Part IV

Lesson Development & Preparation

Breakthrough COLLABORATIVE

Objective

By the end of the section, readers will be able to (RWBAT):

- Utilize curriculum design strategies to build a unit plan and daily lesson plans.
- Create a variety of assessments in alignment with standards and objectives.
- Select and implement appropriate and diverse instructional techniques.

The Breakthrough Challenge: **Your challenge is to develop a vision and concrete plan defining what academic goals you want your students to reach, how you will know when they reach the goals, and how you will help them achieve those goals, while keeping all students invested and engaged in your lessons.**

Introduction

To the nuts and bolts of teaching: what do you want your students to learn and how should you teach it to them? It may seem easiest to jump into classroom instruction by brainstorming ideas for a single class period, but difficulties inherent in this approach quickly emerge and bog down those teachers. A long-term vision guiding your students towards rigorous academic goals is imperative to strong teaching. An excellent teacher must be an artist in lesson development and presentation; however, teaching is also an analytic task. Teachers must be able to diagnose students' skill levels, needs, and talents, integrate those factors with academic expectations, and construct lessons considering both. The approach to curriculum design presented here creates a funnel, beginning with the broad concept of what we want students to learn and narrowing to daily instructional techniques. When it comes to curriculum planning, six weeks can seem like both the longest amount of time and the shortest amount of time in the world, but there an effective approach to this seemingly overwhelming task. Curriculum development can be broken down in the following way:

1. Standards
2. Objectives
3. Units
4. Lessons
5. Student Outcomes

The standards must, of course, link to the outcomes – the skills with which you want your students to walk away. In what may be your first voyage into curriculum design, you must remember to keep the following steps in mind and in order:

Step 1	Determine where you are going: what do you want your students to know and be able to do at the end of six weeks? (*Standards, Objectives*)
Step 2	Determine how you will measure their growth and achievement: what methods of assessment will you use? (*Student Outcomes*)
Step 3	Determine how you will guide your students to the desired goals: what instructional methods and activities will you use? (*Units, Lessons*)

Step 1: Where are you going?

Standards

The first component to instruction, and the key to achieving the first step in curriculum design, is standards. Standards delineate the skills and content that students should know, and therefore what teachers should teach. Most states have developed standards organized by grade and subject, and some districts write their own versions, which include more locally relevant components. The procedure used to develop standards varies from state to state. Authors include education experts, political bodies, and community stakeholders, including parents. Standards are often based on educational and developmental research, and well-developed standards will provide a smooth trajectory of educational objectives from early childhood through twelfth grade, or even

SAMPLE STATE STANDARDS	
California Grade 9 State Standards	
English:	**Math:**
Vocabulary and Concept Development	*Algebra I*
1.1 Identify and use the literal and figurative meanings of words and understand word derivations.	**15.0** Students apply algebraic techniques to solve rate problems, work problems, and percent mixture problems.
1.2 Distinguish between the denotative and connotative meanings of words and interpret the connotative power of words.	**Science:**
	Genetics
	3.0 A multi cellular organism develops from a single zygote, and its phenotype depends on its genotype, which is established at fertilization.

through college. Though the terminology used to label standards may vary from place to place, including terms like: benchmarks, performance standards, and essential skills, the purpose remains the same: to set common goals for instruction.

While standards can provide a useful roadmap for a teacher, much is still left to the teacher's discretion. Although some documents will go so far as to include sample projects, instructional techniques, or assessments, many states outline only broad concepts. The teacher must determine how to break the standards into teachable components, how to assess progress towards—and mastery of—the standards, as well as how to best instruct students in those concepts. Because standards are often interrelated and complex, viewing standards as a checklist can stultify learning; students will often need to revisit and continue practice of the related skills in order to achieve and maintain competency.

Breaking it Down:

Standards and Breakthrough Students

In Breakthrough, teachers are not responsible for choosing the standards for the summer curriculum. Site directors will determine the standards around which the curriculum is based. During orientation you will learn what you will be expected to cover in your class. Each site will have standards for each subject, derived from the needs of students attending local schools. These site standards must drive your six-week instructional goals.

While the states have taken the lead in establishing easily-downloaded standards, **you cannot forget that state grade-level standards do not reflect the needs of Breakthrough students.** Again: Breakthrough is an accelerated program designed to prepare students for the top high schools. Strong elementary and middle schools are preparing their students beyond these minimal state standards, and Breakthrough should be doing so as well. You will note that we included the *grade 9* California standards as an example. This is more likely where our 7th and 8th students need to be. Breakthrough needs to be *more relentless and rigorous* than the public schools our students come from.

Utilizing diagnostics, as described under Assessment, will help you to clarify the difference between expected and actual student achievement. Your unit and lesson plans will be designed within the parameters of your site's standards to meet and raise student achievement levels and to prepare them for their next school year.

The buzz about standards-based learning and standardized testing is controversial, yet the basic intent of establishing standards for learning must be kept in perspective. Setting and implementing high standards for all students helps to provide an equal opportunity to achieve and succeed. Because they provide a clear roadmap for teachers, they can set and sometimes raise the bar for teacher instruction. While not all teachers will (or should) choose to instruct students the same way for a particular standard, in high-mobility areas, like urban school districts where students often transfer schools during or between school years, standards can potentially provide a smoother transition. Teachers not following the standards may shortchange students; content area standards often build on each other from year to year. Eighth graders must master seventh grade concepts to be prepared for eighth grade instruction. Furthermore, standards clarify what students and schools will be held accountable for on standardized

tests in many states. When appropriately designed and implemented, standards can serve as a means to achieve equity across all schools for all children.

Standards are usually found on state Department of Education websites or linked to school district websites. Some national organizations also publish standards for major academic and elective subjects, which many states use or reference in developing their own. See toolkit item: *Regional and National Standards.*

The next process after determining *which* standards will drive your instruction is to break the standards down into learning goals and objectives.

Objectives

While a standard lays out a complex task or piece of knowledge, an objective breaks the complexities down in comprehensible segments. Objectives are *measurable* statements of what you want your students to learn, or "learning goals." The daily objectives are derived from, and therefore must build toward the standards. Designing objectives will help you determine how you want your students to reach the standards, what you need to teach them, and how you must assess them. If student assessment does not align with the objectives, then there is an obvious and problematic gap that must be resolved. They are an integral step in purposeful instruction, which fosters higher levels of student learning. The standard format for daily, unit, and long-term objectives, is:

<u>S</u>tudents <u>W</u>ill <u>B</u>e <u>A</u>ble <u>T</u>o: (SWBAT)

What follows should be a descriptive statement regarding what students will be able to do at the end of the lesson, unit, or year, utilizing active verbs which align with varying levels of Bloom's Taxonomy.

Objectives must not describe what students will *do*, but what *skills* they will *master*. For instance, the following objectives are not well developed:

Bad Example: **S**tudents **W**ill **B**e **A**ble **T**o (SWBAT): read a short story.

Explanation: Reading the story is a weak goal. Depending on the lesson, the real goal may be for the student to identify the theme, practice predictions, or analyze character motivation.

Bad Example: **S**tudents **W**ill **B**e **A**ble **T**o (SWBAT): understand a short story.

Explanation: Likewise, the word "understand" is relatively useless in designing objectives. Understand is a passive word difficult to measure. In order to determine if students understand, they must show their understanding by demonstrating their skills as in the following objective…

Good Example: **S**tudents **W**ill **B**e **A**ble **T**o (SWBAT): compare motivations of the main characters.

Explanation: The above objective uses a verb (compare) from the "analysis" level of Bloom's. Note the objective is not to create a chart or Venn diagram, or to tell the teacher the differences, for those would be activity-based, not skill-based.

When writing objectives, it is important to consider the breadth of Bloom's. Below is a list of objectives for the task "reading a short story" which could be developed during a series of lessons.

Bloom's Level	OBJECTIVE: **S**tudents **W**ill **B**e **A**ble **T**o (SWBAT):
Knowledge	*identify* the main characters.
Comprehension	*summarize* the characters' actions.
Application	*predict* character actions after the end of the narrative.
Analysis	*compare* motivations of the main character.
Synthesis	*invent* logical character responses to a hypothetical situation.
Evaluation	*judge* character actions based on their analysis of motivation.

