JAY McTIGHE
KRISTINA J. DOUBET
ERIC M. CARBAUGH

Designing Authentic Performance Tasks and Projects

Tools for Meaningful Learning and Assessment

Designing Authentic Performance Tasks and Projects

Introduction

Once regarded by many K–12 educators as an "extra" in a standards-based world, performance tasks and projects are increasingly being acknowledged as a valuable way to develop and assess deeper learning (Guha, Wagner, Darling-Hammond, Taylor, & Curtis, 2018). By positioning authentic tasks and project-based learning (PBL) at center stage of the educational process, teachers can engage students in transferring their learning to relevant situations. Such tasks and projects emphasize the meaningful application of disciplinary knowledge while also engaging the 21st century skills—critical thinking, creativity, communication, and collaboration—valued in the wider world. When performance tasks and projects are authentic in nature (and known in advance), learners are more likely to see the relevance and purpose of learning the requisite concepts and skills. Teachers often observe that students are motivated and engaged by these real-world projects and tasks. Recognizing the efficacy of performance tasks and PBL, a growing number of teachers, schools, and districts have begun to embrace them as integral components of curriculum design and as alternate means of assessing student learning (e.g., Virginia DOE, 2016).

Although the promise of performance tasks and projects is immense, the challenge lies in the details of design and implementation at the district, school, and classroom levels. This book provides a comprehensive treatment of the topic. We examine the qualities of effective tasks and projects and offer a collection of practical and proven design tools for constructing authentic versions that best suit their curricular, instructional, and assessment purposes. We describe how to design effective evaluation tools and use them in ways that can enhance student performance, not just evaluate it. We highlight connections to other prominent initiatives (e.g., STEM, technology infusion) and explore the instructional implications—how to teach for authentic performance. We

explore the concept of equity in performance-based learning and describe a variety of ways for differentiating tasks and projects to address differences in students' readiness needs and interests. We move beyond the classroom level and illustrate how to construct a K–12 curriculum and assessment system that is anchored by authentic tasks and projects. Finally, we tackle the realistic challenges and common pitfalls of implementation that, if not addressed proactively and soundly, can derail well-intentioned efforts to implement worthy performance tasks and project-based learning.

Chapter Summaries and Appendixes

Chapter 1: Implementing Performance Tasks and Projects: What and Why

In the opening chapter we make the case for the importance of engaging today's learners through the use of performance tasks and projects. Our rationale highlights the value of tasks and projects in addressing and assessing academic standards as well as 21st century skills—the capacities needed for success in college and careers. We present and discuss a variety of examples of performance tasks and projects.

Chapter 2: Designing Authentic Performance Tasks

In this chapter we explore the characteristics of a high-quality performance task and present a set of practical and proven design tools for creating them, including Webb's Depth of Knowledge (DOK) Levels 3–4, Wiggins and McTighe's Six Facets of Understanding, and the GRASPS format. We include tips for effective task design and review criteria to use for quality control.

Chapter 3: Crafting Cohesive Project-Based Learning Experiences

In this chapter we examine the characteristics of authentic projects used in project-based learning and reference components from the Gold Standard from PBLWorks (formerly the Buck Institute for Education). We explore the relationship between performance tasks and projects by looking at an array of design variables teachers can control when crafting them. We offer ideas for developing effective projects and provide suggestions for overcoming associated design challenges.

Chapter 4: Constructing and Using Evaluation Tools to Enhance Student Performance

Here we focus on various evaluation tools (criterion lists, holistic rubrics, and analytic rubrics) for assessing student products and performances. We present several practical and proven methods for designing quality rubrics, and we offer review criteria. We describe how to apply the evaluation tools for reliably scoring student work on tasks and projects and how to use them in ways that can enhance student performance and facilitate peer and self-assessment.

Chapter 5: Teaching to Support Student Performance on Tasks and Performances

In Chapter 5 we examine performance-based teaching to prepare students to transfer their learning to authentic situations. Using the analogy of athletic coaching, we provide specific strategies and instructional models that support deeper learning, while highlighting the critical role of formative assessment and feedback in enhancing student performance.

Chapter 6: Tailoring Tasks and Projects for All Students

Chapter 6 explores the issue of equity and presents ways to support student success in task and project implementation through the use of supports, scaffolds, challenge, and student "voice and choice." We present ideas for the strategic use of resources and technology to increase access for all learners.

