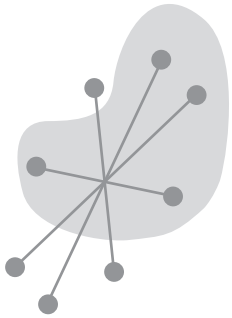
CHAPTER 7



Engaging Students with Authentic Assessments

Outcomes for Professional Learning

In this chapter, we'll discuss:

- Explaining how authentic assessments support deeper learning
- Sharing strategies for formative assessments
- Offering strategies for formal assessments
- Creating an assessment plan

CONNECTING TO THE ISTE STANDARDS FOR EDUCATORS

The content of this chapter relates to the following indicators:

Designer (2.5.a) Educators use technology to create, adapt and personalize learning experiences that foster independent learning and accommodate learner differences and needs.

Analyst (2.7.a) Educators provide alternative ways for students to demonstrate competency and reflect on their learning using technology.

Analyst (2.7.b) Educators use technology to design and implement a variety of formative and summative assessments that accommodate learner needs, provide timely feedback to students and inform instruction.

Analyst (2.7.c) Educators use assessment data to guide progress and communicate with students, parents and education stakeholders to build student self-direction.

I (Nathan) enjoy gardening. Each gardening tool—gloves, a hat, a hoe, a pitchfork—is designed for a specific purpose. A rake is good for moving soil, for example, and a garden trowel is good for digging small holes. Although tools are an important part of the process, so much more goes into creating and cultivating a fruitful garden. You also need the right combination of materials, such as compost, fertilizer, water, and sunlight. You need to sow seeds at certain times of the year, and the soil temperature and pH affect the growth of your fruits or vegetables.

We like to use the metaphor of a garden to show how assessment fits into a student's learning journey. Like rakes and trowels, assessments are just tools that aid in the formative process of learning. Traditional assessment places a lot of emphasis on end-of-year tests, chapter tests, weekly quizzes, and so on, because those tools are easier to work with, as well as more objective and quantifiable than other strategies. These assessments measure just a select few intelligences, however, and they measure them poorly. They are not the right tool for every job. Providing students with multiple ways to demonstrate knowledge and skills increases engagement and learning, and provides teachers with more accurate understanding of students' knowledge and skills.

Authentic assessments provide opportunities for students to learn at a deeper and richer level and to engage with the world around them.

What are some ways you can authentically assess students, while continuing to also provide a process to nurture creativity and critical thinking? Some of our favorite authentic assessments include:

- Reflective video journals
- Debating an issue
- Role playing
- Designing a solution to a problem
- Creating a product
- Peer critique

With these kinds of authentic assessments, we not only put students in charge of their learning; we also get important information that can help us plan for targeted instruction.

FROM THE FIELD

New Formative Assessment Approach

During the remote learning period, Gymea Technology High in New South Wales, Australia, adopted an "anywhere, anytime" approach to teaching and learning that epitomized the transformation underway in assessments. The school developed a new whole-school, continuous formative assessment and homework program around learning platforms, vodcasts, and a Remote Learning Markbook developed in-house that tracked every student's engagement and progress. Students received weekly learning packages that included a set number of targeted, online activities that they worked through at their own pace. Senior students continued with the syllabus via vodcasts produced by Gymea's teachers, which mapped to online tasks such as quizzes, practice exam questions, and draft exam essays. Drawing from data collected by the school's Remote Learning Markbook, individualized emails were sent weekly to students and parents about student progress. Parents will eventually be able to access the data being collected by Gymea's online Student Task Tracker

by using individualized logins. The new practices have worked so well that Gymea Tech has retained them now that it has returned to face-to-face teaching. The new formative assessment strategy has created a culture of high expectations for academic achievement and engagement.

Measuring Learning with Assessments

To effectively gather evidence of student learning, you first need to understand the two main types of assessments: summative and formative. *Summative assessments*, such as unit tests, are generally given at the conclusion of learning and enable teachers to reliably record student data, provide feedback on their work, and create dynamic portfolios of student progress and growth. *Formative assessment* is a process of gathering evidence as a part of instruction to inform teaching and learning. Two key words in that definition distinguish formative assessments from summative assessments: process and inform.

