Backwards Learning

What is it?

A learning-with-the-end-in-mind technique that has students analyze culminating assessment tasks *before* instruction begins to identify the knowledge and skills they'll need to complete those tasks successfully

What are the benefits of using this tool?

Thanks to Grant Wiggins and Jay McTighe's *Understanding by Design* (2005), many educators are familiar with backward design, or the process of designing instruction with learning outcomes and assessments in mind. But thinking backwards is hardly the exclusive domain of lesson designers. In fact, thinking backwards is what gives our most successful students their self-direction. Successful students regularly ask themselves what assigned tasks will demand of them and what they can do to meet those demands. This tool teaches all students to do the same by giving them a step-by-step process for analyzing a task, breaking it down into *knowing* and *doing* goals, and devising a plan for success.

What are the basic steps?

1. Examine the learning goals/targets for an upcoming lesson or unit. Develop a culminating assessment task that is consistent with these goals/targets.

2. Introduce your lesson or unit, then present the assessment task to students.

3. Download copies of the Backwards Learning Organizer (www.ThoughtfulClassroom.com/Tools) or let students draw their own organizers using the ones on pp. 19–20 as models.

4. Use the organizer to walk students through the steps in the Backwards Learning process. Specifically,

- Check (and help students check) that they understand the given task by asking them to explain it in their own words. Examine students' responses and clarify or re-explain the task if needed.

- Ask students to determine what they'll need to *know and understand* in order to complete the task successfully (e.g., "I'll need to know the difference between an acid and a base").

- Ask students to determine what they'll need to *be able to do* (skills) in order to complete the task successfully (e.g., "write a comparative essay" or "create a picture graph").

- *Optional:* Help students spell out their plans for acquiring the requisite knowledge and skills. Sample action plan: "I'll consult a dictionary, Wikipedia, and my text to see what I can learn about allegory."

How is this tool used in the classroom?

✔ To have students analyze a task and determine what it will require of them

✔ To teach students to establish goals and plans for completing assigned tasks

✔ To help students become more self-directed learners

Organizers from different grade levels and content areas are shown below (additional examples are available for download at www.ThoughtfulClassroom.com/Tools). The optional "create an action plan" portion of Step 4 is illustrated in Example 1.

EXAMPLE 1: A fourth grader's analysis of the culminating assessment task for a poetry unit

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What is my task?

Write about something I love using three kinds of poems.

The three kinds of poems are called haiku, limerick, and cinquain.

KNOWING GOALS
What will I need to know and understand?

What a haiku is
What a limerick is
What a cinquain is

DOING GOALS
What will I need to be able to do?

I will need to know how to write my own haiku, limerick, and cinquain. It sounds like fun!

What is my plan for completing this task successfully? What steps will I take?

I will decide what to write about. I think I am going to write about cats.

I will look at example poems to learn from them.

I will listen carefully and make some notes when we learn about the kinds of poems.

I will write some poems for practice before writing my real ones.

I will ask my friend Giada if she wants to work on our poems together after school.

EXAMPLE 2: A high school student's analysis of a task on renewable/nonrenewable energy

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What is my task?

Write an editorial that explains the difference between renewable and nonrenewable energy and that takes a position on how to address the energy crisis.

What will I need to know?

• Differences between renewable and nonrenewable energy

• Causes and effects of the energy crisis

• Options for addressing the energy crisis and the pros/cons of each

What will I need to be able to do?

• Conduct a comparison

• Research different options for addressing the energy crisis

• Write a persuasive editorial

EXAMPLE 3: A middle school student's analysis of a physical-chemistry design task

> **At the end of this unit, I'll be asked to…**
> *Design a container that has the least amount of heat loss.*
>
> **Here's what I'll need to know:**
> · *How heat moves*
> · *What materials slow down heat loss*
> · *What factors affect heat loss*
> · *If the material in the container is a solid or a liquid*
>
> **Here's what I'll need to be able to do:**
> · *Design containers*
> · *Measure temperature*
> · *Calculate heat loss*
> · *Compare heat loss of different designs*

EXAMPLE 4: An organizer that first-grade students completed as a class with some help from their teacher (note that the task was designed to target Common Core Standard RL.1.5)

> **What is my task?**
> Make a poster that could teach someone the differences between books that tell stories and books that give information. The poster should show examples of both kinds of books.
>
> **What do I need to know?**
> • I need to know what a book that tells a story is.
> • I need to know what an information book is.
>
> **What do I need to be able to do?**
> • Explain the difference between books that tell stories and books that give information.
> • Find examples of both kinds of books.
> • Make a poster.