Chapter 7: Collaborating to Manage Projects and Performances: A Teacher-Student Partnership

In this chapter we provide project-management strategies to help teachers and students navigate the moving parts that support performance-driven classrooms. We address practical concerns, including how to monitor progress, how to encourage and assess collaboration, how to manage differentiated tasks and projects, how to provide needed support, and how to encourage students' self-assessment and reflection.

Chapter 8: Creating a Performance-Based Curriculum

Moving beyond the individual classroom, in this chapter we consider a performance-based curriculum at the district, school, and program levels. We describe the need for a modern education to evolve from a "coverage-based" curriculum to a coherent curriculum and assessment system anchored by a

coordinated set of authentic cornerstone tasks and projects. We introduce task frames for multiple content areas and provide a K–12 map of performance tasks and projects for writing.

Appendixes

Here readers will find a storehouse of resources including additional examples of performance tasks, PBL projects, rubrics, technology tools, and a K–12 map of authentic tasks and projects in various subjects. Note that Appendix A is a glossary of key terms referenced throughout the rest of the book, and Appendix B provides a planning tool that references the design elements discussed throughout the book.

Our Hope

We concur with the conclusions of a recent research study on the efficacy of performance tasks:

> If designed and used appropriately… performance assessments could be a key component of K–12 systems and could, along with rigorous curricula and high-quality instruction, drive improvements in teaching and learning. (Guha et al., 2018, p. v)

We hope this book will help educators effectively design and use performance tasks and projects, along with appropriate instruction, to engage students in deeper learning in pursuit of the most important outcomes of a modern education.

1

Implementing Performance Tasks and Projects: What and Why

In a world where information on virtually any topic is instantly accessible on a smartphone or similar device, our relationship to knowledge is changing. Accordingly, the ideas in this book are based upon a two-part claim: (1) a primary goal of a modern education should be to prepare students for transfer, and (2) achievement of this goal requires the systematic use of performance tasks and projects for learning and assessment.

Here's the case for the first part of our claim: Although disciplinary knowledge and skills are certainly relevant, individuals no longer need to be able to remember lists of established facts to be considered educated. Not only is such knowledge just a click away, it is constantly subject to revision and updating. We contend that to remain relevant, education must shift from a coverage orientation, which emphasizes acquisition of factual knowledge and basic skills, to a performance-based curriculum that stresses application—transfer—of learning.

A Focus on Transfer

Transfer refers to the ability to apply learning to a new situation beyond the context in which it was learned. The latest generation of academic standards from multiple disciplines highlights a focus on transfer. For example, the Common Core State Standards (CCSS) in English language arts (ELA) are framed by a set of College and Career Anchor Standards—transfer goals that specify what students should be able to do in reading, writing, listening, and speaking when they leave school:

> Students are able independently to discern a speaker's key points, request clarification, and ask relevant questions. They build on others' ideas,

> articulate their own ideas, and confirm they have been understood. . . . More broadly, they become self-directed learners, effectively seeking out and using resources to assist them, including teachers, peers, print and digital reference materials. (National Governors Association Center for Best Practices, Council of Chief State School Officers, 2010)

The Common Core Mathematics Standards established a set of mathematical practices that must be pursued in a manner similar to the ELA Anchor Standards. These practices call for students to apply mathematical reasoning to real-world problems.

Similarly, the Next Generation Science Standards (NGSS) include scientific practices as a key component of science education, with the following rationale:

> The continuing expansion of scientific knowledge makes it impossible to teach all the ideas related to a given discipline in exhaustive detail during the K–12 years. But given the cornucopia of information available today virtually at a touch—people live, after all, in an information age—an important role of science education is not to teach "all the facts" but rather to prepare students with sufficient core knowledge *so that they can later acquire additional information on their own*. (Achieve, 2013, italic emphasis added)

In other words, students should study science in such a way that they are equipped to transfer scientific practices to new and novel situations.