Subject	Standard*	Objective SWBAT:	Sample Activity
English	**1.3** Use strategies of note taking, outlining, and summarizing to impose structure on composition drafts.	Organize ideas by category.	Brainstorm reasons why athletes should or should not be so highly paid, then organize them into broader categories and write them into an outline.
History	**7.4.1** Study the Niger River and the relationship of vegetation zones of forest, savannah, and desert to trade in gold, salt, food, and slaves; and the growth of the Ghana and Mali empires.	Analyze the effect of the Niger River on trade.	Create a map of the Niger River and nearby vegetation zones. Mark the trade routes for different products and label the amount traded over time. Write a narrative explaining how this affected the Ghana and Mali empires.
Math	**1.2** Construct and read drawings and models made to scale.	Construct models made to scale.	Build a scale model of your room, complete with furniture and wall decorations.
Science	**2a.** Students know the differences between the life cycles and reproduction methods of sexual and asexual organisms.	Compare and contrast the life cycles and reproduction methods of sexual and asexual organisms.	Create a chart describing the similarities and differences between the life cycles and reproduction methods of sexual and asexual organisms.

* The example standards listed here are from California Grade Seven State Standards.

Obviously, standards range from very broad to more specific. The math standard in the chart above, for instance, could be used as an objective with little change. And while this objective does describe a student activity, it is also a skill; there will be some overlap. On the other hand, the English standard incorporates many different skills. The objective and activity select one aspect of the standard on which to expand. Later in the unit, however, the skill must be integrated with the other portions of the standard to create a written product in which the student demonstrates competency in all aspects of the standard.

There are two categories of objectives: unit objectives and daily objectives. Daily objectives are more specific than unit objectives, but some may overlap. But no matter what type of objective you are writing, write with a copy of Bloom's Taxonomy by your side and consider the progression from simply having an awareness of a concept to

developing a deeper understanding of the idea. Your job does not stop with an explanation; you must take on the gamut of Bloom's, from Knowledge to Evaluation.

Step 2: How will you measure growth and achievement?

Assessment

Assessment is a system of measuring student outcomes. We have all participated in various forms of assessment, whether it was a Scantron test, a five-paragraph essay, a class discussion, or a multimedia project. Assessment takes many forms and teachers must choose the most appropriate form(s), depending on the learning objectives. The goal of assessment is to evaluate a student's progress towards or mastery of a concept, skill, or process. In developing measures of progress, teachers must determine "acceptable evidence" to provide fair, valid, and reliable data. A secondary purpose of measuring progress is to celebrate improvement.

Assessment is the second step in this model of curriculum design, discussed further in *The Planning Process*. Developing a plan to assess student learning at the beginning of the process allows you to develop your instructional plan to best foster student success. Too often teachers design their assessment at the end of a unit only to realize they have not adequately prepared students for the tasks they will perform for evaluation. Alternately, teachers may forget to integrate ongoing assessment into instruction, plunging ahead without pausing to check if students are keeping pace. Both pitfalls severely endanger student progress.

Families, teachers, and students all need and deserve regular feedback on student achievement. To best support students at home, families must receive input about progress and areas for improvement. They can also help to motivate students by participating in a celebration of mastery. Teachers should use the data gathered to construct an updated roadmap of student progress and lack thereof to inform instruction. In order to quickly identify and address holes in student learning, teachers must develop techniques to constantly monitor development. But not only does assessment provide information about student progress; teachers must also consider assessment a reflection on their teaching; if students didn't master the concept, the teacher must find a different way to present it. Finally, students need feedback on how

or when to improve study skills, attention, or practice; frequent assessment can target where and how to improve. Especially at the middle school level, students need ongoing feedback so they understand the basis for evaluations, i.e. grades. All three parties can develop a common understanding of student achievement and needs based on quantitative and qualitative assessment data.

Types of Assessment

The type of assessment chosen depends on the learning objectives, the instructional methods, and the educational philosophy of the teacher, school, or program. Some objectives will lend themselves to particular forms of evaluation. For instance, the components of an essay are best demonstrated by writing an essay. Similarly, students may maximize exhibition of knowledge on tests or projects that mimic the instructional approach. Finally, philosophical differences lead to arguments regarding the benefits of authentic assessment versus standardized assessments. While authentic assessments measure a student's ability in the context of real life applications and allow for individualization of student products, standardized assessment presents the same objective questions to all students to allow for quantitative comparison of scores. Clearly the latter is easier and more efficient for grading purposes. Additionally, all students will face standardized tests in middle school and high school, and they must receive adequate preparation in testing techniques. This type of test is not always the best measure of learning, however, so the teacher must integrate both methods to best track student progress.

Assessments are used throughout instruction to achieve two distinct purposes:

1. to determine *mastery* of concepts
2. to determine *a baseline* for and ongoing record of student progress

Summative Assessment

Summative assessments take place at the end of a unit, marking period, or year and measure how well students mastered the given concepts or skills. Summative assessments may take many forms, a few of which are listed below.

Type	Description
Test	objective and/ or short-answer questions
Project	creative product exploring a topic through a variety of media
Presentation	oral presentation on a topic
Writing Assignment	written analysis or summary of a topic

Diagnostic Assessment

Diagnostic assessments are given at the beginning of and throughout a unit to establish proficiency levels and identify unmet objectives. These are less formal assessments and are used mainly to provide the teacher and student with input to direct instruction. This data is invaluable in shaping the curriculum to individuals' needs and to assure all students grasp a given concept. Many diverse activities can serve as informal diagnostics, including those listed below:

Type	Description
Class Wrap-Up	quick oral or written question on the objective
Class Discussion	teacher questioning explores student understanding
Think-Pair-Share	a directed pair discussion on a given question
One-on-One Conversation	teacher check-in with a student
Quickwrite or Journal	written student reflection or explanation
Quiz	objective or short answer questions
Homework or Classwork	independent practice on an objective

Portfolios

One assessment tool, a student portfolio, plays a unique role by melding the two functions, diagnostic and summative. The portfolio system is designed to promote student agency in the learning process. It contains a year-long record of student work, including brainstorms, outlines, related activities, drafts, papers, presentation notes, tests, and other selected materials. The teacher meets with the student on a regular basis to review and discuss the evident strengths and future goals. Since the contents are unique for each student, to regulate the system, the teacher must clearly define the following components: portfolio goals, criteria for inclusion of work, and an evaluation

process. Whether you choose to document student work in a portfolio format or not, you must constantly gather information regarding student achievement, and share this information with students and families to foster growth.

Questions

A good teacher is always asking questions of students. Throughout all types of evaluation utilizing diverse questioning strategies is essential to well-developed student evaluation. Questioning will be further discussed as a classroom instruction technique in *Instructional Methods*.

Questions can be broken into two groups: closed questions and open-ended questions; each has an appropriate use in the classroom. Closed questions leave little room for interpretation, require concise replies, and often have correct and incorrect answers. Examples include:

- What does thirteen times seven equal?
- Do you enjoy reading?
- Which of the following is/ are a mammal(s): human, lizard, fish, bird, caterpillar, polar bear, or leopard?

Open questions provide more opportunities for student talk and analysis. They are used to elicit more information from the student. Below are the closed questions from above rewritten in an open-ended format:

- How do you calculate thirteen times seven?
- What is your opinion of reading? Why?
- Describe characteristics of mammals. List several examples/ non-examples.

There will be occasions when because of time constraints or evaluation purposes you deem closed questioning appropriate, however, open-ended questions usually involve higher order thinking and greater understanding of the process, not just memorized facts. Teachers must strive to design evaluation questions to both target the desired outcome and challenge students to demonstrate complex and layered understanding.

