Engage students in new content in clear and accessible ways

**How do I plan to engage students in new content?**

**How do I plan to engage students in new content?**

**What are examples of plans that do this well?**

**What different instructional methods can I use?**

Teacher modeling or demonstration
Lecture
Graphic organizers
Questioning to teach
Discussion

**What factors should I consider when planning to engage students in new content?**

Student needs and interests
Instructional tools for different learning modalities
The nature of the content
Time and resources available

*Note: in the 5-step lesson plan, this purpose is usually accomplished by the “Introduction to New Material”*

**How do I plan to engage students in new content?**

- **In your lesson, plan to:**
  - Emphasize the key points that you created earlier
    - focus student attention on the most essential information needed to master objective.
  - Use multiple ways to convey material
    - consider different instructional techniques (below) that address students’ learning styles
  - Ensure that students actively take in information
    - by using different methods (below) to help organize content and encourage student participation
  - Anticipate potential misunderstandings
    - determine places where students may be confused and plan ways to address this by explaining unfamiliar vocabulary words, creating alternative explanations of confusing concepts, etc.
  - Check for understanding of the key points (E-3)
    - determine what checks for understanding you will use and when you will use them in the lesson

- **To help you decide what instructional methods to use, consider:**
  - student needs and interests,
  - the nature of the content,
  - time and resources available

- **Determine how much time to allocate to this section of your lesson** - make sure there is sufficient time to complete what you planned, while still leaving plenty of time for student practice

- **Double check the alignment of the activity** – is it aligning to the level required by your objective?
5-step lesson plan examples with teacher intentions:

**OBJECTIVE #1 (ELEMENTARY ESL):**

**SWBAT use regular comparatives correctly in an oral presentation.**

**Introduction of New Material:**
Ms. Cate points out the key to knowing how to form a comparative is counting the word’s number of syllables. She unveils a three-column chart indicating that adjectives with one syllable usually take -er and -est. Adjectives that have two syllables and end in y (early), ow (narrow), and le (gentle), can also take -er and -est. Almost all other adjectives with two or more syllables require the use of more and most. She knows that some students may never have counted a word’s syllables before, so she demonstrates by clapping out the stresses of a series of words. Using the chart, she shows how the student-generated examples from the Lesson Opening demonstrate how the rule works. Students copy the chart in their notebooks and fill in the student-generated examples during Ms. Cate’s demonstration. She walks through the classroom, monitoring.

**Teacher’s Intentions:**
By focusing her lesson on the syllable and suffix rules for forming comparative adjectives, Ms. Cate boils down her lesson into some memorable main points. She uses a visual aid to highlight these points, employs examples and plans for the potential confusion over syllable counting. Students are recording the information through a graphic organizer.

**OBJECTIVE #2 (6TH GRADE):**

**SWBAT write a bibliographic entry for a book.**

**Introduction of New Material:**
Ms. Cartwright notes that the way to give proper credit to books you’ve used is to create a bibliography. Students already learned the word bibliophile, and Ms. Cartwright guides them to see the relationship between the two words. She then points to the board, where she has written the structure for a bibliographic entry for books (with different colors of chalk for the five different parts). She asks students what they notice about the entry: that the author’s last name comes first, followed by the first name; the title has been underlined; there is a city, a company name and a year. Ms. Cartwright asks her students, “What is a publisher? Why might it be important to have the publisher’s name? Why might it be important to have the date of publication?” She then affirms that a publisher helps authors get their books printed and sold. Including this information in the bibliography is useful in case people want to find the book themselves. She further mentions that this information can usually be found on one of the first inside pages of the book, and she demonstrates with the class textbook, showing everyone the publisher’s name, which is the most difficult to locate. She then summarizes the five parts of a bibliographic entry in order. She asks students to write down the bibliographic entry in their notes and circulates to make sure students are doing it correctly. She reminds everyone to feel free to use colored pencils if necessary to separate the different parts of the entry.

**Teacher’s Intentions:**
Ms. Cartwright explicitly highlights the different pieces and the sequence of a bibliographic entry, the new information that she wants her class to learn. By asking questions about the relevance of the book’s publisher and date of publication, she is moving her lesson beyond sheer memorization and into the world of practicality. She realized that the book’s publisher is often difficult to find, so she decided to spend extra time explaining how to locate that information. She enables student input of the information by providing targeted directions for taking notes. She also takes advantage of student prior knowledge (and reinforces the idea of relationships between words) by noting connections to the root “biblio.”