Transfer goals are also prominently featured in the College, Career, and Civic Life (C3) Framework for Social Studies State Standards (National Council for the Social Studies, 2013) through its Inquiry Arc of four dimensions:

- Dimension 1: Developing Questions and Planning Inquiries
- Dimension 2: Applying Disciplinary Concepts and Tools (Civics, Economics, Geography, and History)
- Dimension 3: Evaluating Sources and Using Evidence
- Dimension 4: Communicating Conclusions and Taking Action

Finally, the National Core Arts Standards (NCAS) actually employ the term *Transfer Goals* and reference the importance of using "rich performance tasks" to assess them:

> The standards are built this way with the expectation that schools or districts will value the understanding and transfer of knowledge and skills that will come with a standards-based curriculum in the arts and therefore acknowledge that they are important curricular goals. Moreover, NCAS hopes that the

> inclusion of cornerstone assessments in these standards will focus the great majority of classroom- and district-level assessments around rich performance tasks that demand transfer. This paradigm shift in measuring student learning in the arts will offer relevant and reliable evidence of what students truly understand and know how to do, for it is only when students are able to apply their learning thoughtfully and flexibly to a new situation that true understanding of the content is demonstrated. (National Coalition for Core Arts Standards, n.d., p. 16)

Unlike grade-level standards, these broader process-oriented standards cannot be effectively addressed within a single unit or even in one year. Rather, they must be pursued year after year, with increasing levels of complexity and with decreasing levels of support and scaffolding in order to prepare learners for independent transfer.

Although the standards referenced thus far specify learning goals within academic disciplines, we have also seen a growing demand for the inclusion of transdisciplinary outcomes as new "basics" for today's students. Transdisciplinary outcomes include the 21st century skills of critical thinking, creativity, collaboration, and communication (Partnership for 21st Century Skills, 2009) and dispositional habits of mind such as perseverance and metacognitive self-monitoring (Costa & Kallick, 2009). Such goals are inherently transfer oriented; they reflect the value we place on developing students who are able to (1) think critically about new information and complex issues that they will encounter throughout their lives and (2) persevere when engaged in challenging tasks.

Not surprisingly, the personnel needs of today's employers echo the value of such transfer goals. The National Association of Colleges and Employers (NACE) conducts an annual survey of employers to gather data about their hiring intentions as they relate to new college graduates. Figure 1.1 summarizes the rank ordering of the desired job qualities and skills as reported by employers in its recent survey and report, *Job Outlook* (NACE, 2019).

By citing employability reports, we do not mean to imply that we believe the sole purpose of education is job preparation. On the contrary, we call for a well-rounded education that values the arts and humanities, health and wellness, and responsible citizenship. In other words, we advocate for an education that prepares students to succeed no matter where they "land" following graduation. Not surprisingly, these outcomes are best envisioned as long-term transfer goals that will enable a person to effectively navigate a variety of new challenges and opportunities.

Figure 1.1
NACE Survey Results

Attributes Employers Seek in Job Candidates	
Communication skills (written)	82.0%
Problem-solving skills	80.9%
Ability to work in a team	78.7%
Initiative	74.2%
Analytical/quantitative skills	71.9%
Strong work ethic	70.8%
Communication skills (verbal)	67.4%
Leadership	67.4%
Detail-oriented	59.6%
Technical skills	59.6%
Flexibility/adaptability	58.4%
Computer skills	55.1%
Interpersonal skills (relates well to others)	52.8%
Organizational ability	43.8%
Strategic planning skills	38.2%
Tactfulness	25.8%
Creativity	23.6%
Friendly/outgoing personality	22.5%
Entrepreneurial skills/risk-taker	16.9%
Fluency in a foreign language	11.2%

Source: Job Outlook 2019 by the National Association of Colleges and Employers, Bethlehem, PA. © NACE. Used with permission.

Characteristics of Transfer Goals

Transfer goals specify particular transfer abilities; they reflect what we want students to be able to do when they confront new information, issues, challenges, and opportunities. Transfer goals have several distinguishing characteristics (McTighe & Curtis, 2019). They

- Are long term in nature (i.e., they develop and deepen over time).
- Are performance based (i.e., they require application rather than simple recall).
- Call for application of learning in new situations, not those previously taught or encountered.
- Require some strategic thinking, not simply plugging in facts or skills acquired in a rote fashion.
- Seek independent performance; upon graduation, learners must be able to apply their learning autonomously, without scaffolding or coaching.
- Typically involve applying habits of mind, such as good judgment, self-regulation, and persistence.

As noted, transfer goals are identified within academic disciplines as well as for transdisciplinary outcomes. Discipline-based transfer goals are often stated in the opening pages of standards documents, where the long-term outcomes of teaching to the standards are explicated. Grade-level standards are usually much more detailed and do not qualify as transfer goals. Figure 1.2 presents examples of disciplinary transfer goals (McTighe & Curtis, 2019). Figure 1.3 presents a few examples of transdisciplinary transfer goals (McTighe & Curtis, 2019), which students in all grade levels can address through a wide variety of content-specific topics.