Unlike summative assessments, formative assessments are used while the learning is taking place: at the beginning of a lesson, in whole-group or small-group checks, or during closure. Another characteristic of formative assessment is that it provides teachers with insight about what students need, which can guide future instructional strategies. By using the information gathered from students on their current level of understanding and reflecting on the end goal, teachers can design instructional pathways that enhance the learning process for each student. Formative assessments make it possible for teachers to take action during, as opposed to after, learning, and can help teachers answer questions about their students, such as:

- Which students are showing gaps in their learning?
- Which students are responding to strategies?
- Which students are not responding to strategies?
- Which students are showing proficiency with learning objectives?

Formative assessments are similar to a mapping app or car navigation system. By using the current location and proposed destination, the app offers several routes for the journey. Along the journey, if you take a turn that wasn't on the proposed plan, the

system reroutes and creates new pathways to the original destination. With intentional moments of formative assessments, teachers can do the same for their students.

In some classes teachers use assessments only as evaluation tools to quantify students' current status relative to specific knowledge and skills. Although this is certainly a legitimate use of assessments, we believe their primary purpose should be to provide students with feedback they can use to improve their knowledge or skill. When teachers are intentional with assessments and assessments are directly connected to the level of rigor required by the standard, students understand how their "scores" relate to their status on specific progressions of knowledge and skill they are expected to master.

Engaging Students with Portfolios, Performance Tasks, and Products

Performance tasks and portfolios inform teaching and learning while using strategies that take a comprehensive snapshot of where a student is in their learning. The following table provides an overview of three key summative assessment strategies to use in your classes.

SUMMATIVE ASSESSMENT STRATEGIES	
STRATEGY	**DESCRIPTION**
Performance Tasks	Performance tasks are a form of assessment that prompt students to research and analyze information, weigh evidence, and solve meaningful problems, allowing them to demonstrate their new learning.
Digital Learning Portfolios	A digital learning portfolio is a dynamic assessment that allows students to demonstrate performance through web-based tools. Learning portfolios can take the form of a website, blog, or video documentary just to name a few.
Student-Created Products	A product is an artifact created by a student that is a culmination of the cognitive and collaborative processes inside of a project or unit.

Performance Tasks

Performance tasks are learning experiences that allow students to evaluate their thinking through a solution path that most resonates with their personal learning modality and represents their current level of thinking about a concept. Performance tasks are often used for math and science classes, but you can use them in any subject area. Because they build on previously learned skills and concepts and require students to synthesize them in ways that make sense in the context of real-world learning, performance tasks make an effective summative assessment.

Performance tasks are not simply bookends to a lesson, however; they are authentic and therefore should be integrated naturally into the learning context. When instruction is focused on learning dispositions (how students behave when engaged in learning), performance task assessments will be more integral to the learning environment because of the natural connection to instruction.

Learning Portfolios

Learning portfolios have taken a new shape in the digital age. They provide students a fun and innovative way of self-documenting and showcasing their learning through the creation of websites, videos, and blog posts. Learning portfolios not only provide an effective means of authentic assessment for you, but give parents, other students, and community members a window into rigorous and relevant learning.

Zubizarreta (2004) stressed the importance of an effective framework for facilitation of student products and portfolios, pointing out the importance of specifically aligning the learning portfolio to learning objectives and goals. The representation of student work, or products, is linked to the reflective and recursive components of the learning portfolio, and it is driven by purpose (real-world application of concepts) and audience (authentic audience in addition to the teacher). Learning portfolios can also serve as a "final product" during an inquiry-based or project-based learning experience. Because this assessment strategy closely emulates real-world work, students are highly motivated and become true curators of their own learning. This approach is also beneficial in providing the data you need to offer appropriate feedback on current levels of learning.

Student-Created Products

Products are often thought of as tangible objects that students build in response to a project assigned by the teacher. They are often a culmination of weeks' worth of collaborating with other students. In fact, a product can be any tangible artifact that students produce (individually or in teams) that thoroughly assesses student knowledge and understanding of subject-area content (products are assessed for evidence of standards). In the "Designing Engaging and Authentic Assessments" section, we will describe some examples of authentic products that make engaging and authentic assessments.

Effective Formative Assessments

Formative assessments help you monitor student progress so you can better differentiate instruction, reteach concepts and skills, address misconceptions, and provide meaningful feedback. The following table offers examples of formative assessment strategies to apply in blended, in-person, or even online learning environments.