Below is a guide to several question types for use in assessments. You will see the open questions require more student writing and it is easier to guess on the closed questions:

Type	Closed or Open?	Example
Multiple Choice	Closed	Choose which of the following were causes of the American Revolutionary War: a. Stamp Tax c. Mexican Revolution b. Slavery d. Boston Massacre
True/ False	Closed	The Stamp Act was one cause of the American Revolutionary War. (True/ False)
Matching	Closed	Match the following items with their effects: 1. Stamp Act ___Colonists had to 2. Tea Tax shelter and feed 3. Quartering Act British soldiers ___Colonists sabotaged ___Colonists paid a a British shipment tax on paper goods
Short or Long Essay	Open	Describe 3 causes of the American Revolutionary War and how they contributed to the build up to war.
Evidence-based Essay	Open	After reading the following documents, write an essay explaining the causes of the American Revolutionary War using the documents as evidence to support your thesis.

Developing a Good Assessment

Developing assessments, again, is both an art and science. You must directly align the evaluation of student learning with your objectives and the overarching standards in all forms of assessment, but particularly during summative assessments. Alignment assures you test what you teach. For instance, if you assign students to write an essay on significant trends in immigration in the twentieth century, you are also testing them on essay writing skills, whether or not that was your intention. You cannot, however, assume your students know how to write an essay without either determining if it is true or delivering the instruction yourself. This does not mean you should not assign them complex tasks, only that you must either instruct them on all facets of the assessment or filter out any activities which are secondary or with which they are unfamiliar.

Another method to assure accurate assessment is to provide multiple opportunities for students to demonstrate knowledge. Students may have mastered material, but may be

better able to display their knowledge in different contexts. For example, a student may be able to present just as complex an understanding of immigration trends through graphs and charts as in an oral presentation. Giving students a choice in which type of assessment they prefer may provide more opportunities for all students to succeed. Conversely, all of those presentation skills (essay writing, graph and table construction, and oral presentation) are important academic skills, and teachers should not hesitate to instruct students in them all, in addition to immigration trends. When teachers provide adequate instruction in both the content and the method of assessment, students are better prepared.

In addition to linking instruction and assessment, teachers must clearly communicate the content and method of assessment to students. While a question-by-question review is not necessary, the students must have a clear understanding of what material will be included and how they will be expected to demonstrate their knowledge. This communication builds trust between students and the teacher, as well as providing clear and high expectations so students know what the teacher believes they should be able to do.

Methods to assure clear communications of expectations include clear written instructions, sample high-level products, and rubrics. The first two methods are self-explanatory. Students need to understand the task they have been given, and writing it down provides consistent guidelines for constant reference. While some teachers shy away from providing samples because they believe it limits student creativity, viewing samples can also clarify expectations in a way words cannot. Lastly, rubrics can synthesize both the intent of clear guidelines and product specifications into one document and take some of the pain and mystery out of grading.

Rubrics

A rubric is an outline of how to grade different levels of performance. There are two types of rubrics:

1.   A document used internally by teachers to guide grading; delineates common answers and assigns points to each answer; also called a "key".

2.   A document made public by teachers delineating requirements for highly proficient, proficient, and below proficiency, sometimes aligned with grades.

The first type is used only by teachers to standardize grading practices for a given teacher or between groups of teachers. When working to prevent bias in grading, this document is useful. The second type of rubric is most valuable in communicating teacher expectations to students. Often students do not understand why they receive a given grade, resulting in great frustration and a decrease in motivation. A clear explanation of what constitutes each grade does wonders to erase the mystery and to motivate students to fulfill requirements at the highest level of proficiency. While students with consistent home support may have others to clarify expectations where a teacher has not explicitly stated them, students without that type of support are at an unfair disadvantage. To provide all students with the same opportunities and to increase motivation, incorporate rubrics regularly.

Finally, once you develop a good rubric, you can reuse it, either during the year or in subsequent programs and years. You can maximize the impact of a given rubric by collaborating with grade level teachers to establish similar expectations throughout the grade. Additionally, teachers can share rubrics between grade levels to assure a smooth transition in expectations, for instance in research reports from sixth to seventh grade. The seventh grade rubric should follow on the sixth grade version, but raise expectations and add new skills. A school- or program-wide system of rubrics demonstrates real consistency and clarity to students. We want our students to achieve, but we have to tell them how. Please examine the sample rubrics in the toolkit at the end of this section.

Grading

Grades are both an opportunity and a burden. While focusing on grades can be detrimental to intrinsic motivation, or motivation from within, they can serve as an indicator for student mastery of a concept. Too often, however, they tell us how much work a student has completed, not how much a student knows. Our goal at

Breakthrough is to teach students how to learn and how to fulfill their potential; we do not assign final grades, but may use grades on assignments to designate progress.

Because a variety of grading theories exist, many of us have experienced what we feel is arbitrary grading with little understanding of how we were assigned a certain grade. Transparent grading policies on each assignment, as well as in a class overall, will serve to inform the students and to challenge them to use the information to achieve at the highest level. While the grade can represent the fulfillment of an objective, it can also represent reaching the goal.

You will decide what products or processes to grade as you move through instruction. Not every item must receive a letter or number grade, or any grade at all, but it is important to consistently recognize work, both to maintain a clear picture of where students are, and to acknowledge their efforts. For instance, homework may receive a checkmark if completed, but students may evaluate their own accuracy during homework review. Journals may be very personal, and therefore difficult to grade. Group work, is especially complex because of the need to appraise both individual and overall effort and achievement. On the other hand, students need concrete feedback on progress, and many will have developed an understanding of what an "A" means versus a "C". Pairing grades with a clear explanation of how to get there can foster a common language. As you develop your approach and talk with other teachers you will design a logical grading system that dovetails with your educational philosophy and fulfills students' and families' needs to understand academic progress.

Whatever the system you choose, it must be clearly explained to students and their families. Nothing breeds animosity like lack of understanding around grades. Like the rubric, any equations, percentages, or other methods you use should be taught in class and communicated to the home in a newsletter. Additionally, returning work in a timely manner will win you support and enable both you and the students to incorporate the resulting information into subsequent assignments. Likewise, if a significant gap or weakness emerges, you will be able to address it with re-teaching before moving too far away from the concept. If you think of grading as a feedback system rather than a labeling system, you will be more likely to provide students with useful and supportive commentary on their progress.

Breaking it Down:

Assessments and Grading

Your first week you will need to spend time figuring out what your students know and what they don't know, especially with regards to the goals you have set. Some sites maintain student cumulative folders, which may have samples of student work, report cards, test scores, or written evaluations. Reading these prior to long-term planning can help you develop a plan that suits your students' needs.

Some sites also have prewritten diagnostics for each subject area. You can also develop diagnostics on the significant skills you plan to teach and on some of the skills you expect your students to have mastered already. These diagnostics will help you determine if your unit plan is on target, if you will need to teach some other skills first, or if you can jump ahead to more complex work. The diagnostics can be used again at the end of the six weeks measure growth during the six weeks.

Other resources to take advantage of include former teachers, mentor teachers, or the directors who may have had experience with your students. You can also speak with them about what to expect from that grade level in general. Additionally, you will want to bounce lesson ideas off folks with experience to help you gain a sense of what works and to get fresh ideas.

Remember also that Breakthrough is not about letter grades but about learning. Your assessments should focus on student progress and mastery not just the A, the D, the 75%. Students definitely need feedback on their progress, but qualitative feedback and goal setting are generally more meaningful than letters and numbers. Once you embark on the journey to move the students to your end goals, you will need to keep a watchful eye out for stalled learning and great achievement. Help students to recognize those too. Student awareness of their personal progress is a valuable skill that will help with continual improvement during the school year.

Re-teaching

Sometimes, despite the teacher's best intentions or instruction, students do not demonstrate mastery of a concept on an assessment. In other words, they fail. At that point, the teacher is faced with two choices: a.) press on with the agenda in order to finish the goals set in unit or long-term planning, or b.) pause and return to certain concepts, providing additional instruction until students have mastered them. Too often in large classes in overcrowded public schools, teachers are under pressure to complete a curriculum on a timeline; in other situations teachers mau have so many students they

have difficulty balancing varying levels of achievement in the class. Breakthrough, however, provides a unique opportunity to acquaint yourself with the students and their academic proficiencies in great detail.