A Modern Curriculum

Our initial claim contends that a contemporary education should prioritize such long-term transfer goals. This approach calls for planning the curriculum (and associated assessments and learning experiences) backward from these transfer goals. When designing curriculum for the district or school level, we recommend identifying only a small number of transfer goals. Targeting a small number of long-term transfer goals to anchor a curriculum has two virtues.

First, transfer goals become a way of focusing and prioritizing the curriculum. Noted educational researcher Robert Marzano concluded that "a guaranteed and viable curriculum" is the most significant school- [and district-] level

factor impacting student learning and achievement (2003, p. 19). His choice of the term *viable* reflects a recognized challenge—standards typically include too much content, and there is not enough time to teach them all well. Trying to "cover" all the listed grade-level standards can result in superficial and disconnected learning. Instead, encouraging a focus on long-term performance goals helps to avoid teachers getting lost in trying to teach and assess hundreds of discrete objectives in isolation.

Figure 1.2
Examples of Disciplinary Transfer Goals

English Language Arts/Writing
- Write to communicate effectively in various genres for a variety of audiences and purposes (e.g., explain, entertain, guide, argue, and challenge).
- Produce effective writing in which the genre, conventions, organization, and style are appropriate for various purposes, audiences, and contexts.

Health and Physical Education
- Make decisions and take actions that support lifelong health and wellness.
- Participate regularly in one or more sports or fitness activities.

Mathematics
- Apply mathematical concepts, reasoning, strategies, and tools to make sense of practical and theoretical problems and persevere in trying to solve them.
- Apply sound mathematical reasoning to construct, justify, and defend viable arguments and respectfully critique the reasoning of others.

Science
- Plan and carry out a systematic investigation to explore phenomena, test a hypothesis, or answer an empirical question.
- Evaluate scientific claims and analyze current issues involving science or technology.

Social Studies/History
- Use knowledge of patterns of history to gain perspective about the present and prepare for the future.
- Actively participate as an informed and responsible citizen.

Visual and Performing Arts
- Develop a personal aesthetic in order to respond to the artistic expression of others.
- Develop competence in [at least one arts discipline] to continue active involvement in creating, performing, and responding to art as an adult.

World Language
- Communicate and interact in [one or more languages], displaying sensitivity to culture and context.
- Adjust one's use of spoken, written, and visual language to communicate effectively and respectfully with various audiences for different purposes.

Source: McTighe & Curtis, 2019. Used with permission.

Figure 1.3
Examples of Transdisciplinary Transfer Goals

Critical Thinking
- Think critically about information and claims encountered at school and beyond by seeking clarity, accuracy, sound evidence, good reasons, and fairness.
- Exercise flexibility in selecting and employing evidence and reasoning for a variety of audiences and purposes.

Collaboration
- Work effectively with others, exchanging ideas and expertise in a variety of situations, both in school and beyond.
- Seek, consider, and incorporate multiple perspectives into group decision making.

Citizenship
- Make informed decisions and take actions for the public good.
- Consider the impact of one's personal decisions and actions on the larger community.

Research
- Formulate a researchable question.
- Locate and critically appraise pertinent information from multiple and varied sources (print, online; primary, secondary).

Habits of Mind—Persistence and Perseverance
- Persist in challenging situations by changing approach, seeking feedback, applying different strategies, and maintaining focus.

Habits of Mind—Open-Mindedness
- Remain open to new ideas and alternate points of view.
- Be willing to change one's mind when convinced by new and valid evidence and sound reasoning.

Source: McTighe and Curtis, 2019. Used with permission.

Second, transfer goals promote cohesion in students' K–12 learning experiences. It is noteworthy that the word *curriculum* is derived from Latin, translating as the "course to be run." This original connotation helpfully suggests that we think of a curriculum as the pathway toward a destination—long-term transfer goals (McTighe & Willis, 2019). Because such goals are conceived as exit outcomes, they provide the end points from which educators can plan a preK–12 curriculum. This approach to backward design leads to greater curriculum coherence because the transfer goals serve as a "north star" to keep teaching and assessing on course. Moreover, vertical alignment within a curriculum is enhanced when all teachers in a subject area focus their teaching and assessments on the same ends.