EFFECTIVE FORMATIVE ASSESSMENT STRATEGIES	
STRATEGY	**DESCRIPTION**
Emoji	Provide students with a table or chart that shows the learning objectives or success criteria. Students self-assess where they are with the objective by placing an emoji to indicate their assessment. A smiley emoji could indicate they are feeling good about it. A mind-blown emoji could indicate they are confused about the concept. Decide as a class which emojis you'll use to represent different levels of proficiency.
Virtual Exit Tickets	This simple assessment tool allows students to quickly create a response to a question or a prompt posed by the teacher at the end of a learning block. Vary these tickets by using an online form or having students record a video of themselves sharing their thinking.
Guided Reciprocal Peer Questioning Using Probing Questions	This strategy allows students to develop questions about new learning by creating open-ended probing questions or choosing them from a list. Place questions on a shared collaborative document or slides.

Continued

EFFECTIVE FORMATIVE ASSESSMENT STRATEGIES	
STRATEGY	DESCRIPTION
RSQC2 (Recall, Summarize, Question, Comment, Connect)	This five-step activity guides students quickly through a simple recall, summary, analysis, evaluation, and synthesis exercise. This assessment gives students an opportunity to draw upon new learning while also recalling previous concepts that were scaffolded into the current concept.
KWLs	A KWL (Know, Want to Know, Learned) chart allows you to find out students' prior knowledge on a particular topic. You can then adapt your lessons based on this information. Students can complete the KWL chart when starting a new topic and add to it throughout the unit. Further, the tool helps you see what the students have learned by the end of their lessons.
Think-Pair-Share	Think-Pair-Share is a strategy in which you pose a statement or ask a question of the class. Each student is given time to think and write down their answer. They each then pair up with another student to discuss their answers. After they have had a chance to discuss their answers amongst themselves, they share their answers with a larger group or the rest of the class. You can circulate through the class (or join online small group breakouts) while students are paired in discussion to determine understanding.
Carousel Brainstorming (also called Gallery Walk or World Cafe)	Split the class into groups of four or five students (using your Google Meet or Zoom dashboard, for example), and provide each group with their own online collaborative whiteboard. Have each group write down what they know about a topic or possible answers to an open-ended question. Specify a time limit, and when it's up, have each group pass their whiteboard another group. If you set up multiple boards in Google Jamboard, for example, just ask students to progress to the next board in the sequence. Students must read what the other groups have recorded for answers and then add to the list. They can also circle or highlight answers that they feel hit the mark or add question marks to answers they feel missed the mark.
What Were You Doing?	Take a screenshot or a photo of students during an activity or project. Use those images as writing prompts or discussion starters with the question, "What were you doing in this activity?"

Formative assessments should not only provide you with quick and ongoing checks for understanding, but should also provide students with opportunities to learn while being assessed. Stiggins and Chappuis (2004) called this "assessment FOR learning." During Guided Reciprocal Peer Questioning (GRPQ), students build inquiry skills in the process of question construction while also building metacognition skills through reflection. You can scaffold this strategy by first providing question prompts for students to choose, and then eventually asking students to create their own prompts. To aid in the question generation, refer to the learning protocol of building probing questions. Educator Charlotte Danielson (2011) developed a framework for teaching that included guiding questions. As a guide to get you started using GRPQ, the following example questions can be used as prompts:

- Why do you think this is the case?
- What would you have to change in order for…?
- What do you assume to be true about…?
- How did you conclude…?
- How did your assumptions about…influence how you thought about…?

You can facilitate this process by providing prompts and the appropriate time (ten to fifteen minutes) to conduct this assessment. Another key component of this strategy is capturing student reflection and thinking. This can be enabled through voice recording or collaborative digital documents.

RSQC2 is another formative assessment that builds thinking and learning while also providing you the evidence you need to check for learning. This protocol is unique in that it is structured to emulate the levels of Bloom's Taxonomy. Additionally, the assessment efficacy is higher because it not only focuses on connecting new concepts, but also on building on previously learned concepts. Here are the steps to RSQC2:

Recall. Students make a list of what they recall as most important from a previous learning.

Summarize. Students summarize the essence of previous learning.

Question. Students ask one or two questions that still remain unanswered or that they are unclear of.