**OBJECTIVE #3 (10TH GRADE BIOLOGY):**

**SWBAT describe the biological risks of drug use.**

**Introduction of New Material:**
Ms. Donnelly first displays pictures of a healthy liver and the liver of an alcoholic, a healthy lung and the lung of a smoker, a healthy brain and the brain of a cocaine user. The teacher then asks students to read silently a handout from the Just Say No Foundation, which describes the ways in which smoking, drinking and drug-use eat away at the various organs. The teacher also shows a short film, featuring people who describe the effects of their drug use on their bodies. Students are instructed to fill the right-hand side of their T-chart (dangers of drug use) during their reading and the film. After the film, Ms. Donnelly asks students as a group what surprised them most about the stories they heard.

**Teacher’s Intentions:**
Ms. Donnelly uses pictures of charred lungs and corroded livers to introduce her points about the consequences of drug and alcohol use, knowing that students are likely to remember the visually arresting images. Students continually process new material from a variety of sources by recording information in their graphic organizers. Ms. Donnelly shows the film to let students see and hear how drug use affected real lives. In addition, she allowed them to connect to the material in more personal ways by asking for their responses to the material.
What different instructional methods can I use?

<table>
<thead>
<tr>
<th>Teacher Modeling or Demonstration</th>
<th>Lecture</th>
<th>Graphic Organizers</th>
<th>Questioning to Teach</th>
<th>Discussion</th>
</tr>
</thead>
</table>

Teacher Modeling and Demonstration

**Modeling**

Teacher MODELING:
- demonstrates application of a skill or knowledge of a concept for students
- mimics the objective that students are expected to master – students should not be expected to apply a skill or demonstrate knowledge of a concept that they have not seen their teacher model for them

Serves as a key BRIDGE between students understanding new skills and concepts, and then being able to demonstrate independent mastery of those skills and concepts.

Effective teachers *model* skills by going through the key steps they outlined for their students during their Introduction to New Material, such as solving a sample problem and narrating their approach. Modeling can take place during your Introduction to New Material or your Guided Practice, but it is a necessary component that serves a bridge between students understanding new skills and concepts, and then being able to demonstrate independent mastery of those skills and concepts.

**Demonstration**

Demonstration is one of the most common instructional methods across the grade levels. Kindergarten teachers model how to form letters of the alphabet. Chemistry teachers show students how to balance equations. If the objective is: “Students will be able to dissect a frog,” the teacher should bust out the scalpel and a specimen and perform a sample incision. Similarly, if students are expected to know how to pick out library books independently, the teacher will want to outline the key steps for doing so, take the class to the library, and model those key steps. It goes without saying that demonstrations must be planned and executed well if students are to learn the skill they are expected to master.

For demonstrations, teachers should plan to:

- **direct student attention to fundamental elements of proper procedure** through (a) holding up an object or pointing to where you want students to focus, (b) breaking processes into clear and numbered steps, (c) performing each action with narration ("now I am checking to make sure I am using the metric side of my ruler"), and exaggerated motions, if applicable,

- **prepare visual or tactile aids** for students to see or experience your demonstration clearly,

- **explain new concepts or terms** ahead of time, or else students will not be able to follow your demonstration,

- **highlight common errors** for students to avoid.

- **narrate your behaviors** by explaining to students what you are doing and thinking at every step of your demonstration

For example, one fourth-grade class goes to the library every week to select new silent reading books. In a lesson on making good literary choices, the teacher points out that some students make the mistake of literally judging new books by their covers and fail to skim the text before checking them out from the library, realizing too late that the
books are inappropriate or uninteresting. She explains four steps to avoid this problem: looking at the Student Book Reviews binder for recommendations; considering other books by a favorite author; doing a search of favorite topics in the card catalog; and reading one page of a potential choice and making sure there aren’t more than five unfamiliar words. As the students write down the steps, she goes through this process herself. After this “Introduction of New Material,” Guided Practice and Independent Practice can follow, with students gradually taking over the demonstration of the skill.

Lecture

If a demonstration covers skills, teachers will often use a lecture to reach knowledge-based objectives. Perhaps the most traditional form of instruction, lectures conjure up the image of a stodgy professor droning on and on while his students doodle or even sleep to escape the monotony.

However, lecture is often the most efficient way to present or review material with the entire class. Teachers choose to lecture when they have a limited amount of time, when the background information is not available or easily accessible to students (e.g., the material is not in print), or when the concepts could be best clarified through verbal explanation. Of course, lecture works best for older students, as younger students may not be able to absorb information for long periods of time.

