel & Youssef, 1963; as cited in McEneaney, 1990, and Kirkman & Shaw, 1997). Since their introduction more than 40 years ago, much has been written about advance organizers as a tool for helping students understand and recall information.

Advance Organizers and Research on Teaching

The research on the Advance Organizer model has been extensive and decidedly mixed. Some researchers (McEneaney, 1990) have suggested that the use of advance organizers has either limited or no efficacy in promoting understanding of information or recall, and others (Ruthkosky & Dwyer, 1996; Relan, 1991) have pointed out that particular types of advance organizers (visual, etc.) have no or only limited effect. On the other hand, many researchers and practitioners (Rinehart et al., 1991; Lawton & Johnson, 1992; Chun & Plass, 1996; Willerman & Mac Harg, 1991) believe advance organizers are very effective.

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The mixed bag of research findings may result from the ambiguity of Ausubel's definition of an advance organizer (Story, 1998). In short, it is difficult to assess and compare the results of studies based on dissimilar interpretations of Ausubel's theory (Clark & Bean, 1982, as cited in McEneaney, 1990).

Among the favorable findings, Chun and Plass (1996) reported that the use of visual advance organizers "does aid in overall comprehension" (p. 503). Willerman and Mac Harg (1991) concluded that "the use of concept mapping as an advance organizer produces a significant increment in academic gain for the students in eighth grade physical science classes" (p. 708). Rinehart et al. (1991) stated that "an advanced organizer read orally by the teacher and followed with guided discussion significantly increased recall" (p. 325).

Finally, it is clear that more research will be needed to identify all the benefits of advance organizers and determine what components of an advance organizer may be less effective. However, we concur with the sentiments of Carol Story (1998) in the conclusion of her review of the research on advance organizers: "Instructional designers can feel confident that advance organizers are an important part of their instructional designs, that organizers are needed whatever the media of instruction, and that organizers themselves can be delivered by a variety of media" (p. 259).

Advance Organizers and Learning Theory

Ausubel's work on his theory of meaningful learning fits within the larger theoretical perspective of **information processing theory**, which metaphorically views human learning and memory as a computer. Information is entered, considered, sorted, and filed for later retrieval. Ausubel's theory of advance organizers can likely best be viewed using general models of human memory that roughly fit with this comparison to the functions of a computer.

In human memory models, all information begins in short-term memory. Information that is attended to moves briefly into the working memory. Small amounts of this data are moved into long-term memory through various processes, including meaningful learning. Relan (1991) describes this process as it relates to advance organizers:

According to the theory of meaningful learning advanced by Ausubel, an advance organizer would enhance learning by establishing a hierarchical framework to anchor new, incoming information. Memory traces resulting from such learning would be firm and enduring, ensuring effective transfer into long-term memory. (p. 214)

As illustrated by Relan, then, the advance organizer provides the "hierarchical framework" for students so that they can move information into long-term memory efficiently and effectively and in a connected manner. This framework helps students understand the "big picture" and categorize new information accordingly. Without this organizing feature, new information can move into long-term memory, but retrieval or recall can be difficult or nearly impossible. According to information processing theory, it is the connections that are made with existing structures that

provide the multiple pathways for use and retrieval of stored information. Advance organizers provide a vehicle for building the framework and supporting recall.

Advance Organizers and the Academic Rationalism Philosophy of Curriculum and Instruction

Advance organizers represent the academic rationalism perspective on curriculum articulated by Eisner and Vallance (1974). As discussed by Glatthorn and Jailall (2000), proponents of the academic rationalism philosophy “believe that understanding a discipline’s concepts and syntax of inquiry should be the central goal of all curriculums” (p. 98). The advance organizer was designed with this orientation in mind. It promotes a discipline’s “concepts and syntax” as a way for learners to organize their own thinking in hierarchal fashion.

Further evidence supporting the advance organizer as a representative of this orientation to curriculum is rooted in its historical placement. Ausubel published his early treatments of this topic in the early 1960s. Glatthorn and Jailall have labeled the conceptions of curriculum during this period as the “structure of the discipline curriculums” (2000, p. 102). Reflecting on the work of Bruner, they contend that “the structure of the disciplines should constitute the heart of curriculums; each discipline has its own concepts, theories, and ways of knowing” (pp. 102–103). It is clear that this belief is reflected in Ausubel’s use of advance organizers as a way to operationalize the use of “concepts, theories, and ways of knowing” for guiding student learning.

In Case Study 13.1, Ms. Wolters tried to construct and introduce the advance organizer based on her understanding of the structure of the subject of the geosphere and its related components. She also emphasized “ways of knowing,” as illustrated by the question she posed for student consideration: “Do the benefits outweigh the costs or vice versa?” Likewise, Mr. Brehm considered a central concept of communities as part of the larger subject of social studies as he constructed his advance organizer. Through his use of comparisons with insects and animals, he helped his students begin to explore the structures of this subject. In both cases, the academic rationalists’ orientation to curriculum was clearly in evidence.