Connect. Students briefly explain the essential points and how they relate to their overall math learning goals

Comment. Students evaluate and share feedback about the previous learning.

Assessments provide insights into strengths and weaknesses of student learning. The following graphic provides some example questions you can use to analyze the data you collect. We adapted our examples from the Here's What, So What, Now What protocol (Wellman & Lipton, 2004), which was designed to be completed with colleagues for a team response, whether a district, school, or grade level team.

HERE'S WHAT, SO WHAT, NOW WHAT DATA ANALYSIS PROTOCOL

Adapted from Wellman & Lipton (2004)

Analyze the data from the assessment for the entire grade level or course to address each part of the protocol.

Here's What

What is the data the team needs to be analyzing? Simply recognize the data, categories, and student populations. This is not yet the time to critique or make inferences about student learning in the data.

- Which aspects of our content area should be examined? Strands? Standards? Digital age competencies?
- Which student populations need to be examined for equity in student learning?
- If comparisons are to be made, how should they be made? From teacher to teacher within a grade level? Following a cohort of students?

So What

Recognize trends from the data without yet making inferences or an action plan. Consider using the sentence frame, "I notice..." when articulating observations.

- What do you notice in the data?
- Which content is a strength for students in the grade level or course?
- Which content is a weakness for students in the grade level or course?

Now What

Make conclusions and inferences about the data to structure a collective response to student learning.

- Why might students have scored well or not scored well in light of instructional practices or programs? What will we do about it this year? Next year?
- How do the results show equity or inequity in learning between various student populations? Why? How will we address any inequities this year? Next year?
- Conclude with an action plan and clear role responsibilities for each person involved in analyzing the data.

Designing Engaging and Authentic Assessments

Formative assessments are intended to help students grow in their learning by providing evidence of their proficiency with particular content standards or skills by use of specific feedback. Traditionally, formative assessments come in the form of quizzes, homework, writing prompts, performance tasks, and the like. Although these forms of assessment may provide some evidence of where a student is in relation to a learning target, they are limited in what they measure and can also take the fun out of learning. Every educator knows that lack of engagement has a detrimental effect on student performance.

But what if assessment could be fun and engaging for students? What if it didn't feel like "testing" at all? With this in mind, we suggest having students make video products as a way to engage them in the assessment process. As a formative assessment, video creation illuminates the thinking and learning process, provides opportunities to improve processes and products, and reveals misconceptions along the way. Delivering formative assessment through creativity provides students a motivating environment that supports deeper thinking while giving teachers important data that can be used to inspire subsequent instruction. Not only can reviewing student videos inform and guide your next steps as their teacher, but it can also help students see for themselves how their own ideas integrate, compare, and contrast with those of their peers. Students are able to see how other students may share the same view or level of thinking. The more comfortable students are in sharing those ideas, the more visible they will make their thinking.

Here are some examples of digital products to try with your students:

- PSA informing an audience of a student-created solution
- Historical documentary
- Video presentation (instead of slides)
- Book trailer
- Podcast (audio-only version of multimedia/video)
- Critique/review
- Discussion board
- Timeline
- Proposal
- Project
- Portfolio
- Newsletter
- Editorial
- Video reflection journal
- Interview

Video creation not only serves as an instructional support and learning experience, but as a powerful and effective formative assessment tool. Video creation overcomes several limitations of traditional assessment. Consider the following:

- Video creation opens the door to organically embracing the revision process without students feeling the drudgery of taking a test.
- Students are motivated to revise their work within a video creation project because the results are instantly viewable and encourage further refinement.
- There is an element of gratification that makes the video creation process more welcoming, especially when compared to a paper-and-pencil quiz or test.
- Video creation gives students an outlet for creativity, the output of which the student can feel both proud and invested.

Video Creation as Assessment

Let's walk through a lesson example using a video product as an assessment: A group of students has chosen to research, and in turn engage in critical thinking and creativity, as well as take action on elephant poaching in Africa. Students have a variety of approaches at their disposal through which to demonstrate learning. Options can be as simple as written summaries, but you encourage the students to take more complex, multi-dimensional, and collaborative routes, such as creating videos. Whichever option is taken, students will need to provide formative feedback that is aligned to the learning goal. The first step toward enabling students to guide and track their progress on the way to a learning goal is through a well-defined rubric.

STANDARDS ADDRESSED

ELA Standard: Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace.