While re-teaching is often done in one-on-one tutoring sessions after-school in public schools, the small class sizes allow Breakthrough teachers to return to concepts that one or more students have not yet mastered, helping them to attain mastery of each concept. If you do not utilize both diagnostic and summative assessments to shape instruction, you miss the point of assessing. You may as well fumble blindly on in your instruction without any testing. If they don't show mastery, you haven't succeeded as a teacher yet. Just because your unit was supposed to end Friday doesn't mean you're free to move on to the next concept if they don't get the first one. Use your assessments to determine what you need to re-teach, and then assess your students again. Do not stop the cycle until your students can do what you set out to teach them.

Re-teaching is not as simple as pulling the original lesson plan and teaching that lesson again. If they didn't get it the first time, they must need more or different instruction and guidance. The first step is to determine what, specifically, students do incorrectly. It is not enough to know that they can't "do" fractions. The teacher must analyze where in the process of multiplying, dividing, adding, or converting fractions the student goes awry. Secondly, teachers must inform students of their mistakes, and coach students in identifying them. Thirdly, by applying new techniques to old concepts, teachers must demonstrate the correct technique and provide multiple opportunities for students to practice the skill. By the end students should be able to explain what they did wrong and the correct method, as well as demonstrating mastery on independent assessments. In order to leave no students behind the teacher must recognize when students need additional support and then deliver the support.

Step 3: How will you guide your students to the desired goal?

The Planning Process

You have six weeks to educate your new students. Six endless empty weeks to teach your kids how much fun learning can be when you do it right. The temptation is to start your planning with the first day, the second day, the third, and so on: how you will introduce yourself, the engaging activities in which you will all participate, the brilliant discussions you will facilitate. These ideas are incredibly important; you should harness that energy and get those ideas down on paper so you don't lose them. At the same time, day-to-day planning without a detailed overarching vision is dangerous, both for you, your health, and your students. Each lesson will be harder to create and may not fit as succinctly with the previous or following day. You will spend more time figuring out where you are headed and your students will have to jump around with you while you figure it out.

One strategy to circumvent this problem is backwards design, which begins by establishing the desired end results, then moves back to the beginning. In the broad sense, this means your first step is your long-term plan, followed by your unit plan, and ending with your daily lesson plans. Within each of these processes, it is important to consider first where you want to wind up at the end of the year, unit, or day. The process is outlined below for **a) long-term planning**, **b) unit planning**, and **c) lesson planning**. See the sample long-term/ unit plan in backwards planning format in the toolkit.

Long-Term Planning:

1. Determine end goals
2. Sequence and group goals into units
3. Schedule units on calendar

Unit Planning:

1. Establish the unit objectives
2. Determine the type of unit
3. Determine assessment methods
4. Sequence and group objectives into daily lessons

Lesson Planning:

1. Establish the daily objectives
2. Determine how you will assess the daily objectives
3. Design or select an instructional approach which will engage and motivate students
4. Write your plan, addressing all stages of the plan
5. TEACH
6. After the lesson, reflect on the successes/ challenges you faced and use this knowledge to shape subsequent lessons

Long-Term Planning

While some beginning teachers first think about the next day's lesson the night before, the most effective approach to instructional planning is to develop a long-term plan. Whether your "long-term" is the six weeks in Breakthrough's program, or the ten months in a school year, you need a plan for coherent

> **Long-Term Planning**
> 1. Determine end goals
> 2. Sequence and group goals into units
> 3. Schedule units on calendar

instruction that spans your entire timeline. Without this plan, it is harder to make progress and easier to become bogged down on certain concepts or with irrelevant lessons. A long-term plan provides the opportunity to build a trajectory towards end goals and allows both teacher and student to clearly relate a given day's objectives to the standards. Additionally, creating a timeline which spans the entire program or year clarifies how much time you actually have and helps you to sequence instruction and budget your time. Long-term planning is the key to maintaining your focus and your momentum.

1. Determine End Goals

To backwards plan, to must determine what you want your students to be able to do at the end of time period for which you plan; use the standards to design these goals, but also ask yourself what type of students you want to see departing at the end of the program. How will she or he be different? What should he or she have learned? And while teachers should always set high expectations, it is imperative that the goals are reachable by both the teacher and the students. Setting impossible goals will only frustrate and disappoint you and your students. Be realistic about the amount of time and resources you have.

2. Sequence and group goals into units

Once you have a clear picture of what you want your students to know and be able to do at the end of the program, you must organize the goals into a logical sequence. Determine if one goal depends on students acquiring another skill first. For instance, it will be difficult to require your students to research a certain disease if they do not first have a strong understanding of the healthy human body and its functions. You will also want to determine the natural breaks in instruction to define a unit. This will allow you to assess and bring closure before moving on to a different set of skills.

3. Schedule units on calendar

Lastly, create your calendar outlining your long-term plan and where your units will fall. You will design separate more detailed calendars for your unit plans. It is likely that your calendar will change; it is a working document, not a final draft, and changing it is acceptable. If your long-term plan and your unit plan are the same thing because you are teaching for a shorter time period, as in Breakthrough, then only one calendar is necessary.

Unit Planning

Organizing your instruction by units helps to focus you and your students on certain objectives and to move them forward systematically. Building on the grouping and sequencing of goals in long-term planning, your unit plan breaks these goals down further into objectives and organizes them around projects, goals, or themes. You will have an opportunity during the unit plan to bring more creativity into the planning process.

> **Unit Planning**
> 1. Establish the unit objectives.
> 2. Determine the type of unit.
> 3. Determine assessment methods.
> 4. Sequence and group objectives into daily lessons.

No matter how much planning you do, things will change. Obstacles will arise, students will take longer to master one skill, or they will get bored quickly with another activity, but your plan will guide you even in these instances. Because you as the teacher know where you want to wind up, you will be more easily able to adapt your plans to help students reach those goals. Constant reflection on planning and execution of units will

help you to refine your analytic and creative powers of curriculum development. Whether you find students are more advanced and you can skip to the middle of your plan or you find you need to back up further than you thought, each day begins anew and you and your students have fresh opportunities to succeed in new and exciting ways.

1. Establish the unit objectives

You should already have established standards-based goals in the long-term planning stage. The next step is to transform the goals into objectives using the objective-writing process described in "Step 1." This step is perhaps the most complex and most important, aside from actually developing the instructional plan. Breaking skills down into smaller components will enable you to design appropriate instruction. Make sure you consider the full range of skills necessary to reach the goal as well as the span of Bloom's Taxonomy.

2. Determine the type of unit

There are several categories of units described below. Although they overlap moderately, they are distinct enough to manufacture vastly different learning cultures in the classroom. The types of units you select should depend on your objectives, your timeline, your students' needs and strengths, and your personal style as a teacher. The three unit types are: goals-based, project-based, and thematic.

> **Goals-Based Units:** While all units should be goals-based, meaning they should be designed to help students achieve mastery of the standards, in this type of unit the goals are a focused set of academic objectives organized by a central question, task, or principle. The content plays the central role rather than other fancy features. For instance, a unit on solving algebraic equations or on fictional character development would be goals-based units.

> **Project-Based Units:** The driving force behind a project-based unit is the culminating product, which is, of course, designed to help students achieve the standards. This type of unit may integrate various content objectives as well as performance objectives, how students demonstrate or perform a skill. Because students take active roles in producing the projects, student motivation often increases, especially when working on service-learning projects or other real world applications. Well-designed project-based units often focus heavily on synthesis and application. One challenge of project-based

units is that they allow students progress at varying rates. Teachers, however, must continue both direct instruction and flexible coaching as needed. This type of unit can actually be more difficult to teach well because it is more student-driven, and may be more difficult to prepare for and guide.