There are some drawbacks to using lectures as an instructional tool; namely most “lectures” – as they are most commonly delivered – do not allow frequent interaction between students and the teacher. This disadvantage can be overcome, however, by leaving time at the end for whole-class discussion.

If you determine that a lecture is the most efficient and effective instructional tool, here are some guidelines to delivering the information:

• **Determine the style of your lecture**, whether it’s a…
  - Classical lecture, which works well when you simply want to transmit information;
  - Problem-centered lecture, where you offer solutions to a problem with advantages and disadvantages;
  - Sequential lecture, where you promote understanding of a subject by giving an extended argument or chain of reasoning that leads to a conclusion;
  - Comparative lecture, where you draw comparisons between new and familiar information; or
  - Thesis lecture, where you make and justify an argument or assertion.

• **Focus on reaching clear outcomes.** What are your objectives? Write down and tell the students what you want them to walk away with.

• **Organize the lecture for your students.** Make it easier to take notes by providing students with graphic organizers (more on this later in the chapter) or outlines at the beginning of your lecture. You can also put a brief outline of the lecture on the blackboard or overhead transparency.

• **Establish ground rules.** Are questions in the middle okay, or should students wait until the end? If you don’t want students to interrupt you, you need to teach them to write down their questions so you can address them at the end of the lecture.

• **Make modifications for visual learners.** Synchronize slides (or overheads) to go with your verbal presentation. Select graphics that represent the ideas, concepts or words.

• **Follow basic strategies for effective oral presentations (see E-1 page for more on this)**

• **End your lecture clearly.** Summarize and highlight the main points. Conclude with the key ideas and how they relate to the future. What should students do with the information from today? Then invite questions and ask questions of students.

**Graphic Organizers**

A flow chart, a time line, a family tree – these are all graphic organizers, which combine words and phrases with symbols to visually represent connections between various pieces of information or ideas, thereby helping students to process information. These tools can come in handy during the Introduction of New Material, when you can refer to a completed
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graphic organizer to help students visualize the connections among the concepts they are learning. During Guided or Independent Practice, students can complete or create their own graphic organizers to apply the information they have learned. Graphic organizers are also an excellent way to reflect on and organize learning at the end of a lesson or unit; they are among the most versatile learning devices because they can be used in whole group, small group and individual configurations.

These tools can be especially helpful as a way for students to learn how to take notes, a skill you cannot assume students possess at the beginning of your year. You may have to show students how to separate main ideas from details, or how to abbreviate effectively. Lay out exactly how you expect students to take notes (even modeling the process with a clip of the evening news, for example), provide tips on outlining, and have students practice. Doing so will lead to more retention of the information you relay in lecture.

Below is an example of a Venn diagram, a commonly used graphic organizer. This particular tool allows students to compare and contrast two objects or ideas. A filled-in version of this diagram could be given to students at the beginning of a lesson, students could fill it in as the lesson progresses, or students could fill it in as a form of student practice.

Asking students to identify similarities and differences between concepts is the instructional strategy with the highest probability of improving student achievement, according to a recent analysis by the McREL educational laboratory.

A web – where key concepts literally sprout from a central topic, and details branch off from each concept – serves yet a different purpose: brainstorming new ideas. Show these different kinds of graphic organizers to your class and explain their purposes. Then have students practice selecting the appropriate choice for a particular task.

**Why should I use graphic organizers?**
- Provide an active way for students to process information.
- Visually represent different types of connections between various pieces of information or ideas.
- They combine words and phrases with symbols to communicate those connections and to effectively engage students in learning – including supporting different student learning styles.

**When should I use graphic organizers?**
- When introducing new concepts or starting a unit.
- When you are lecturing and having students take notes.
- When reflecting on and organizing learning from a lesson or unit.

**How should I use graphic organizers?**
1. There are a variety of different ways to use graphic organizers. You can distribute a complete organizer to students to support understanding of material, you can create blank organizers and distribute to students to complete with or without your guidance, or you can have students create their own organizers.
2. Some examples of different types of organizers in the Tools section of the P-3 page.