ISTE Standards for Students, Creative Communicator (6a) Students choose the appropriate platforms and tools for meeting the desired objectives of their creation or communication.

Developing a Rubric

A rubric is needed to assess complex video products and performance tasks. But rubrics should also be used throughout a unit/project as a tool for guiding students as they work. Introduce rubrics near the beginning, when students hear about (or help decide) what the major products of the project will be. When you share a rubric say, "Here's how you'll be assessed." Have students either practice using the rubric several times or co-create a rubric and then practice using it. To have students practice using a rubric, find some examples of the kind of work required in the project. If students need to write a scientific report after an investigation, show them one—but on a different topic, to prevent direct copying. If they need to design a theater blueprint, show them how to research for other blueprints. You can use the following rubric as a guide for how to assess the elephant poaching lesson.

EXAMPLE RUBRIC			
GOAL	APPROACHING	MEETS EXPECTATIONS	ABOVE AND BEYOND
Criteria #1. Developing a powerful cohesive message through the synthesis of multiple sources and engaging in metacognitive processes.	You have combined a few ideas and some of your own to develop a message that resonates with some. There are some gaps in your story that keep the audience from fully grasping what you're trying to communicate. Your thinking was visibly articulated through application, but not quite reconstructing and synthesizing the concepts into a unified message.	You have broken apart multiple ideas and pieces of evidence from your interviews and a variety of research sources to reconstruct and develop a powerful message that demonstrates thoughtful insight on your topic. Your central message causes the reader to think, "I've never thought of that before" and to want to explore your ideas further. Your thinking was visibly articulated through application and synthesis.	You have broken apart multiple ideas and pieces of evidence from your interviews and a variety of research sources to reconstruct and develop a powerful message that demonstrates thoughtful insight on your topic. Additionally, your synthesis includes powerful digital media that captures the emotions of your audience and clearly communicates a compelling message that conveys the significance of why it's important today. You have inspired your audience to act. Your thinking was visibly articulated through application, synthesis, debate, and evaluation.

Continued

EXAMPLE RUBRIC			
GOAL	APPROACHING	MEETS EXPECTATIONS	ABOVE AND BEYOND
Criteria #2. Historical Context and Applied Relevancy	You provide an accurate, thorough, and relevant historical context for your interviews. There were no primary sources cited in your research. Some of the examples provided don't clearly connect to your central message and there are only loose connections to today's relevance.	You provide an accurate, thorough, and relevant historical context for your interviews, including at least one primary source from research. You include specific examples and evidence to illustrate your points. You clearly make connections from the past to today.	You provide an accurate, thorough, and relevant historical context for your interviews, including at least one primary source from research. You include specific examples and evidence to illustrate your points. You clearly make connections from the past to today. Additionally, you make predictions about future impacts and scenarios given current data and statistical analysis. You also integrate human behavior and psychology into your discussion of the historical context to give your story more credence and strength.

Researching the Topic and Creating an Effective Product

Now let's consider a potential outcome of this project. Teams of students research several topics, including the impact of African elephant poaching on local communities, the international ban on ivory trade, and the history of ivory and its uses. Building on that research:

- Students propose novel solutions to prevent poaching.
- Students use Google Hangouts to chat with other students in Botswana, Tanzania, Zimbabwe, Kenya, Zambia, and South Africa.
- Students work with the World Wildlife Fund and use WeVideo to create a documentary video through which they share their research and the content of their conversations with students in African countries.
- The video contains clips shared by local student eyewitnesses living in the communities that are impacted by elephant poaching.
- To raise awareness, students include cinematic elements and then post the final video project to YouTube.

The assessment is designed to challenge students to think with complexity as they must both research to understand the problem and then evaluate solutions to the matter. Students must analyze multiple sources of data from research and from locals. They then must create a deliverable using an open-ended and iterative process, in this case, video creation, that involves multiple steps. The multiple steps involved in creating the video afford you a window into the progression of student thinking (making thinking visible is truly the most authentic assessment opportunity), which makes it easier to address misconceptions and present new learning opportunities.