Designing curriculum that prioritizes a small number of long-term transfer goals does not negate the importance of helping students acquire factual knowledge and basic skills. Indeed, one cannot productively apply learning without knowledge and skills. However, in a world that offers easy access to much of the world's knowledge, we propose that the "basics" should be properly seen as foundational—the floor, not the ceiling.

The ability to transfer also requires deep understanding. If we learn only through rote memorization or repeated practice, we are unlikely to be able to transfer that learning to a new situation; we can only give back what was taught in the way it was taught. Transfer is about intelligently and effectively drawing from a repertoire of knowledge, skills, understandings, and dispositions to navigate new situations independently.

To reiterate our first claim: we contend that a modern curriculum should be framed and developed in terms of worthy outcomes—transfer performances—not simply as a scope and sequence of content inputs to be covered.

Performance-Based Learning and Assessment

We began this chapter by articulating a two-part claim; the first portion highlighted the centrality of transfer goals in the articulation of a sound and viable curriculum. The second part builds upon that premise in the form of an if/then proposition: if we agree that transfer is a primary educational goal for today's learners, then the nature of teaching and assessment should reflect that focus. But how do we teach for and assess students' ability to transfer? We contend that the answer lies in the systematic use of performance tasks and projects for learning and assessment. Let's take a closer look at each.

What is a performance task? In its essence, a *performance task* asks students to "perform" with their learning—to apply their learning in some fashion. More specifically, we define a performance task as any learning activity or assessment that asks students to construct a multifaceted response, create a product, or produce a demonstration—in other words, to perform with their learning.

What is a *project*? A dictionary definition is "an individual or collaborative enterprise that is carefully planned to achieve a particular aim" (https://en.oxforddictionaries.com/definition/project). In education today, projects are often associated with project-based learning (PBL), a pedagogical approach in which learning develops as students pursue answers to complex questions through work on extended learner-directed projects.

Although we have more nuanced descriptions of performance tasks and projects to offer later, take a look at the eight examples of tasks and projects from different grade levels and subject areas shown in Figure 1.4. What characteristics do they share? How do they differ?

These examples illustrate the range and variety of performance tasks and projects being used in schools. Although tasks and projects such as these have been used over the years, we have noticed that educators sometimes find it difficult to differentiate the two. In general, we characterize projects (as conceived under the PBL label) as follows:

- Longer term
- Interdisciplinary
- Open ended
- Focused on genuine issues or problems
- Targeted toward a real audience
- Largely student directed

Performance tasks, on the other hand, are often characterized as follows:

- Shorter in duration
- Generally focused on a single subject (but may be interdisciplinary)
- More structured
- May or may not be set in an authentic context
- May or may not have a real audience other than the teacher (though there may be an imagined audience specified in the task)

In Chapter 3 we will take a closer look at variables to consider in the design of performance tasks and projects. For now, we'll offer a general recommendation. The choice between performance tasks and projects should be based on the nature of the targeted learning outcomes. When the focus is on discipline-specific academic content, a short, subject-specific performance task may be most appropriate. For other outcomes (e.g., 21st century skills), an interdisciplinary, student-directed project may be warranted.

Challenges in Implementation

We conclude this chapter by forecasting potential challenges that teachers and students may encounter—and must overcome—as part of a successful implementation of performance tasks and projects for learning and assessment (we will address them in the chapters that follow):

Figure 1.4
Examples of Performance Tasks and Projects

Example #1—Community Problem Solver (Social Studies, English/Language Arts; Grades K–1)

Students interview family members and neighbors to identify a problem in their community. They decide to focus on the problem of stray animals. They gather information about the nature of the problem (causes and effects) and brainstorm ways to address the problem. Each student contributes to creating a display board to use in an oral presentation to share findings and recommendations with members of the community.

Source: Adapted from Katherine Smith Elementary School, San Jose, California. https://video.search.yahoo.com/yhs/search?fr=yhs-domaindev-st_emea&hsimp=yhs-st_emea&hspart=domaindev&p=kindergarten+pbl+on+stray+animals+youtube#id=1&vid=d0f87333ffc0f9423d78e44c3bfa78e3&action=click

Example #2—Mail-Order Friend (English/Language Arts; Grades 1–2)

Note: This task is associated with a literary unit that includes reading and discussing stories involving the theme of friendship.