◕ Teacher Talk

➔ Here are some scaffolding tips:

- Before using the tool, discuss the difference between knowing goals (goals that involve acquiring and making sense of declarative knowledge) and doing goals (goals that require mastering specific skills, procedures, or behaviors). Use concrete examples to help students understand the distinction.

- Familiarize students with the kinds of questions they should ask themselves when developing their action plans (optional portion, Step 4). Then help them brainstorm some possible answers.

  Sample questions and answers: Where will I look for information? (textbook, Internet, notes); Who can help me? (librarian, teacher, friend, parent); What learning or study strategies will I try? (text previewing, Interactive Note Making, mnemonic devices)

  Note: The questions above are printed on the downloadable organizer for easy reference.

- Let students complete a Backwards Learning Organizer as a class before having them complete one on their own. *Note:* Very young students can complete the organizer as a class every time.

Student-Generated Assessment Criteria

What is it?

A tool that prepares students to produce high-quality work by showing them examples of what it looks like and helping them identify its essential attributes

What are the benefits of using this tool?

Establishing the criteria by which students' work will be evaluated has traditionally been the teacher's prerogative. Shifting some of this responsibility to students can be extremely worthwhile since students have an easier time understanding and applying assessment criteria that they themselves generate. This tool initiates such a shift by giving students samples of exemplary work and helping them identify the elements that define quality. Under the guidance of their teacher, they then convert these "quality elements" into a list of assessment criteria that helps them focus, evaluate, and improve their work on an upcoming task.

What are the basic steps?

1. Present an assessment task that requires students to create a product or performance.

2. Help students identify the characteristics of high-quality work *before* they tackle the assigned task. To do this, choose and use one of the following approaches (divide students into three- to five-member teams before they begin working):

- *High-Performance Approach:* Select or create three different samples of exemplary work. Help students compare the samples and identify the common characteristics. (What are the essential attributes of high-quality work?)
- *Three-Level Approach:* Select or create samples of excellent, average, and below-average work. Help students compare the samples and identify the critical elements that distinguish one level of quality from the next.

3. Invite students to discuss their findings as a class. Help them refine, synthesize, and transform their ideas into a list of mutually acceptable assessment criteria for the assigned task. Ensure that the final list includes all the critical dimensions of a quality product/performance.

4. Explain that *students* should use this list of criteria to guide, assess, and improve their work on the assigned task. Then explain how *you* will use the list to evaluate their completed assignments.

5. Make it clear that this strategy of analyzing and learning from high-quality work is one that students can and should use independently—not just when you tell them to.

How is this tool used in the classroom?

✔ To help students identify and internalize the characteristics of high-quality work

✔ To involve students in defining the criteria by which their work will be evaluated

✔ To give students criteria for guiding, assessing, and improving their work

HIGH-PERFORMANCE APPROACH: "What does good work look like?"

To help his students identify the characteristics of a top-notch narrative (working toward Common Core Standard W.2.3), a second-grade teacher read them three high-quality examples from his previous year's class and asked them to think about what the examples had in common. He recorded their thoughts on the board, helped them refine their list of ideas, and printed up copies for them to keep. The next day, students used the list of criteria they had generated (below) to help them write their own narratives. Before submitting their drafts, students worked with a writing buddy to check that they had met all the criteria and to revise their work as needed (Common Core W.2.5).

What do we notice at the BEGINNING?

The first sentence is interesting and makes you want to read more.

The first sentence tells you what event or experience the writer is going to be writing about.

Example: "I bet you would never guess what happened to me on the playground."

What do we notice in the MIDDLE?

The writer uses "order words" to help you understand the order in which things happened.

Examples: first, next, after that, finally

The writer describes actions, thoughts, and feelings. The writer uses strong verbs and adjectives to help you picture what's happening.

Examples: "I rode my shiny yellow bike." "She yelled in a loud voice." "I felt sad like I was going to cry."

Note: This same list of criteria was used to provide students with specific feedback about their completed drafts during teacher/student writing conferences.

THREE-LEVEL APPROACH: "What's the difference?"

After comparing excellent, average, and below-average argument essays from a previous year's class, a group of seventh graders identified the characteristics that distinguished one level of quality from the next. They then used this information to create the rubric below. After confirming that their "criteria for excellence" were consistent with the Common Core Writing Standards (W.7.1), their teacher encouraged them to use this rubric throughout the year to help craft the kinds of coherent and logically argued pieces that the standards call for.