Creating an Assessment Plan

Thus far, you have explored the different types of assessment and strategies for implementing them in a blended learning context, and you know assessments must meet the needs of every student. Are there opportunities where one assessment should be used over the other? By using tools that support high levels of aligned assessment, you can create a scaffolded assessment plan that not only captures basic levels of understanding but also students' ability to apply new concepts, analyze information, and solve real-world problems. One tool to help you with this is Norman Webb's (1997) Depth of Knowledge (DOK), which categorizes tasks according to the complexity of thinking required to successfully complete them.

WEBB'S DOK LEVELS

Level 1. Recall and Reproduction: Tasks at this level require recall of facts or rote application of simple procedures. The task does not require any cognitive effort beyond remembering the right response or formula. Copying, computing, defining, and recognizing are typical Level 1 tasks.

Level 2. Skills and Concepts: At this level, a student must make some decisions about their approach. Tasks with more than one mental step, such as comparing, organizing, summarizing, predicting, and estimating, are usually Level 2.

Level 3. Strategic Thinking: At this level of complexity, students must use planning and evidence, and thinking is more abstract. A task with multiple valid responses, where students must justify their choices, would be Level 3. Examples include solving non-routine problems, designing an experiment, or analyzing characteristics of a genre.

Level 4. Extended Thinking: Level 4 tasks require the most complex cognitive effort. Students synthesize information from multiple sources, often over an extended period of time, or transfer knowledge from one domain to solve problems in another. Designing a survey and interpreting the results, creating a brand-new product, analyzing multiple texts to identify and categorize themes, or writing an original myth in an ancient style would all be examples of Level 4.

In partnership with Webb's DOK levels, Bloom's Taxonomy—and related models—can assist you in developing an effective assessment plan. In practice, teachers assign Bloom's Taxonomy levels according to the main action verb associated with a level in the taxonomy. Building upon Bloom's early work, many educational and cognitive psychologists have since developed various schemas to describe the cognitive demand for different learning and assessment contexts. In 2001, Anderson and Krathwohl presented a structure for rethinking Bloom's Taxonomy. Whereas the original taxonomy applied one dimension, the revised taxonomy table employs two dimensions: cognitive processes and knowledge. The revised descriptors consider both the processes (the verbs) and the knowledge (the nouns) used to articulate educational objectives. This restructuring of the original taxonomy recognizes the importance of the interaction between the content taught—characterized by factual, conceptual, procedural, and metacognitive knowledge—and the thought processes used to demonstrate learning. You can use the following question stems based on Bloom's levels as you develop your assessment plan. (Scan the QR code for a downloadable list.)

EXAMPLE BLOOMS TAXONOMY QUESTION STEMS

REMEMBERING QUESTION STEMS (LEVEL 1)

- What is...?
- Where is...?
- How did...happen?
- Why did...?
- When did...?
- How would you show...?
- Who were the main...?
- Which one...?
- How is...?
- When did...happen?
- How would you explain...?
- How would you describe...?
- Can you recall...?
- Can you select...?
- Can you list the three...?
- Who was...?

UNDERSTANDING QUESTION STEMS (LEVEL 2)

- How would you classify the type of...?
- How would you compare...?
- How would you contrast...?
- Compare and contrast...
- State or interpret in your own words...
- How would you rephrase the meaning...?
- What facts or ideas show...?
- What is the main idea of...?
- Which statements support...?
- Explain what is happening...
- What is meant...?
- What can you say about...?
- Which is the best answer...?
- How would you summarize...?

APPLYING QUESTION STEMS (LEVEL 3)

- How would you use...?
- What examples can you find to...?
- How would you solve...using what you've learned...?
- How would you organize...to show...?
- How would you show your understanding of...?
- Why did...do or choose..., and why?
- What would you recommend...?
- How would you rate the..., and why?
- What would you cite to defend the actions...?
- How could you determine...?

- What choice would you have made...?
- How would you prioritize...?
- What facts would you select to show...?
- What questions would you ask in an interview with...?

ANALYZING QUESTION STEMS (LEVEL 4)

- What are the parts or features of...?
- How is...related to...?
- Why do you think...?
- What is the theme...?
- What motive is there...?
- Can you list the parts...?
- What inference can you make...?
- What conclusions can you draw...?
- How would you classify...?
- How would you categorize...?
- Can you identify the different parts...?
- What evidence can you find...?
- What is the relationship between...?
- Can you distinguish between...?
- What is the function of...?
- What ideas justify...?