Imagine that you have an opportunity to "order" a true friend by telephone from a mail-order catalog. Remember the stories we read and the songs we learned about friends. Think about the characteristics of a friend that we listed on our friendship web. Now, think about the qualities that you want in a friend. Before you "order" your friend over the telephone, practice asking for three characteristics that you want in a true friend and giving an example of each characteristic. Remember to speak clearly and loudly enough so that the salesperson will know exactly what kind of friend to send.

Source: McTighe & Wiggins (2004), p. 168.

Example #3—Tour Director (Social Studies, Math; Grades 4–5)

The State/Provincial Department of Tourism has asked for your help in planning a four-day tour of (your state or province) for a group of foreign visitors (who speak your language). Plan the tour to help the visitors understand the history, geography, and key economic assets of (your state or province). You should prepare a written itinerary, including an explanation of why each site was included on the tour. Include a budget for the four-day tour.

Source: Adapted from McTighe & Wiggins (2004), p. 168.

Example #4—Scientific Investigator (Science; Grades 5–6)

The Pooper Scooper Kitty Litter Company claims that their litter is 40% more absorbent than other brands. You are a consumer-advocate researcher who has been asked to evaluate their claim. Develop a plan for conducting the investigation to determine the accuracy of the company's claim. Your plan should be specific enough so that the lab investigators could follow it to evaluate the claim. You should also prepare a presentation or report that will clearly communicate your findings to potential consumers.

Source: Adapted from McTighe (2013), p. 42.

Example #5—The Global Challenge (Multidisciplinary; Grade 8)

At the end of the school year, students work in teams on a week-long project based on the United Nations' 17 Sustainable Development Goals (SDGs). Each student chooses a global development challenge of interest (e.g., malnutrition, education, gender equality, the environment) and then joins four other students to

research the challenge, define problems, and propose solutions. They then develop a proposal for funding to present to a panel of adults in a simulated *Shark Tank* setting. Students are assessed on developed rubrics on Problem Solving, Communication, Collaboration, and Result (i.e., did the panelists approve their funding request?)

Source: Adapted from Wise & McTighe, 2017, pp. 12–18. See also http://markwise8.wixsite.com/globalchallenge

Example #6—See My World (Visual Art; Middle School)

You have recently analyzed the narrative work of Faith Ringgold to identify ways she communicated ideas about her world. Think about your own world—your family, friends, hobbies and interests, daily experiences, and the things that are important to you. Select a drawing or painting medium, or use mixed media, to create your own narrative work that visually communicates your personal ideas about your world.

Source: Adapted from Daisy McTighe, Baltimore County Public Schools; McTighe (2013), p. 51.

Example #7—Tiny House Project (Multidisciplinary; High School)

Students work in teams over the course of a semester to research, design, and construct a "tiny house" (350 square feet) that is both energy self-sufficient and livable. Teams create videos and a website to document their process. The project culminates with a public showing of the house in a park in San Diego, California.

Source: Adapted from Maria Alcoke, High Tech High School, San Diego, California. https://sites.google.com/site/hthtinyhouse/our-company

Example #8—Active Citizen (Social Studies/Government; High School)

After investigating a current political issue, prepare a position paper or presentation for a public policymaker (e.g., a U.S. representative) or group (e.g., school board, legislative committee). Assume that the policymaker or group is opposed to your position. Your position statement should provide an analysis of the issue, consider options, present your position, rebut opposing positions, and attempt to persuade the public policymaker or group to vote accordingly. Cite relevant evidence to support your argument. Your position can be communicated via a written report, a blog, or a presentation.

Source: Adapted from Littleton High School, Colorado.

- *Too much content.* Teachers may believe that they do not have enough time for students to work on performance tasks and projects because there are so many grade-level standards to cover.
- *Standardized tests*. Administrators and teachers may question why they should use performance tasks and projects when they are being held accountable for scores on multiple-choice accountability tests.
- *Reliable evaluation.* Judgment-based evaluation of performance tasks and projects may be seen as overly subjective. Parents and students might challenge the grades they receive.