	EXCELLENT SAMPLES	AVERAGE SAMPLES	BELOW-AVERAGE SAMPLES
POSITION	Writer's position is clearly stated and easy to find.	Writer's position is a little bit hard to follow or hard to find.	Writer doesn't take a position or position isn't clearly explained.
EVIDENCE	Position is supported with logical and relevant evidence.	Needs more (or more convincing) evidence to support the position.	Evidence is missing, unconvincing, or irrelevant.
ORGANIZATION	Reasons/evidence are presented in a logical order.	Reasons/evidence would make better sense in a different order.	Components (position, evidence, conclusion) are absent/out of order.

🌓 Teacher Talk

➔ The samples of work that you give students to analyze in Step 2 can be created by you, by experts, or by other students. (To help students understand the characteristics of a top-notch story, for example, you could write three of your own, grab three from a library, or select three good examples from a previous year's class.) To protect students' privacy, use samples of work from previous years' classes or other class periods—and remove students' names/other identifying information before distributing copies of their work (ask for permission as well).

Tip: If you spend this year filling a notebook or folder with samples of work at different levels of quality, you'll have an extensive collection of samples to draw on in subsequent years.

➔ With the Three-Level Approach, students are typically told which sample of work represents which level of performance. To make the task more challenging, give students the responsibility of figuring out which sample of work is which; then have them explain their reasoning.

➔ Teachers who use the High-Performance Approach often have students describe the *differences* between the three samples as well as the similarities. Why? Because calling students' attention to these differences is a good way to teach them that there's more than one "right way" to complete a given assignment.

➔ Having students examine samples of high-quality work *after* they've completed an assignment can be useful as well. A teacher we know scans students' graded tests, selects three high-quality responses for each test question, and distributes copies of those responses to students along with their graded tests. Her goal is twofold: to show students what high-quality responses look like and to teach them that there are multiple ways to answer a question well.

➔ Be sure to guide students through the criteria-generating process. The goal is to *help* them identify the criteria that define quality—not to leave the criteria-generating process entirely in their hands.

Note: Without this kind of guidance, students can easily come to the wrong conclusions about the critical attributes of a top-notch performance. They might, for example, mistakenly conclude that having decorative borders on slides is important simply because the slides in three high-quality presentations all have decorative borders. (In this case, it would be important to help students understand that decorative borders aren't in any way linked to quality; one way to do this would be to show them examples of top-notch slides that *don't* have decorative borders.)

Checklists

What is it?

A tool that guides and improves students' work on assigned tasks by spelling out steps to follow and components to include

What are the benefits of using this tool?

In our everyday lives, many of us count on checklists to help us complete essential tasks. And in the classroom, students can count on them to do the same. Checklists improve students' performance on assigned tasks by reminding them what they need to do or include in order to complete those tasks successfully. When used repeatedly, checklists help students internalize the requirements for specific kinds of tasks so that they can ultimately complete those tasks without needing the help of a checklist.

What are the basic steps?

1. Identify an assessment task that you want students to complete. It can involve creating a product, demonstrating a procedure, or delivering a performance.

2. Create a checklist that will help students complete the task successfully (use specific and student-friendly language). Depending on the task, your checklist might include

   • Steps to carry out ("Count how many atoms of each type are on each side of the equation")

   • Directions to follow ("Read three different accounts of the event" or "Reduce all fractions")

   • Elements to include ("Include a bibliography" or "Include five words from our Word Wall")

   Note: The items on your checklist *should* remind students what to do or what to include in their work. They *should not* require students to make subjective judgments about the quality of their work—like whether their work is interesting, creative, or easy to understand.

3. Review the checklist with students before they begin working on the assigned task.

4. Encourage students to keep the checklist handy as they work. Have them check off the items that they complete, either as they complete them or at the end.

   Optional: Have students submit their checklists along with their completed assignments.

5. Help students understand that fulfilling the requirements on the checklist is necessary but not sufficient to do well on the assigned task. (Completing a checklist guarantees that required steps and components have been completed. It does *not* guarantee that they have been done well!)

6. Review students' assignments and give them feedback about their work. Identify checklist items that were completed, but not as well as they could be, and discuss strategies for improvement. ("You gave examples to support your thesis as the checklist said you should—and that's a good start. The next step is to make those examples even stronger. Let's talk about how to do that.")

How is this tool used in the classroom?

✔ To guide and improve students' work on assigned tasks

✔ To teach students a procedure and help them execute it correctly

✔ To help students understand and internalize the requirements for specific kinds of tasks

EXAMPLE 1: An automotive technology teacher created the checklist below to guide his students through the process of replacing a vehicle's battery. Students referred to the checklist as he explained and demonstrated the battery-change procedure. They then completed the procedure on their own using the checklist as a guide.