Thematic Units: Thematic units organize objectives around a broad concept, or a theme. Teachers may develop key questions to answer throughout which relate back to the theme. Examples of themes include: conflict, Zimbabwe, Buddhism, or water. For instance, a math teacher could develop a unit on water that addresses objectives concerning cubic measurement. Thematic projects provide opportunities for interdisciplinary study. Subject teachers sometimes plan collaboratively, in order to develop the unit in both classes or even connect instruction across an entire grade level.

3. Determine Assessment Methods

When planning a unit, teachers should develop the assessment plan, including any pre-, post-, and ongoing assessment, after deciding the type of unit, but prior to developing any daily lesson plans. They should also clearly explain assessment methods when introducing the unit so that students may work with an understanding of how they will be expected to demonstrate their knowledge. Designing assessment at this point in the process is essential because it will drive your instruction and help you to address all learning goals in lesson planning. For longer teaching stints, you may want to consider final exams, portfolio presentations, or projects requiring students to integrate multiple skills from different units.

4. Sequence & Group Objectives into a Unit Calendar

Organizing skills so they complement each other provides a curriculum structure that enables students to achieve at high levels. In order to do this, teachers must be sensitive to the background students need to master more complex skills. Unit calendars should include a week-by-week and day-by-day breakdown of when skills or concepts will be introduced. Don't forget to include scheduled time for assessing, reviewing for assessments, and possibly for re-teaching. You will also want to include planned time to celebrate, or show off, student achievement. The resulting document will be your personal map to classroom instruction in the same way standards are the system map. You may find a need to revisit your unit

plan as you develop your lesson plans because students may take longer or shorter to achieve the goals.

Breaking it Down:

Long Term and Unit Planning

In Breakthrough, since the program runs for six weeks, your long-term plan *is* your unit plan. Although you will really be going through the unit planning process, not the long-term planning process, you must still keep in mind the broader learning goals. How will your unit fit into your students' school-year experiences? How will the summer prepare them for the following grade level?

Additionally, although the process outlined above seems very rigid, curriculum planning is both analytic and creative process. Each teacher will have an individual planning style. Sometimes the creative aspect of the process will mean you envision a great idea for a lesson in the last week of the program, while you are still in the throes of developing your unit objectives. Do not ignore your instincts. Get your ideas down on paper. You can always brainstorm lessons during the various phases, like while deciding what type of unit you want to teach. This will help you envision the benefits and drawbacks of the ultimate path you take. Just don't sacrifice the unit plan for individual lessons. Before you plan out each lesson and sequence them, and certainly before your first day of class, you must have developed your unit plan. Of course your plan will change to adapt to your students' needs and other bright ideas you have along the way. Without the plan, however, your process will be far more painful than it needs to be, more of a series of jerky moves than one smooth interpretive dance. So, follow your creative impulses, but rein yourself in to get a unit plan in place before your students arrive.

And remember, since Breakthrough features many program-wide events, some of your class time will be compromised. You will have to plan around Olympics, Spirit Day, Career Day, and any other events your site schedules. All in all you will likely have only roughly 25 days of regular class time. It goes fast, so use it wisely!

Lesson Planning

Once you have laid out your long-term plan and designed your unit, you are ready to begin daily lesson planning. Again, the importance of prior planning cannot be emphasized enough. You will drift without the anchor of a long-term plan. Furthermore, if you take the time to develop a detailed unit plan, your daily lessons will be easier to create and clearer to your students.

Excellent teachers enter the classroom with a clear lesson plan every day. The procedure described to the right outlines one process to develop daily lessons. First, you will need to analyze your unit objectives to create a list of skills your students will need to achieve those objectives. These skills must then be transformed into daily objectives. Secondly, once you have established the objectives, you will need to decide how you will determine if students achieve them – an informal assessment. Thirdly, you must select an

> **Lesson Planning**
> 1. Establish the daily objectives.
> 2. Determine how you will assess the daily objectives.
> 3. Design or select an instructional approach that will engage and motivate students.
> 4. Write your plan, addressing all stages of the plan.
> 5. TEACH.
> 6. After the lesson, reflect on the successes/ challenges you faced.

instructional approach, described further in *Presentation Methods*. After securing your approach it is time to set down your decisions in a lesson plan format. Many different formats exist which vary in structure and level of detail; one option is described below. The final step, reflection, will assist you in refining your technique. Identifying what students responded well to and what they struggled with will help you to isolate approaches that work well and those that do not. Your reflections should then influence subsequent planning. A list of reflection questions is included in the toolkit.

While many variations exist on the lesson plan format, there are several essentials that are consistently included. One lesson plan format including these components is described below

1. Hook

The beginning of the lesson must initiate interest or "hook" the students. This stage of the plan serves as a motivator, transition, and introduction; it can either follow or be integrated with the opening procedures. One such opening procedure is called the "do now" and consists of an independent activity the students perform as soon as they enter the room and sit down. To pull students in either during the do now or in a separate hook, you can activate the students' prior knowledge, meaning connecting the topic to your students' experiences. Another option is to create a spectacle, or capture attention. A third possibility is to present an object or image of interest without explanation and to ask for student responses. All strategies provide good opportunities to utilize instructional techniques representing a variety of learning modalities. Examples of hooks are described below:

- Ask thought questions on real world applications of content-area knowledge in journal entries, think-pair-share, or class discussions.
  - o Introducing solving for a variable: If you were the Breakthrough director, how would you figure out how many classrooms you needed for your summer program?
  - o Introducing a lesson on the Bill of Rights: What are your rights do you have at home? What rights do you not have?
- Show a relevant object or image.
  - o Pass around a snakeskin to introduce adaptation in animals. Ask students what they think happened to create it.
  - o Show a painting that connects with a story the class will read. Ask what they see in the painting and what they think is the story behind the painting.

2. Objective

Explicitly stating the day's and unit's objectives tell students know what they are learning and why, which fosters directed learning. These objectives should also be posted visibly in the room and students should know where to find them. This stage is also a good time in the lesson sequence to review the agenda. Some classes keep notebooks in which they begin daily notes by writing down the objectives, agenda,

and homework. The objective and agenda provide a transition from the hook to the next stage, the introduction of a new concept.

3. Introduction to New Material

Once the class is familiar with the objective, the teacher introduces the new material, whether it is a new skill or new content. Although it is tempting during this stage to simply lecture or show material students must copy into notes in this stage, it is important to vary your technique. Teachers can involve students in this stage by incorporating student volunteers, leading student exploration of new content, or by structuring interactive activities. Several methods to provide instruction on new material will be described in *Presentation Methods*.

4. Guided Practice

During Guided Practice, students practice a skill or work with a concept while the teacher coaches them. This segment is often organized as either a whole class or a small group activity. It is essential that students have an opportunity to practice the new skill or explore the content with immediate teacher feedback. Some students will need more guided practice than others and some activities, likewise, will require greater amounts of teacher support. Close student observation during this stage of the lesson will provide clues to when to move on and when to provide more examples or greater clarification.

5. Independent Practice

Once the students seem comfortable with the processes, it is time for them to practice on their own. Both classwork and homework can fulfill this stage, but remember that the teacher has little control over the conditions of homework, and it may be hard to determine what kind of support students received outside of school. The teacher should continue to be available for coaching during this phase, but questioning strategies are more appropriate than directly instructing students. Remember, your goal is to help students perform the activity independently, which requires a perfect balance of guidance and encouragement.

6. Closing

Although lesson closure should not take more than five to ten minutes, teachers have many options to bring the lesson to an end. It is imperative some closure is provided to review what was learned and to link the day's lesson to subsequent instruction. You should also give a brief preview of how the lesson will relate to the following day's instruction and a reminder or explanation of the homework assignment. Options for closure include journal entries or brief discussions on a synthesis of the day's activity or how the class met the daily objective.

Breaking it Down:

Lesson Planning

The outline presented above is just one option for a lesson plan format. Other formats may include key portions of the above plan or may present information in a different way depending on the curriculum or skills being taught. The length of the class period or the individual portions of the lesson may also cause variation in the lesson format. You may find it necessary to stretch the presentation of new information or guided practice segments over two days. Alternately, with a longer class period you may plan to present and practice two different concepts on a certain day. No matter what pieces are presented in a given day, it is important to include a lesson closure at the end of the period even if the lesson will extend into the following day. Also, incorporating a review of the previous day into the hook will remind students they are responsible for previous learning and encourage them to view the six weeks as a connected experience rather than individual daily activities.