- *Schedule*. The school schedule (especially in high schools) may mitigate opportunities to plan for, teach toward, and implement multidisciplinary projects.
- *Students' skills*. Teachers may worry that some students will not have the skills or maturity to direct themselves during long-term projects.
- *Cooperation challenge*. When students work in groups on performance tasks and projects, some group members can shirk while others shoulder the load.
- *Grading and reporting*. Although performance tasks and projects are well suited to developing and assessing transdisciplinary outcomes (e.g., 21st century skills and habits of mind), these outcomes do not appear on most report cards.
- *Students' expectations*. Some students have come to excel at the "school game"; they are compliant and will do what the teacher directs, as long as it "counts." Some may rebel if they have to think too hard on performance tasks and projects.
- *Parents' expectations*. Some parents expect students to sit in rows, listen to the teacher's lectures, do homework from a textbook, memorize information, and take tests of recall. They may not understand—and may object to—performance-based learning and assessment because these are likely very different from their own school experiences.

Conclusion

A modern education extends beyond knowledge acquisition; it calls for students to be able to *transfer* their learning to real-world situations. Accordingly, performance tasks and projects can serve as an effective means by which teachers can foster the development of students' capacities to apply their learning in meaningful ways. Performance tasks and projects have multiple benefits: (1) Set in authentic contexts, students are more likely to see the relevance of what they are learning; (2) work toward authentic performance helps students to synthesize discrete knowledge and skills into a more coherent whole; and (3) performance on tasks and projects by students provide the assessment evidence of their understanding and ability to apply their learning. Moreover, authentic tasks and projects are ideal vehicles for integrating 21st century skills (critical thinking, creativity, collaboration, communication, technology, and other

transdisciplinary outcomes) with academic content. For performance tasks and projects to deliver on their promise, they must be carefully crafted. In the next two chapters we will propose sets of criteria for judging high-quality performance tasks and projects. We'll present practical and proven practices for designing authentic tasks and projects that meet these criteria and address challenges of design and implementation.

5

Teaching to Support Student Performance on Tasks and Projects

In Chapters 2 and 3 we focused on design principles and processes for constructing rich, authentic tasks and projects. In Chapter 4 we explored the hallmarks of effective evaluation tools and strategies for facilitating communication and student success. In this chapter, we extend those same principles to the design and implementation of *instruction* that supports performance assessment and project-based learning.

The quality of a performance task or project will quickly erode if the unit's instruction does not prepare students to be successful. In other words, we can't design a task or project that calls for critical thinking, creativity, and collaboration and then spend three weeks lecturing and assigning worksheets. The task or project will fail because students will not be equipped to handle it. High-quality assessment demands high-quality instruction. If a complex task or project is the learning destination, then the instructional route to that end should be punctuated with multiple opportunities for practice, feedback, and scrimmage-like performances.

Teaching for Transfer = Thinking Like a Coach

Authentic performance tasks and projects call for students to transfer their learning to new situations. Accordingly, preparation must help learners to be able to apply their understanding, knowledge, and skills to the new contexts posed by the tasks and projects. Said differently, teaching for transfer is the model for instruction when the end goal is competent performance on a complex task or project. We must teach so that students have regular opportunities

for practice, feedback, and refinement of skills (core, disciplinary, and 21st century). Thus, in many ways, teaching for transfer reflects the principles of effective coaching (Larmer et al., 2015; McTighe, 2013; Sizer, 1984).

It is not surprising that backward design is the norm in performance-based courses (e.g., visual and performing arts, career and technology education), as well as in extracurricular activities (e.g., athletics, yearbook, debate). This overlap likely springs from the fact that these areas are directed toward an authentic performance, such as the game in athletics, the concert in band, the public display in visual art, the production of the yearbook. Teaching, learning, and practice are thus orchestrated to prepare learners for performance. The football coach doesn't simply cover the playbook page by page. Instead, the coach uses the playbook strategically as a resource to help the team prepare for the game.

But… isn't that teaching to the test? Yes! The backward design approach *does* teach to the test, but that's not a bad thing if the test (the performance task or project) reflects what matters most: authentic performance reflecting core standards and 21st century skills. Just as coaches do not apologize for coaching for the next game or theater directors do feel guilty asking their actors to rehearse for the play, teachers need not apologize for teaching for authentic performance on worthy tasks.

How should teaching for transfer shape instruction throughout the unit? When considering the best coaches and how they use assessments, we can recognize that they (1) assess players in the beginning, (2) set the tone for success, (3) rehearse the skills of the game, (4) monitor progress, (5) provide targeted feedback to individuals and groups, and (6) incorporate opportunities for scrimmage.