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Descriptive Organizers</strong></td>
<td>Descriptive organizers can be used to define the characteristics, facts, or terms related to a specific person, place, thing, or event (see Figure 1).</td>
</tr>
<tr>
<td><strong>Time/Sequence Organizers</strong></td>
<td>Time/sequence organizers list specific events in chronological order (see Figure 2).</td>
</tr>
<tr>
<td><strong>Cause-Effect Organizers</strong></td>
<td>Cause-effect organizers illustrate the events starting from an action leading to a specific outcome (see Figure 3).</td>
</tr>
<tr>
<td><strong>Generalization Organizers</strong></td>
<td>Generalization organizers illustrate the supporting examples of a general statement (see Figure 4).</td>
</tr>
<tr>
<td><strong>Concept Organizers</strong></td>
<td>Concept organizers illustrate the general characteristics of a concept, with those characteristics then divided into smaller classifications or examples (see Figure 5).</td>
</tr>
</tbody>
</table>
Comparison/ Contrast Organizers

Comparison/Contrast organizers (also called Venn Diagrams) organize information about two or more topics according to their similarities and differences (see Figure 6).

Questioning to Teach

Note: This type of questioning is a technique for presenting instructional content – not for checking academic understanding (E-3)

Questions should be asked to stimulate student thought. This type of questioning is a fundamental and powerful instructional tool. Don’t think that using questions to lead students to deep understanding is reserved for stodgy law professors and long-dead philosophers; questions and discussions are instructional methods that can be used at all ages and in all content areas.

In his extensive survey of pedagogical research, Jere Brophy found that questions-based discourse was one of the most common and most powerful tools for introducing new material and checking for students’ understanding:

Besides presenting information and modeling skills application, effective teachers structure a great deal of content-based discourse. They use questions to stimulate students to process and reflect on content, recognize relationships among (and implications of) its key ideas, think critically about content, and use it in problem solving, decision-making, or other higher-order applications. Such discourse should not be limited to factual review or recitation (featuring rapid pacing and short answers to miscellaneous questions), but instead should feature sustained and thoughtful development of key ideas.

Brophy goes on to describe how this technique often plays out in successful classrooms:

Thoughtful discourse features sustained examination of a small number of related topics, in which students are invited to develop explanations, make predictions, debate alternative approaches to problems, or otherwise consider the content’s implications or applications. The teacher presses students to clarify or justify their assertions, rather than accepting them indiscriminately. In addition to providing feedback, the teacher encourages students to explain or elaborate on their answers or to comment on classmates’ answers. Frequently, discourse that begins in a question-and-answer format evolves into an exchange of view in which students respond to one another as well as to the teacher and react to statements as well as questions.

You will undoubtedly find yourself using question-based discourse extensively in the classroom. In many ways, it is the most natural method of engaging students in new material. However, while all of us have been asking and exchanging questions all of our lives, effective questioning in class is not easy. Asking truly effective questions is a complex skill. By developing effective questioning techniques, you will develop your ability to engage students in meaningful discussion.

Discussion

Planning Discussions

When asking questions, sometimes you are looking for a specific answer, and other times you will want to create arenas for students to benefit from each other’s point of view. Creating classroom discussions can be tricky because students may be reluctant to contribute—or eager to pursue irrelevant tangents. Here are a few suggestions for making discussions productive:

- **Discuss familiar topics or matters of perspective or observation.** Students may be shy to participate in discussions at first because they believe they do not know the magic answer sought by the teacher. Encourage students to draw from their personal experiences and opinions when delving into a topic. For example, “What are some of the ways that commercials attempt to get you to buy products? What different techniques do they use to get your grandparents to buy things?”
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- **Establish ground rules.** Once they get started, discussions can get heated or raucous. Be sure to explain your expectations for behavior—allowing one person to speak at a time, asking clarifying questions instead of pouncing on someone else’s comment—before setting off a free-for-all. You may want to develop a system that requires everyone to get equal “air time.”

- **Have an objective in mind – and stick to it.** Discussions have a tendency to drift, so be sure to take the reins and gently steer conversation back to the objective by highlighting the relevant points already made. For example, “Let’s review…we were discussing the techniques that commercials use to persuade us…Margaret mentioned catchy jingles…what else?”

- **Foster well-informed dialogue.** Provide necessary background information so that your students are well-informed ahead of time. You may want to have students read a book or passage, or examine data before spouting off about a topic. In addition, have students jot down a few thoughts before beginning the conversation to allow ideas to surface and percolate, and ask clarifying questions if you do not understand what students are trying to say—or if they need to support their claims with evidence.

- **Meld personal, analytical and global perspectives in the discussion.** Because new knowledge builds on prior knowledge, students may be drawn into a dialogue by sharing their own views, or sharing information they know about a related subject. Rather than simply limiting a discussion about *The Adventures of Huckleberry Finn* to the text, ask students if they ever had to support a friend when everyone else thought he or she was wrong. Ask them, too, about the responsibilities of people who ran across runaway slaves in the nineteenth century.