Lesson Presentation

The previous section began to address how to plan to guide your students towards academic goals. In this section, we will discuss some details of what you do in your classroom when the period starts. Much of the content of daily lessons will be determined by the subject and grade level you teach; there are many instructional strategies specific to curriculum areas like science or English. On the other hand, there are also common techniques for how to organize and execute a lesson that do not depend on subject matter or grade. During your site orientation, you will receive further training on this topic, but in this manual we will introduce a range of broadly applicable strategies. Remember in order to maintain student interest you will want to mix things

up: do a demonstration one day and have your students debate a controversial topic the next. Each strategy is to be used in combination with other throughout the summer.

Before we address specific methods we will discuss two philosophies of instruction: teacher-centered vs. student-centered. Following the philosophies, the methods are organized into two categories: whole group and small group. Since in Breakthrough, your classes will always be relatively small, some of the small group strategies will be ones you can use with your whole class.

Teacher-Centered Instruction

Classroom instruction can be mapped on a continuum from teacher-centered instruction during which the class focuses on teacher input to student-centered

Student Centered
Collaborative Group Project
Class Discussion
Seatwork
Lecture
Teacher Centered

instruction, where the focus is on the student output. Teacher-centered instruction usually takes place in a whole class format. The teacher controls the direction of the class and the students' choices. For instance, a lecture during which the teacher talks and the students write down what the teacher says is teacher-centered; the sole source of information and action is the teacher. Students learn passively in these instances because they only receive information without manipulating or interpreting it in any way. While too much teacher-centered instruction can lower student motivation, it is important that students can adapt to and learn from this approach since many of their high school and college classes are likely to be teacher-centered.

Student-Centered Instruction

During student-centered instruction, the students participate actively in the learning process and often direct the course of instruction and discovery. Teachers encourage students to develop theories, raise questions, and act as leaders. The teacher reduces the amount of "teacher talk" and instead acts as a guide or a coach, playing a subtler, but no less important, role. Implementation of student-centered methods works well in: small groups, pair work, projects, debates or student-led discussions, and role-playing. This approach empowers students and enables them to develop leadership

skills, as well as increasing motivation. Often students learn material better under this style because they have greater opportunity to interact with the material, which deepens their understanding and cements their learning.

A classroom does not need to embrace just one approach; in fact utilizing both methods during appropriate lessons strengthens instruction. Keep in mind an overly teacher-centered style may reduce student motivation and, depending on how well it is executed, a wholly student-centered approach may reduce the focus on the content.

Whole Group Methods

On many occasions, you will find it necessary to provide instruction to your entire class. This is useful because it enables you to communicate concepts to everyone at once, it puts the whole class on the same page, and you can develop a sense of class progress on a given topic. Below is a range of whole group instructional methods from which you may select. Remember to consider both your material and the nature of the group, as well as individual needs, when you choose your presentation methods.

Demonstration

A demonstration is exactly what it sounds like: the teacher demonstrates a process, concept or principle to the whole class. Presenting information in this way allows the teacher to show students how to perform an activity, including possible pitfalls or tricks of the trade. The activity can range from a science experiment to a math problem to a descriptive essay. Demonstrations also provide rich opportunities to utilize visual and auditory aids, as well as student volunteers. Demonstrations can be presented with the intent that students will then perform the task, or solely for the purpose of conveying information.

Lecture

Although lectures often receive a bad reputation because they call to mind the old graying history teaching rambling on about World War II while students pass notes, there is such a thing as a dynamic lecture that captures student attention. Additionally, lectures can convey information practically and quickly. A good lecture must be logically organized, clearly developed, and interesting. You must also clearly connect it to the topic of study. If you jump into your topic without planning the trajectory, you will lose

your students' attention, and possibly your own train of thought. Varying your tone of voice and body language adds texture and might even prevent the student napping often produced by the monotone mannequin teacher.

During the lecture, students must have a task to complete. No student should ever sit passively while a teacher lectures. Providing students with an outline of the lecture beforehand helps them understand what to expect from the lecture, and they can use it to take notes as you speak. You may want to use a photocopied outline or a PowerPoint presentation, if you have access to the computer program. This is an especially useful technique if you are teaching note-taking. Note-taking is a key skill students must have in high school. Developing a note-taking style is a key study skill you may want to incorporate into your lesson plans. If you don't give them an outline ahead of time, you can create one simultaneously on the board or overhead projector that they copy as you go. Remember that copying provides an example of how to organize information, but does not teach students how to select main ideas or relevant facts and examples. Finally a graphic organizer for students to fill in as you lecture provides a format for organization while allowing students to select important pieces of information. While only using lectures to communicate information may alienate students, they do need to learn the skills used to translate a lecture into useful notes.

Graphic Organizers

Graphic organizers are visual methods of organizing information. While they are presented here, in reference to lectures, they are excellent tools to use in any kind of instruction. Examples include Venn diagrams, T-charts, cause and effect charts, KWL charts, and family trees. You can also develop your own diagrams and pictures to help students process and organize information. Students should become familiar with the more common structures like Venn diagrams and T-charts as they are often used throughout schooling. Ready to photocopy examples are included in the toolkit. 🛠️

Whole Group Reading

Teachers must focus on literacy skills no matter what subject they teach; many students struggle most in content area, or academic, literacy – reading science textbooks or articles, for example. Reading aloud in class, whether from a novel, textbook, handout, or poster, provides the opportunity to practice academic literacy. The teacher must

assure equal participation and prevent damaged self-esteem in lower-level readers. You can, of course, simply ask for volunteers to read, but the danger is that some students will volunteer eagerly and some will be more reticent. Strategies to equalize participation are described further in *Questioning and Discussions*. Several methods to protect self-esteem and build oral reading skills are described below.

When the whole class reads the same material in one voice at the same pace it is called choral reading. This strategy gives struggling readers or students with limited English proficiency the opportunity to practice without the disdain of stronger readers. This technique does require some practice to synchronize students and should be used in tandem with other individual oral reading activities.

No matter what techniques you use, you should set an expectation that everyone will read aloud. You can then control who reads when, either via a regimented order or a surprise attack. Two-line reading assures students pay attention to the reading even when it is not their turn to read. With this technique, warn the students you will select the readers in a random order by touching their book when it is their turn to read. During their turn they read two sentences only. In smaller classes, the amount could be greater. This strategy assures everyone follows along in the reading so they will be prepared should they be chosen next. You will find further class reading strategies described in the toolkit.

Sometimes correcting students can intimidate them, yet not correcting pronunciation results in poor reading skills. You must create an atmosphere in your class where students are comfortable reading aloud, even if they make mistakes. Allowing students to correct each other or fill in a word is detrimental to fostering that atmosphere. As the teacher, you should not provide the missing word until the student asks for help. You may want to develop a signal in your class, for instance the student puts up a single finger to get the next word. Sometimes asking the student to sound out the word will enable them to move on independently. Mispronunciations, however, are another point of concern. You can either interrupt the student to correct them, which can be disruptive, or at the end of their turn you can repeat a section of the sentence with the mispronounced word. Regardless of how you correct pronunciation, they must also repeat the word. At the beginning of the program warn students you will assist them in

reading. Help them to understand that students do not all know the same words, and that being corrected is an opportunity to learn.

Questioning and Discussions

Questions are not only an assessment tool, but also a way of fostering critical thinking. Research, however, shows most questions teachers ask cover only the lower levels of Bloom's Taxonomy, therefore students are not always encouraged to practice analysis, synthesis, and evaluation. Additionally, teachers tend to give students they perceive to be low achievers less opportunity to answer complex questions, perpetuating a cycle of underachievement. Studies also show they give less frequent praise to perceived low-achievers. Knowing the research findings is the first step towards creating a classroom where the opposite is true: teacher questions cover the range of Bloom's and all students must respond to complex questions.