BATTERY-CHANGE PROCEDURE CHECKLIST

To replace a vehicle's battery, follow these steps:

☐ Turn off the engine.

☐ Pop the hood.

☐ Remove the negative cable from the battery terminal.

☐ Remove the positive cable from the battery terminal.

☐ Remove the battery hold-down clamps.

EXAMPLE 2: A third-grade teacher made this checklist to teach and help her students remember the essential components of a book review. Students used this checklist throughout the year to guide their work and check their book reviews for the required elements before submitting them.

CHECKLIST FOR WRITING A BOOK REVIEW

☐ I mentioned the book's title, author, and genre in my opening paragraph.

☐ I provided a brief summary of the basic plot.

☐ I introduced and described the main characters.

☐ I explained what I liked and disliked using specific examples from the book.

☐ I concluded by saying whether I would recommend the book to a friend and why.

☐ I spell-checked and proofread my work.

☐ I fixed any errors that I found while proofreading.

EXAMPLE 3: A fifth-grade teacher designed this oral-presentation checklist to develop and assess students' command of specific Common Core Speaking and Listening Standards (SL.5.4–5). Notice that she added an extra column so that she and her students could comment on their performance.

When I am giving an oral presentation…	Comments (mine and my teacher's)
☐ I make a conscious effort to speak slowly, loudly, and clearly.	*I was nervous and forgot. I think I rushed. You're right. You did.*
☑ I use visual displays like charts/graphs to try and clarify my points.	*The bar graphs made your data easier to understand.*
☑ I support my statements and positions with specific evidence and examples.	*Good examples of how changes in supply and demand affected prices!*
☑ I stop at various times to address people's comments/questions.	*Excellent job responding to your classmates' questions!*

EXAMPLE 4: A math teacher developed the checklist below to help his students assess and improve their performance on constructed response items. In creating this checklist, he drew both on the Common Core Standards for Mathematical Practice (particularly Standards 1 and 6) and on his personal experience as an educator (i.e., what types of errors were his students prone to making?).

TWELVE-POINT CHECKLIST FOR CONSTRUCTED RESPONSE ITEMS

☐ I read the problem and the directions.

☐ I underlined what the problem was asking me to do.

☐ I determined what was known/unknown and drew a diagram if appropriate.

☐ I thought about possible problem-solving strategies before I started working.

☐ I showed my work.

☐ I wrote neatly so the person grading my work would be able to read it.

☐ I checked that I answered all parts of the question.

☐ I underlined or circled my final response(s).

☐ I labeled any drawings and graphs.

☐ I explained any abbreviations and symbols.

☐ I proofread my work and revised it if needed.

☐ I checked my solution to make sure that it was reasonable.
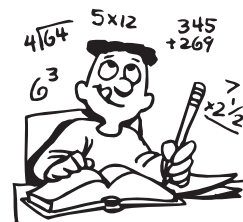
🌀 Teacher Talk

➜ Use student-friendly language and complete sentences when crafting your checklists. Whenever possible, begin your sentences with "I," "My," "Did I," or "Did you."

➜ Make checklist items as specific as possible to help students understand what good work entails (e.g., "I explained what I did and didn't like using specific examples from the book" instead of "I shared my opinion about the book").

➜ If students will be completing the same type of task multiple times throughout the year (e.g., preparing a lab report, writing an argument essay, solving a word problem, giving a slide-show presentation), create a checklist for that type of task and use it every time. Having students use the same checklist over and over again can help them internalize the required elements so that ultimately, they're able to complete that type of task without needing the checklist.

Note: You may want to turn these "multiple-use checklists" into posters and hang them around your classroom so that students can refer to them throughout the year. Another option is to make printed copies of the checklists for students to keep in their notebooks.

➜ Once students are familiar with the checklist concept, invite them to help you develop checklists for various tasks and procedures. Involving students in generating the criteria for successful work can help them internalize those criteria.

➜ Some teachers use online tools to create (and help their students create) task-specific checklists. See this website for an example: http://pblchecklist.4teachers.org/index.shtml.

Glow & Grow

What is it?

A feedback tool that boosts confidence and achievement by telling students what they've done well (what *glows*) and what they can improve (where their work can *grow*)

What are the benefits of using this tool?

In order for feedback to be effective, it should

- Identify specific things that have been done well.
- Identify particular areas where work can be improved.
- Be easy for students to understand and apply to their work.

Glow & Grow makes it easy for teachers to meet these criteria when providing feedback to their students. The *glow* feedback helps to build students' confidence and understanding of what quality looks like; the *grow* feedback teaches students how to take a direct role in improving their work; and the tool's simple, student-friendly format ensures that the feedback isn't overwhelming.