- **Ask higher-order questions.** In general, it is unwise to “go fishing” during a discussion and hope that students will give the exact answer you are looking for. Use discussion to encourage divergent thinking by focusing on analysis, synthesis and evaluation. “Last month, we read a book written by O. Henry, and we have just finished one by Sir Arthur Conan Doyle. What can we learn from both authors about the art of writing suspense?”

You may find that certain students are less skilled at participating in discussions, and it is your job to create opportunities for everyone to get involved. Chuska’s book, *Improving Classroom Questions*, recommends some strategies for working with reluctant students.

**What factors should I consider when planning to engage students in new content?**

<table>
<thead>
<tr>
<th>Student Needs and Interests</th>
<th>Nature of the Content</th>
<th>Time and Resources</th>
</tr>
</thead>
</table>

**Student Needs and Interests**

To learn more about tailoring your plans to meet individual student needs, read about [differentiating instruction](#).

Students’ engagement with and interest in the material you are introducing is paramount to their academic success. To ensure your instruction meets students where they are, consider the following 3 factors:

**Students’ Developmental Levels**

Depending upon developmental stage, students may respond better to certain ways of approaching material. Understanding your students’ physical, cognitive, social, and emotional stages of development will allow you to more accurately gauge the appropriate level and type of methods for introducing new material. For example:

- Children ages 6-8 lack strong near-vision, making it important to provide them with large print
- Nine to 11-year-olds tend to be pre-occupied with the fear of being seen as different from their peers, making it
important for the teacher to be sensitive to singling students out.

### Students’ Learning Modalities

The form, or modality, in which information is packaged and presented impacts learning, as different students learn and retain information differently. The most commonly referenced modalities or learning styles are:

- **Visual Learners** – learn most effectively through seeing the materials that are helping them learn
- **Auditory Learners** – learn most effectively through listening to the presentation of new material
- **Tactile Learners** – learn most effectively if they are using their hands to touch materials that are helping them learn
- **Kinesthetic Learners** – learn new information most effectively when the new material is associated with active participation or movement

Avoid relying too heavily on any one modality (perhaps the one with which you are most comfortable), as your students will invariably represent a range of learning styles.

Some instructional strategies to address different learning modalities can be found in the P-3 Tools section.

<table>
<thead>
<tr>
<th>Examples: You could use a variety of modalities to teach fractions. For instance, you might:</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Talk through a real-world example of dividing up a pizza among friends (auditory)</td>
</tr>
<tr>
<td>- Demonstrate the division of the pizza via a chalkboard diagram (visual)</td>
</tr>
<tr>
<td>- Provide students with cardboard wedges that form a circle and ask them to manipulate the pieces to divide them among different numbers of people (tactile)</td>
</tr>
<tr>
<td>- Ask student volunteers to be slices of a pizza pie; separate volunteers from the group and ask the class to determine what fraction of the whole is being represented (kinesthetic)</td>
</tr>
</tbody>
</table>

### Students’ Interests

Your students have interests related to content, the social dynamics of grouping strategies, and the liveliness and pace of the instruction — you should invest time in identifying these so that you can leverage those interests into academic gains for your students. For example:

- Your students might be fascinated by the Olympics – teach a unit on the Olympics through dividing your students into small groups that represent different countries that students have researched and written about
- Your students might tell you that you “talk too much” - consider using fewer whole-group lectures and injecting more hands-on learning opportunities into your classroom.

### Instructional Tools for Different Learning Modalities

| Visual Learners | o diagrams, photographs, charts, graphs, and/or maps  
|                 | o visually organized notes on overheads  
|                 | o guided imagery or visualization  
|                 | o opportunities to take notes or highlight key ideas  
|                 | o flash cards |
| color coded notes to help reveal the categorization of information |
| slide shows or movies |
| mind maps, acronyms |
| for visual learners, still time can be important, as these students may be more distracted than other students by movement or action. |
### Nature of the Content

Some concepts and skills—because of their content—are best presented and practiced using a particular instructional strategy, such as lecture, student exploration, or questioning. At the same time, some material is most effectively received in a large group and some in a small group.

- When teaching about the effect of temperature on the solubility of salt in water, student exploration in small groups is probably most appropriate, given the process-based nature of the skills that you are teaching and the fact that salty water is difficult to see clearly in a whole class setting.