Technology and Advance Organizers

As the development and introduction of advance organizers are largely teacher-directed activities, one important use of technology would be researching the topics and disciplines that guide instructional activities and that are being introduced and framed by the organizer. Although it can be presumed that most secondary teachers will have a deep understanding of the discipline related to their content area, most elementary teachers are required to teach many content areas, even those that were not a major area of study in their teacher preparation experiences. For them especially, the ability to find Web sites and articles, as well as Web sites of groups that govern various fields (see Table 1.3), would be invaluable as they construct their advance organizers and develop learning activities.


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Advance Organizers used with personal computers or other technology have much potential for enhancing student learning.

Similarly, an assortment of Web sites produce graphic organizers for teacher use. These graphic organizers can sometimes be used to construct actual advance organizers. The use of a concept map as an advance organizer could be facilitated here. Another option would be to use these graphic organizers as tools to outline and construct a map of the hierarchy of a discipline for use in designing both the advance organizer and the lessons that will follow.

There are applications of technology, with the use of advance organizers, that more directly involve students. However, just as advance organizers can sometimes be a receptive activity for learners, the incorporation of technology may be as well. For example, teachers can put their advance organizer on a computer and project it on a Smart Board or in a PowerPoint presentation format. This allows for easy organization, and the teacher can also easily incorporate video, pictures, and other kinds of visuals and graphics. More important, students will have easy visual access—the kind that is less easily achieved when the teacher holds up photographs or other graphics for a group of 30 students.

Finally, students can use technology to more actively interact with advance organizers. Some researchers and developers have explored the use of advance organizers with educational computer software (Kenny, 1993). These kinds of software can be used in support of a current area of study or as stand-alone activities on a variety of topics.

Listed below are samplings of National Educational Technology (NET) Standards for Students (International Society for Technology in Education, 2000) that illustrate how an advance organizer can be aligned with technology for student activities.*

GRADES PK-2

NET Standard 1: Basic Operations and Concepts

NET Standard 3: Technology and Productivity Tools

Performance Indicator 2: Use a variety of media and technology resources for directed and independent learning activities.

Advance Organizer Extension

Using a Smart Board or PowerPoint, present the advance organizer to students as a group.

NET Standard 1: Basic Operations and Concepts

Performance Indicator 4: Use developmentally appropriate multimedia (e.g., interactive books, educational software, elementary multimedia encyclopedias) to support learning.

Advance Organizer Extension

Locate and provide students with computer software that uses advance organizers for subject organization.

GRADES 3-5

NET Standard 3: Technology and Productivity Tools

Performance Indicator 4: Use general purpose productivity tools and peripherals to support personal productivity, remediate skill deficits, and facilitate learning throughout the curriculum.

Advance Organizer Extension

Locate and provide students with computer software that uses advance organizers for subject organization.

*National Educational Technology Standards for Students: *Connecting Curriculum and Technology* by ISTE. Copyright © 2000 by International Society for Technology in Education (ISTE), 800-336-5191 (US & Canada) or 541-302-3777 (Int'l), iste@iste.org, www.iste.org. All rights reserved. Reproduced with permission of ISTE via Copyright Clearance Center. Reprint permission does not constitute endorsement by ISTE.

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NET Standard 5: Technology Research Tools

NET Standard 6: Technology Problem-Solving and Decision-Making Tools

Performance Indicator 8: Use technology resources (e.g. calculators, data collection probes, videos, educational software) for problem-solving, self-directed learning, and extended-learning activities.

Advanced Organizer Extension

Allow and encourage students to use PCs as they explore information relative to a subject that has been introduced with an advance organizer. This could include using PCs in centers.

GRADES 6–8

NET Standard 3: Technology Productivity Tools

NET Standard 6: Technology Problem-Solving and Decision-Making Tools

Performance Indicator 5: Apply productivity/multimedia tools and peripherals to support personal productivity, group collaboration, and learning throughout the curriculum.

Advance Organizer Extension

Provide students with access to reference software (encyclopedias, etc.) and Web sites to research information related to the content being studied.

GRADES 9–12

NET Standard 4: Technology Communication Tools

NET Standard 5: Technology Research Tools

Performance Indicator 8: Select and apply technology tools for research, information analysis, problem solving, and decision making in content learning.

Advance Organizer Extensions

Provide students with access to reference software (encyclopedias, etc.) and Web sites to research information related to the content being studied.

Direct students to Web sites offered by various discipline-related organizations and assist them in observing the structure of the discipline via resources available on the Web site. In addition, help them explore the discipline's ways of knowing—as demonstrated by content or tools located on the Web site.

Advance Organizers, Content Standards, and Benchmarks

As a model designed to use the structure of disciplines, Advance Organizers can easily be connected to content standards across the curriculum. Indeed, many content standards and benchmarks are designed in a way that reflects the structure or major concepts of various subjects (Glatthorn & Jailall, 2000). Therefore, it can be said that by their very nature, standards and benchmarks are aligned with the aims of an advance organizer.