VALUATING QUESTION STEMS (LEVEL 5)

- Do you agree with the actions...? ...with the outcome?
- What is your opinion of...?
- How would you prove...? Disprove...?
- Can you assess the value or importance of...?
- Would it be better if...?
- Why did...do or choose..., and why?
- What would you recommend...?
- How would you rate the..., and why?
- What would you cite to defend the actions...?
- How could you determine...?
- What choice would you have made...?
- How would you prioritize...?
- What judgment would you make about...?
- Based on what you know, how would you explain...?
- What information would you use to support the view...?
- How would you justify...?
- What data was used to make the conclusion...?
- Why was it better that...?
- How would you compare the ideas... to...?

CREATING QUESTION STEMS (LEVEL 6)

- What changes would you make to solve...?
- How would you improve...?
- What would happen if...?
- Can you elaborate on the reason...?
- Can you propose an alternative...?
- How would you adapt...to create a different...? How could you change (modify) the plot (plan)...? What could be done to minimize (maximize)...? What way would you design...?
- Can you invent...?
- What could be combined to improve (change)...? Suppose you could... what would you do...? How would you test...?
- Can you formulate a theory for...?
- Can you predict the outcome if...?
- How would you estimate the results for...? What facts can you compile...?
- Can you construct a model that would change...? Can you think of an original way for the...?

Although the tools are related through their natural ties to the complexity of thought, Webb's DOK and Bloom's Taxonomy differ in scope and application, as Hess et al. (2009) eluded to. Depth of knowledge relates more closely to the depth of content understanding and scope of a learning activity, which manifests in the skills required to complete the task from inception to finale (planning, researching, drawing conclusions). Bloom's Taxonomy, on the other hand, categorizes the cognitive skills required of the brain to perform a task, describing the "type of thinking processes" necessary to answer a question. Both the depth of content knowledge and the thinking processes have direct implications in curricular design, lesson delivery, and assessment development and use.

To help you put these together, we have developed the Assessment Design Plan tool. With this tool, you begin with the big idea of the unit. Then you decide on what the finished product will look like (summative assessment) for students. Because learning is a process, it's important that you develop assessments that match the scaffolding you're providing and are highly aligned to the cognitive domains that are being required. We have included two examples of what this plan could look like for a math and a science unit. The following Assessment Design Plan Template works well for any unit no matter the subject, grade level, or type of learning environment. For additional, downloadable copies, scan the QR code.

ASSESSMENT DESIGN PLAN TEMPLATE			
Big Idea/Enduring Understandings:			
Formative Assessment	**Webb's DOK**	**Bloom's Level**	**How Does this Assessment Support the Big Idea?**
Final Product/ Summative:			

MATH ASSESSMENT DESIGN PLAN			
Big Idea/Enduring Understandings: A Study in Cooperation: Design a Theater for Your Local Community			
Formative Assessment	**Webb's DOK**	**Bloom's Level**	**How Does this Assessment Support the Big Idea?**
Blueprint Sketch (Individual)	Level 2: Students make mock-ups based on other blueprints.	Comprehend	This allows students the opportunity to think of their own ideas before they join a team, with whom they will create one shared model.
Measurement Task/Quiz (Individual)	Level 1: Students demonstrate that they understand the basic measurement skills required to create the scale model.	Apply	This formative ensures students have the foundational measurement skills needed to create an accurate scale model.

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MATH ASSESSMENT DESIGN PLAN			
Big Idea/Enduring Understandings: A Study in Cooperation: Design a Theater for Your Local Community			
Formative Assessment	**Webb's DOK**	**Bloom's Level**	**How Does this Assessment Support the Big Idea?**
Gallery Walk (Team)	Level 3: Teams review each other's sketches to decide which components are best to include on the team model. Teams need to explain how they arrived at the decision in preparation for critiques.	Synthesis	Teams are narrowing down their list of ideas to select the most useful design components for community board members.
Scale Model (Individual)	Level 4: Students create a draft using accurate measurement and scaling. Teacher reviews and provides feedback.	Create	Students will have a critiqued draft before creating the physical scale model.
Final Product/ Summative: A Physical Model of the Theater (Team)	Level 4: In teams, students create a scale model of their courtyard redesign to solve a real-world problem and make a pitch to site administration and local architects for their designs.	Create	Mission complete!