Questioning can be used during a teacher-centered question and answer session, or in the context of a student-centered discussion to focus and deepen the level of thinking. During a well-organized discussion, the teacher should have certain objectives in mind towards which the questions build. They, of course, should be planned prior to the discussion to assure they encourage higher-order thinking. Student voice should be the predominant force in a classroom discussion, as opposed to the teacher.

Benefits of classroom discussions include increased student self-reliance and social adeptness. If students rely on the teacher to give all the answers, they will remain passive without ever becoming active, inquisitive learners. Developmentally, questioning is an important instructional strategy for middle-schoolers because of their attempts to establish independence. Students will benefit from testing their voice in an educational environment where the talented teacher can help them shape their ideas. When other students provide answers instead of the teacher, they must listen to their classmates, an important adult social skill.

In order to assure smooth discussions, even with just a few students, the teacher must have participation procedures. For instance only students raising hands silently will be recognized. All students will listen actively to the speaker by looking at them and

keeping hands still. While this may seem like overkill in a small class, it is still important to establish procedures to support a respectful and equitable environment.

Even with these procedures, however, some students will still clamor for attention while others shrink into their seats. The first strategy to bring more students in and to build confidence is *wait time*. There are two points where the teacher should pause and allow time for students to think:

> **Wait Time 1:** Between the question and calling on a student to respond, and

> **Wait Time 2:** Between the student response and calling on another student or moving on to another question.

Teacher Question	Wait	Student Response	Wait	Student Response/ Teacher Response

Pausing at **Wait Time 1** allows students more time to consider their answers and increases the number of student volunteers, resulting in a broader variety of student voice. **Wait Time 2** prevents teacher or student interruptions and allows time for students to add to or change their answers. The result is better, more detailed answers. If students seem stuck, prompting students can elicit more information or more accurate responses. Rephrasing the question, asking a more specific question, or asking them to elaborate on a portion of their answer will also direct their thinking. And while all students may not be ready to answer complex analysis questions right away, varying the level of questions and prompting enables more students to participate at higher levels.

Although some students may not seem prepared to participate as frequently, you must provide equitable opportunities. To assure everyone participates equally you can create a deck of index cards or a cup of popsicle sticks with one student's name on each. You then draw a card or a stick for each question, placing the responders at the bottom of the deck or in a separate cup. Further strategies to increase participation are described in the toolkit. 🛠 No matter what strategies you use, it is important to monitor the rate at which you call on individuals students and how you respond to them. It is easy to let

biases based on subconscious beliefs about gender, race, or intelligence shape your interactions with students. Outside observers can often catch patterns you do not.

Sometimes students will give wrong answers. How you respond to your students when they are incorrect will affect their level of respect for you. Using patience and encouragement when responding to students will show you respect their efforts, but are also interested in helping them learn. Restrain yourself from cutting students off and support all attempts with comments like "good try" or "almost." You can also ask them to explain their reasoning, which may result in a revision of the answer. If part of the response is correct, praise that portion and ask them to reconsider the other part. Or just give them a second chance; suggest they refer to their notes, a book, or another student for assistance. Make sure they give the answer in their own words once they have determined the answer. Rephrasing will help them process and remember the information.

While all these strategies may seem overwhelming, if you view your students with respect and use encouragement your discussion and questioning techniques will foster an environment where students are eager to learn. Additionally, if you practice planning questions across all of Bloom's Taxonomy, requiring students to analyze, evaluate, and infer, as well as demonstrate mastery of content, distributing your questions over all levels will also begin to come naturally.

Concept Attainment

There are many models of classroom instruction teachers can use to present information. Concept attainment is one such model that promotes logical thinking and analysis. This particular model is a guided process in which students develop their own definitions and draw their own conclusions using inductive thinking. The teacher begins the lesson by presenting positive and negative examples of a concept. After a few rounds, students must identify and explain new examples and non-examples, with a focus on the explanation. Students may correctly guess an example without having an understanding of why the item fits the category. Because many items can have overlapping characteristics, the teacher must carefully select the examples and non-examples and consider the order in which they are presented so as to adequately direct student thinking.

Here is a simple example of a concept attainment lesson: The concept presented here, which the teacher knows, but the students don't, is "multiples of 3." A teacher presents index cards with numbers on them one-by-one, holding them up for students to see and taping them to the board under either "Category A" or "Category B." The first card held up, a 12, is placed under "Category A." The 7 goes under "Category B." The teacher continues placing cards into each category, encouraging students to guess and explain. The teacher could mislead them by beginning to place only even numbers in the A category and only odd numbers in the B category. She must, however, place an odd multiple of 3 in the stack at some point to disprove that rule, just when students may begin to see that pattern. If students cannot discover the pattern, the teacher might try a more obvious set of examples, like numbers ending in 3 (63, 93, 123), or she might ask the students to organize the numbers in each category to see if patterns emerge.

Clearly, this lesson can be both fun and frustrating depending on the concept and on how well the teacher organizes the items. A certain amount of frustration is good because students become more invested in figuring out the answer, but too much frustration will cause students to stop trying. While math fits easily with this model, many topics in other subjects also work.

Small Group Methods

The ideal number of students in a small group varies depending on the tasks they will perform, but can range from two to eight students. Small groups are especially good settings for problem-solving activities and can incorporate discussion and project work. Although managing small groups in a large class can be a difficult task, the benefits are worth the struggle of developing systems to organize and support the groups. In small groups, students have more opportunities to participate actively and to interact with each other than in the larger group. Group work focuses on the process in addition to the product, which in turn fosters teamwork and leadership skills and specialization in certain skills. The end result of these factors is often increased motivation, interest, and therefore, learning.

Running small group activities does not relieve the teacher of all duties, however. The teacher must take an active role in the process, beginning with the composition of the group, which depends both on the nature of the task and on the nature of the students.

Once the project begins, the teacher must serve as facilitator and coach to keep groups moving along and focused on the goals. You cannot assume students know how to interact positively or set goals themselves; common group guidelines, expectations, and ground rules are necessary to structure their experience for them. Additionally, positive feedback will have a greater impact on them than criticism. The fine art of small groups can be tricky, but incredibly rewarding for students and teachers alike. Below is a list of ways in which to organize small groups, each with their own benefits and drawbacks.

Homogeneous Grouping

Placing students in homogeneous groups means organizing them by ability level. Arguments in favor of this grouping method include targeting instruction and increasing participation levels. Because everyone in the group is relatively close in ability level, the teacher can direct instruction to specific skill areas with which group members need assistance or the teacher can assign a project directed at the group's level and designed to help those students progress to a higher level. Furthermore, the common ability level of members eliminates any risk of a student becoming intimidated or missing out on participation opportunities because of high achievers in a mixed group setting.

Heterogeneous Grouping

Heterogeneous groups include students from all ability levels. In this model, lower achieving group members benefit from exposure to higher achieving students. Higher achieving students benefit from teaching or guiding lower achieving students because they must analyze concepts and explain them to others. Explaining concepts requires operating at a higher level of Bloom's Taxonomy. No matter whether you group students according to ability or not, it is important to hold and make explicit the same high expectations for progress in all students.

Interest Groups

For certain assignments, you may want to organize students by interest groups. For instance during a group research project, you will likely increase student motivation by giving students some choice on the topic. Likewise, if they are going to read different short stories, allowing them to choose the story in which they are most interested and grouping them by story will increase investment in the assignment.

Pairs

The strategy of pairing students has a wide array of applications and assures a higher level of student participation than small or large group formats. It also increases the individual responsibility on a given task. Whether or not students have a consistent partner with whom they work, you can use heterogeneous or homogeneous pairs to achieve different goals. Pairs can discuss thought questions, read aloud to each other, work together on problem-solving activities, or create presentations.

Breaking it Down:

Whole Group vs. Small Group

The individual interests and needs of the students should drive the format of instruction you choose for your lessons. While the first week or two of the program will consist of experimentation and close observation of the results, by the middle of the program you will have a sense of the types of activities to which your students respond best. You must continue to observe them, however, to expand your instructional repertoire, to help the students develop goals for themselves, and to foster more positive and productive class interactions.