What are the basic steps?

1. Design an assessment task for students to complete.

2. Identify the criteria that successful work will need to satisfy. Communicate these criteria to students before they begin working on the task.

3. Review students' completed work. Provide clear and specific feedback about what has been done well (what glows) and what could be improved (where students' work has room to grow).

4. Ask yourself the following questions as you generate your feedback:

- Does your feedback address the criteria for successful work? Does it let students know which criteria they've satisfied and which have yet to be met?
- Is your *grow* feedback manageable? Does it focus on the most critical items to address rather than point out everything that needs to be fixed?
- Will your feedback make sense to students? Did you use age-appropriate and student-friendly language? Did you use examples or suggestions to help clarify your meaning?

5. Before returning students' work, teach students about the two different kinds of feedback they'll be receiving: positive (glow) and constructive (grow). See Teacher Talk for suggestions.

6. Set aside time for students to review and process your feedback. Have them use it to revise and improve their work. Be available to offer assistance and clarification if needed.

How is this tool used in the classroom?

✔ To provide feedback that helps students improve their work

Teachers use the Glow & Grow format to provide students with encouraging and constructive feedback about their work (homework assignments, problem sets, projects, etc.).

EXAMPLE 1: A first-grade teacher asked students to identify their favorite toy and give three reasons why it was their favorite. She discussed her Glow & Grow feedback with students during one-on-one conferences and had them use it to revise and improve their work.

My favor tol is Kugsoos.
MY Kugsoos filt. MY
Kugsoos are funey. my
Kugsoos have a cool
dsine. I like my
Kugsoos.

Three ways your work GLOWS:

☀ Your sentences start with capital letters and end with periods.

☀ You remembered to give three reasons why you like your toy.

☀ You stuck to the topic. Everything is about your favorite toy.

Two ways your work can GROW:

🌱 Four of your sentences start with the word "my."
Can you start some of them with a different word?

🌱 Your letter "z" is backwards.
Can you find and fix your mistakes?

EXAMPLE 2: A portion of a chemistry student's homework assignment and the *grow* feedback that accompanied it are shown here:

1. Find the pH of a 100 mM HCl solution.

$pH = -\log [H_3O^+]$ 100 mM = 0.1 M
$pH = -\log (0.1)$
$pH = 10$

GROW: Always check your answers to see if they make sense. Does it make sense that an acidic solution would have a pH of 10?

EXAMPLE 3: An AP European History teacher prepares her students for the document-based essay question (DBQ) portion of the AP Exam by giving them practice questions. She reviews the criteria for top-notch work before they begin, and she uses these same criteria to focus her Glow & Grow feedback. The feedback that she attached to the first draft of one student's essay is shown below.

Here's where your work GLOWS:

1. You present a clear thesis that addresses the question without simply restating it.

2. You supported your thesis with appropriate evidence from the documents that were provided. Your interpretation of the data table in document #5 was right on target.

3. Your analysis of document #2 takes into account the fact that its author might not be completely unbiased.

Here's where your work can GROW:

1. Remember to address both parts of the writing prompt. (Most of your piece is about the first part.)

2. Your points will be stronger and clearer if you discuss documents that have a similar focus/point together (e.g., the ones that present a negative view of immigration).

3. Can you use information beyond that found in the documents to support your case further? If yes, do it!

⬤ Teacher Talk

➔ Before using this tool for the first time, familiarize students with the two different kinds of feedback that they'll receive: positive (glow) and constructive (grow). Here are some suggestions for doing this:

• Present students with a list of glow statements and a list of grow statements. Have them compare the lists and explain the differences between the two types of statements (e.g., "Glow statements identify and describe specific things that have been done well, while grow statements describe specific ways that the work can be corrected or improved").

• Give students a mixed list of statements (some glow, some grow). Ask them to identify which statements are which and explain why.

• Invite students to analyze samples of work using a list of quality criteria that you provide. Have them use the criteria to explain where the work glows and where it can grow.

• Discuss the way that each type of feedback works to improve the quality of student work.

➔ Since student work often glows in unanticipated ways, keep an open mind when looking for things to praise (i.e., don't limit yourself to the criteria that you identified in Step 2).

➔ Encourage students to use the Glow & Grow framework as well. Give them opportunities to review each other's work and have them provide Glow & Grow feedback to their classmates.

➔ If you're looking for a change of pace, try the "three stars and a wish" variation instead. Record three things that were done well and one thing you wish students would work on.