SCIENCE ASSESSMENT DESIGN PLAN			
Big Idea/Enduring Understandings: A Study in Human Impacts: Design a Plan to Mitigate E. coli in a Local Lake			
Formative Assessment	**Webb's DOK**	**Bloom's Level**	**How Does this Assessment Support the Big Idea?**
Chemical Reactions Task/ Quiz (Individual)	Level 1: Students demonstrate understanding of types of chemical reactions.	Apply	This formative assessment ensures students have the foundational understanding of chemical reactions occurring in the lake.
Water Testing Lab Write-Up (Individual)	Level 3: Students analyze information with data sets and interrelationships between human impacts and the water supply.	Analyze	This allows students to articulate the evidence that will be presented in the video.
Letter to Community Leaders with Results and Recommendations (Team)	Level 3: Students cite evidence and develop logical arguments. Students justify their conclusions.	Evaluate	The arguments and reasoning in this letter will be used to create the video.
Final Product/ Summative: PSA Video Created and Shared on YouTube (Team)	Level 4: After reviewing multiple perspectives and data points, students use their own voice to create a persuasive video articulating their viewpoint.	Create	Mission accomplished!

The last column is important for ensuring that each formative assessment aligns to the overarching idea. How many times do you hear students say, "When are we ever going to need this?" You'll also notice the inclusion of a traditional "quiz" or "task" in the examples. These can be effective, but only when appropriately matched to the cognitive

demand required. You wouldn't give an assessment requiring students to use true/false when you want to measure their ability to justify conclusions. But if you want to know if students have recall of basic facts, a selected response would be appropriate.

Conclusion

I (Nathan) was going through some old emails recently and came upon a grad school assignment I sent to my professor a few years ago. The task was to create a video reflection on a leadership project I had been a part of. I created the video and sent it to my professor and also saved it to my YouTube channel. When I rediscovered the video years later, I was not only astonished at how much my Southern accent and vocabulary changed, but also at how much my thinking changed. In the video, I was discussing a particular concept around leadership, and in that moment, I was able to see how my thinking changed over some time. It caused me to wonder, "What led to my shift in thinking?" and "How long did it take to shift my thinking?" It was a pleasant assessment of my shift in thinking and all in thanks to a video I created. When thinking about the true purpose of an assessment, it's important to consider where you were and where you are now. Because of accountability and the continuing push for standardized testing, this perspective of assessments is often concealed.

So, how can we each best see how our perspective and thinking have evolved? A traditional assessment may capture the current level of knowledge retention, but that doesn't tell us anything about our thinking. Our thinking changes (as we grow and learn) over time, and so the question becomes, how do we best illuminate this progression of thinking and learning?

Authentic assessment is a powerful tool that is not only changing the landscape of creativity and student engagement in the classroom, it's changing how educators measure learning. When authentic assessments illuminate students' thinking, students are engaged in metacognition, which means "thinking about thinking." When engaged in metacognition through reflection, students are focused on their current feelings and thoughts. By being mindful of their emotional state, for example, teachers and students can more effectively steer their feelings and thoughts in a more positive "can-do" direction. As they realize the story of their learning, they begin to synthesize how the chunks of new learning all connect.

As we conclude this chapter, we want to leave you with a final authentic assessment: video reflection journals. Video reflection journals might be new to you and/or your students but are easy to use in your classroom. An initial roadblock of video journaling is figuring out what to talk about. We find that if you have a conversation with your class and guide them through a couple of reflection questions, they will soon have lots of talking points.

Here are a few prompts to help get the conversation started:

- When were you on track with this project?
- How did you know you were on track?
- During this project, when were you successful?
- What did that feel/look like?
- When were you most engaged/focused on this project?
- What were you doing? How did that action affect the end result?

Assessing your own thinking is a powerful strategy because you're engaging in high levels of thinking while also getting information about where you are in relation to what you've learned. For students, authentic assessments reveal emotions, tone, and visual representations. If done in a meaningful and thoughtful way it can help students become powerful idea generators and provide a platform for reflective thinking.

Reflecting for Professional Growth

- What makes an assessment authentic?
- How do you ensure your assessments align with the level of rigor or cognitive demand that the learning objective or essential question requires?
- How will the data analysis protocol change how you plan instruction and design assessments?
- What formative assessment strategies will you now implement? What about summative assessment strategies?
- How does reflection serve as an authentic assessment?