Content standards and benchmarks sometimes direct students to use the methods of inquiry of a specific discipline or subject in fairly explicit ways. The first example listed below illustrates this point using science. In addition, content standards can always be aligned with the specific content being studied. The second example below illustrates how one set of content standards and benchmarks is connected with the content of Ms. Wolter's Earth science lesson. All Standards and Benchmarks listed below are taken from the *Michigan Curriculum Framework* (Michigan Department of Education, 1996).*

Science

STRAND II, REFLECTING ON SCIENTIFIC KNOWLEDGE: CONTENT STANDARD 1: All students will analyze claims for their scientific merits and explain how scientists decide what constitutes scientific knowledge; how science is related to other ways of knowing; how science and technology affect our society; and how people of diverse cultures have contributed to and influenced developments in science.

Elementary Benchmark: Develop an awareness of the need for evidence in making decisions scientifically. (Key concepts: Data, evidence, sample, guess, opinion.)

Middle School Benchmark: Evaluate the strengths and weaknesses of claims, arguments or data. (Key concepts: Aspects of arguments such as data, evidence, sampling, alternate explanation, conclusion.)

High School Benchmark: Justify plans or explanations on a theoretical or empirical basis. (Key concepts: Aspects of logical argument, including evidence, fact, opinion, assumptions, claims, conclusions, observations.)

STRAND V, USING SCIENTIFIC KNOWLEDGE IN EARTH SCIENCE: CONTENT STANDARD 1: All students will describe the earth's surface; describe and explain how the earth's features change over time; and analyze effects of technology on the earth's surface and resources.

*Excerpts from the *Michigan Curriculum Framework* are reprinted with permission of the Michigan Department of Education.

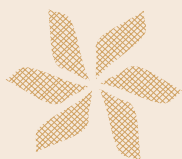
Elementary Benchmark: Describe uses of materials taken from the earth. (Key concepts: Transportation—oil into gasoline. Building materials—sand into glass, ores into metals, gravel into concrete and asphalt. Energy—coal burned to produce electricity; uranium for nuclear power. Water—drinking, cleaning and cooling.)

Middle School Benchmark: Explain how technology changes the surface of the earth. (Key concepts: Types of human activities—surface mining, construction and urban development, farming, dams, landfills, restoring marsh lands, reclaiming spoiled lands.)

High School Benchmark: Explain how and why earth materials are conserved and recycled. (Key concepts: Valuable materials—minerals, metallic ores, iron, copper, aluminum, fuels. Types of resources—renewable, nonrenewable. Conservation, limits, recycling, costs for developing more remote supplies. Recycling processes—melting, shredding, dissolving. Tools: Satellite images and resource atlases.)

Why Choose Advance Organizers?

1. As you consider the amount of content to be taught in a unit or subject, would your students benefit from having a mental framework for organizing and connecting this information as a way to understand it and recall it at a later time?
2. Do your students repeatedly demonstrate difficulty recalling information they have read about a topic under study? Could an advance organizer help prepare them to be better consumers of the information as they connect new information from their readings to things they already know?
3. Are your students mentally engaged with understanding a topic and related information? Would the use of an advance organizer provide them with the kind of focus that might facilitate more engagement?
4. Do you want your students to see how information from a unit of study fits together or is connected in some way? Could an advance organizer help you accomplish this?
5. Would a central theme be a useful way for you to organize the information students need to learn? Could an advance organizer help you find the themes and larger questions of a discipline?



Summary

Developed by Ausubel, advance organizers have been shown to be effective in helping students understand and recall information by providing a framework that represents the hierarchy and major concepts of a discipline or subject. The advance organizer presents introductory information that students are able to use to build a cognitive structure or scaffold in which they can anchor information presented in the various learning activities that follow the presentation of the organizer.

Advance organizers can be used in all subject areas and with all ages of learners. They also can be constructed using visuals, graphics, text, and a variety of other media. As such, they are flexible tools for both student learning and teacher construction and use.

Putting It Together

1. Select a textbook or other reading that students will be using. Take one section or chapter. As you read it, jot down the details and main information that are included. When you are finished, consider how the information fits together. Jot down the larger theme or questions that connect the information. Consider how these themes or questions might help you construct an advance organizer.
2. Review your state's content standards and benchmarks for a content area of interest to you. Note how the standards organize the subject into larger segments that reflect the structure of that discipline.
3. As you explore your state's content standards for a subject of interest to you, consider how you might construct an advance organizer, using one of the subtopics that reflect the structure of that academic discipline.
4. As you develop a unit plan for a course or field experience, begin with an advance organizer. Determine which type would be the best match for your learners and the particular subject you are using: visual, graphic, expository, and so forth.

Student Study Site

The Companion Web site for *Models of Teaching: Connecting Student Learning With Standards*
www.sagepub.com/delloliostudy

Visit the Web-based student study site to enhance your understanding of the book content and discover additional resources that will take your learning one step further. You can enhance your understanding by using the comprehensive Study Guide, which includes

chapter learning objectives, flash cards, practice tests, and more. You'll find special features, such as the links to standards from U.S. States and associated activities, Learning from Journal Articles, Field Experience worksheets, Learning from Case Studies, and PRAXIS resources.

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