With small classes, all of the above strategies become options, although you may only have one small group, as opposed to five, and you will not be able to control whether the class is homogeneous or heterogeneous. Use the small group to your advantage. Work to involve every student actively in the learning process. Provide creative learning activities to help your students connect with the material. Decide to draw out the quiet student with clear wait time. Give the stumbling reader plenty of opportunities to practice. Teach your class how to encourage each other and listen to each other. Many of the pressures of middle school disappear in the Breakthrough classroom because the students have the space to experiment and they have a guide, you, to listen to them and give them confidence. Create the opportunity for your students to have breakthroughs in understanding the material and themselves.

Cooperative Learning

Simply because students work in small groups does not mean they engage in cooperative learning. Cooperative learning involves working together to reach objectives while actively learning from the other students in the group. It is a far more structured interactive experience, than, say, working on textbook math problems in small groups. Students generally lack the social skills to automatically collaborate, therefore, the teacher must provide instruction as to how the students should work

together. Additionally, the teacher must lead the group in setting clear goals for themselves and reflecting on their progress. Members must have individual roles and responsibilities to fulfill. Those roles might be chosen based on students' strengths and interests. To complement the individual roles, the teacher should help groups work to develop a sense of group pride. The result of these factors is, ideally, positive interdependence: a state in which the group members rely on each other to work towards fulfillment of their goals. Finally, there must be an accountability system for both the individual members and the entire group. With this strategy, the functioning of the group is as important as the product or the individual contribution.

Independent Work

Students do not have to constantly work with other students to achieve academic success. In fact, independent work can be the best way to practice some skills, and some students will prefer to work alone. Likewise, individual projects give students an opportunity to experience sole responsibility for a complex task. Developmentally, autonomy is an important aspect of the middle school experience, and working alone will allow them to exercise their independence. It will be up to you to determine what style best fits your students and the curricular objectives.

Team Teaching

Team teaching is difficult, but offers a chance to collaborate with other teachers and build on two sets of strengths in planning and in the classroom. Two teachers equals two people to support students, two brains to plan, two people to assess work, and of course, moral support while presenting a lesson. It also equals a lot of hard work to communicate clearly about why and how to instruct in certain ways, how to balance the load, and how to develop systems to appear as a united front in the classroom, rather than undermining each other.

Although only a few Breakthrough sites currently pair teachers in the classroom, you may be able to work with another teacher for a lesson or two. You may decide to work with a teacher who teaches the same subject in order to build on both of your strengths and talents in a curriculum area. Or you may decide to work with a teacher outside your subject area to create an interdisciplinary lesson, integrating math and science or English and math into a single lesson.

Whether you will work with another teacher the whole summer or only once or twice, here are a few things to keep in mind. It is helpful to assign different parts of the lesson plan to each teacher and to set clear expectations for what the non-presenting teacher will do. For management purposes, both teachers must enforce the same rules in the same ways. When one teacher is in charge, all student attention must focus on that teacher; the second teacher must not become a distraction. For planning purposes, two heads are generally better than one. Get together to share your ideas and see what new ideas you can develop. Remember to allow each other equal opportunities to contribute to the planning process, because otherwise, the lesson may not go as smoothly once you get into the classroom. Teaching someone else's lesson is much more difficult than presenting activities to which both people contributed. Above all, listen. Whether during planning or instructing, listening to your partner teacher will help smooth any transitions or disagreements. Team teaching can easily fail if teachers do not agree fully on the goals for the class, the goals for the day. They must spend time working through issues as they arise.

Differentiation

Every classroom has a diverse range of learners, no two alike. Some students will perform above grade level and some below grade level. Each student will have a different set of strengths and weaknesses, as previously discussed in *Multiple Intelligences*. Some students have learning disabilities, or differences. Other students have native languages other than English, a special ability that should be recognized even though they may need a different type of instruction to build their English skills. You will have to find a way to negotiate these differences to help all students reach similar end goals. But because of the differences in student needs, the type of instruction best suited to each child is also different.

In order to move a diverse group of learners to the same goals and to hold all students to the same high standards, the teacher must create individualized paths for students; teachers must differentiate instruction. Differentiation consists of adapting lessons in order to reach all levels and needs of learners without denying any other level of learner. For instance, students who have mastered skills above grade level must receive tasks challenging to them, while in the same class, students below grade level must

receive enough support to achieve the goals without becoming overly frustrated. In order to raise the achievement level of all students, you have to meet all students at their individual level instead of dumbing down the curriculum or leaving some students behind. This is an incredibly challenging task, but with planning and careful consideration of your students' needs, it can be a reality in your classroom.

Differentiating does not mean you must teach as many different lessons as you have students. After introducing the concepts to the whole class utilizing a variety of methods to make the material accessible to different types of learners, the guided and independent practice segments can be organized around activities, which allow for differentiation. Once students have completed their individualized tasks, the teacher pulls students back together to reevaluate the knowledge, after which they can separate again for further individualized exploration. For students below grade level in certain skills, the teacher must provide instruction in lower level skills to enable students to reach the higher, more complex goals; this process is called scaffolding. Meanwhile, the accelerated students must receive teacher attention and guidance to challenge them to continue to reach their personal goals. Luckily in Breakthrough, your classes will be small enough that differentiation will not seem so overwhelming. Your students will receive plenty of individualized attention, an ideal situation.

The first step in differentiation is to determine what your students' needs are. This process will involve the diagnostics discussed in *Assessment*; reading students' cumulative files, if you have access to them; the multiple intelligence survey; and plenty of careful observation. Once you have a sense of who your students are, the skills they need to develop, and the ways in which they learn best, you must determine which strategies to use to reach them. In addition to utilizing strategies aligned with different learning modalities as presented in the *Learning and Teaching* toolkit, the strategies below will help you to create a classroom where all students can achieve at high levels.

Tiered Assignments

Tiered assignments provide a way for students to master the same content through different means. The teacher constructs a series of activities at different levels that relate to a given set of objectives. The assignments can either stand independently or bridge to each other so students move through the series to wind up at the same end

point. The activities are designed so that different ability groups can successfully master the objectives either in different ways or by varying the pace of learning.

Varying Questions

As described above, there are many questioning strategies you can use to move student thinking into the higher order Bloom's levels. Differentiating questions for different learners may consist of simplifying the vocabulary of the question for clarity, breaking a question into parts to guide a student to a certain end point, prompting, or simply repeating a question. Some students may need a visual or kinesthetic explanation of the question. Likewise, complex questions must be presented to challenge high level learners and to encourage others to strive to respond as well.

Depending on the type of learner differences, you may need to vary questions on assessments, while always presenting high level questions to all students. Remember that differentiation does not mean lowering expectations. It simply means helping all students to reach those expectations.

Learning Centers

Although learning centers are more often used in self-contained classrooms where students remain with the same teacher all day, they can provide differentiation opportunities even in shorter classes. The teacher can design stations where students work independently to rotate though all assignments at their own pace. Alternately, the teacher can design several assignments of varying difficulty at each station so each student can master the goals of the station at a comfortable level.

Independent Projects

Independent projects contain an element of student choice and allow students to push their own boundaries without any limitations from other students. Of course, they also cannot make use of assets of other students. Teachers can vary the complexity of product and the amount of support a given student receives, as well as aligning the requirements of each student's project to the skills that student must master. Additionally, since all projects will differ, it is easier to measure an individual student's progress towards their goals, and harder to measure their products against each other.

Conclusion

While the methods described here cover only a few of the options available to you in instructional strategies, they do constitute some of the most important tenets of classroom instruction. Adapting the lesson to the needs and strengths of the learners in your class may be difficult, but also serves as the key to high student achievement. The ultimate goal, both in Breakthrough and in any other classroom is to help all students to achieve the academic goals set for them, as well as those they set for themselves. No matter what skills or talents they have at the outset, the teacher must work to provide a pathway that each student can use to reach equally high levels of achievement.