- When teaching about the implications of cloning, questioning and discussion may be the best way to lead the whole class to analyze the material because fostering an exchange of ideas may manifest the poles of the larger debate on the issue.

The second general class of considerations to weigh as you try to decide among the many grouping and instructional strategies comes from the objective that you are teaching. The cognitive level of the objective being taught (which might be closely tied to the “nature of the content” below) should influence your choices regarding how you organize your students and what methods are used to present information. For example:

- For objectives that involve lower level thinking skills such as knowledge and comprehension (see discussion of Bloom’s Taxonomy, Chapter Two), the teacher should direct, tell, and show the new material. In this situation, whole group instruction might be most appropriate.

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<table>
<thead>
<tr>
<th>Auditory Learners</th>
<th>Tactile Learners</th>
<th>Kinesthetic Learners</th>
</tr>
</thead>
</table>
| - lectures, oral instruction  
  - reading aloud  
  - rhythmic sounds and song  
  - group discussions  
  - for auditory learners, quiet time can be important, as these learners may be easily distracted by noise. | - props, physical examples  
  - making models, dioramas  
  - textured manipulatives, such as sandpaper letters or foam shapes | - opportunities for movement  
  - plays, acting out, role playing  
  - problem solving  
  - writing notes  
  - props, physical examples  
  - associating gestures with ideas |
| - auditory tapes  
  - repeating ideas orally, reciting  
  - poems, rhymes, word association  
  - music, lyrics | - experiments/labs  
  - field trips, exhibits, tours  
  - manipulatives, like unit blocks  
  - index cards with facts to sequence | - experiments/labs  
  - games  
  - field trips  
  - making lists  
  - associating emotions with concepts |

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**Auditory Learners**

Auditory learners learn best from hearing spoken words, participating in discussions and explaining things to others. The following are tools you might use in your lesson planning to ensure that you are reaching those students who learn best this way:

- lectures, oral instruction
- reading aloud
- rhythmic sounds and song
- group discussions
- for auditory learners, quiet time can be important, as these learners may be easily distracted by noise.

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**Tactile Learners**

Tactile learners need to experience the world through touch. Many teachers often overlook this learning modality. The following are a few means of addressing these students’ unique learning style:

- props, physical examples
- making models, dioramas
- textured manipulatives, such as sandpaper letters or foam shapes

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**Kinesthetic Learners**

Kinesthetic learners learn through experience and movement, and make the greatest academic gains when they are involved and active in a lesson. Consider the following strategies to meet these students’ needs:

- opportunities for movement
- plays, acting out, role playing
- problem solving
- writing notes
- props, physical examples
- associating gestures with ideas
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- For somewhat higher cognitive levels such as application or analysis (for example, students will be able to illustrate the path a water molecule takes through the water cycle), you might have students explore the concept individually or in a collaborative group before moving to a more teacher-led explanation.

- If the objective points to higher-level thinking (such as synthesis or evaluation of a complex concept), it may be important to exercise more control from the beginning, opting for a less collaborative and a more directive activity, such as a lecture or a teacher-guided discussion. In this case, student practice (which is the next step in the lesson plan process) should include activities that require complex thinking, such as designing a science experiment that tests the physics theory about which they have been learning.

**Time and Resources Available**

Successful teachers think critically about how much time to devote to introducing material, and about what resources they have available or can access in order to introduce that material.

For some material, it might make sense to spend a good deal of time up front ensuring that the Introduction of New Material sets students up for success in practicing or using it. On the other hand, some topics are best internalized through practice and might not require lengthy introductions. Given how much you want to accomplish in the year, it often makes sense to choose the instructional strategy that will lead to mastery in the least amount of time. For example, if you have a limited amount of time to teach the properties of water, and the lesson objective could be achieved through either a teacher-led demonstration to the whole group or individual student research (which typically takes longer), you might opt to lead a demonstration in order to move on to other objectives sooner.

Similarly, you will almost intuitively be considering the implications of what resources you have available for your instructional choices. Sometimes, for example, you will need to choose a whole group strategy because you only have one set of materials to run an experiment:

- If you want students to conduct in-class research and write about a particular aspect of Jamaican culture, yet you have only a set number of books on the topic, students probably will not be able to work individually. Instead, you might put students into homogeneous “interest” groups and distribute the books accordingly.

- If you are conducting an experiment on the surface tension of various liquids, and you have enough droppers and bottles for each student to work individually, you would logically have each student perform the experiment individually, and then perhaps facilitate a whole-group discussion of the results.