1. Assess students in the beginning. Effective coaches will not begin practice until they have assessed the members of their teams to find out their skill level, knowledge of the game, conditioning level, and ability to work (play) collaboratively with teammates. The information they obtain is essential to help them shape their practices to yield maximum effect. Likewise, effective teachers use pre-assessment to check the understanding, knowledge, and skill levels students bring to a unit of study. The recognition that students may bring misconceptions (or preconceptions) into the classroom has direct implication for learning; if teachers don't identify potential misconceptions, these erroneous ideas are likely to persist even in the face of good teaching. Therefore, the use of targeted pre-assessments at the unit's outset is vital.

2. Set the tone for success. Strategic coaches recognize that winning seasons are launched during the opening moments of the team's first meeting.

In these moments, the coach sets the tone for the season by sharing expectations and casting a vision for the team's success. In a performance-based unit of study, the *launch* serves the same purpose. Teachers use it to introduce the task or project, foster student investment and motivation, and create a sense of purpose for completing the task.

3. Rehearse the skills of the game. As the season begins, the coach runs plays, conducts drills, and engages players in strength- and endurance-building activities. So it is in a performance-based classroom: students build expertise by learning to apply key skills *in the context* of a variety of settings, with the goal of transferring them to game-time performances. Moreover, learners are more likely to work on developing the necessary skills when they see purpose and relevance in what they are being asked to learn, just as athletes work harder in practice because they are training for authentic performance in upcoming games.

4. Monitor progress. No winning coach waits until the big game to see how the team is doing. Indeed, the essence of coaching is monitoring the progress of individual players—as well as the team as a whole—with the goal of using that information to direct the next steps in coaching. By using ongoing, formative assessments in performance-based classrooms, teachers remain aware of student progress. They monitor each individual student's grasp of the learning goals as well as the progress that individuals and groups have made in completing tasks and projects.

5. Provide targeted feedback to individuals and groups. As legendary football coach Vince Lombardi reportedly said, "Feedback is the breakfast of champions." Using what they learn from progress monitoring, coaches give continuous feedback to athletes to help them refine their skills and strategies during practices. Effective coaches recognize that taking time to help players acknowledge, analyze, and learn from their mistakes is key to improving individual and team performance. The same approach pays dividends in the classroom. As research has conclusively confirmed, feedback given throughout the unit—by both teachers and peers—paves the route to improved performance on a task or project (Black & Wiliam, 1998; Hattie & Clarke, 2019).

6. Incorporate opportunities for scrimmage. A scrimmage is a practice game. It gives players experience using their knowledge (e.g., of plays) and skills in a game-like setting. Coaches also use scrimmages to gather further information about team and player progress and to expose athletes to situations that don't arise during more isolated practice drills. Likewise, teachers in

performance-based classrooms engage learners with minitasks—simplified versions of the summative task—to monitor their readiness to transfer knowledge and skills; to provide additional, more nuanced feedback on their performances; and to direct the future flow of practice and revision (based on the feedback).

So what does performance-based teaching look like? How do the practices just described play out in the classroom? Let's explore each through the use of specific examples.

Pre-assessment: Assessing Students

A pre-assessment need not cover *everything* teachers plan to teach; that would be exhausting for both the teacher and the students! Rather, a pre-assessment should give the teacher a preview of students' grasp of *key* knowledge, skills, and understandings, along with areas of interest that might be pertinent to the investigation (Tomlinson & Moon, 2013). In addition, it should pique students' interests and serve as an "invitation" to the unit of study (Hockett & Doubet, 2013/2014). Finally, in the case of project-based learning, pre-assessment should help the teacher gather information that can inform the strategic formation of collaborative groups. Before beginning a project-based learning experience or a performance task, therefore, teachers should choose pre-assessment prompts. For example, the questions in Figure 5.1 could serve as a pre-assessment for the task of designing a local memorial to honor veterans of the Iraq war and the U.S. war in Afghanistan. So, why these five questions? Let's examine the rationale for choosing each.

Question 1. A teacher preparing to launch this project would need to know students' background knowledge about the U.S. wars in Iraq and Afghanistan, and their answers to the first part of the question would reveal this, along with potential misconceptions about the war that the teacher may need to correct. If it became clear that the class included a few resident experts, the teacher may want to distribute them among the various collaborative groups. Answers to the second part—where the student got the information—provides the teacher with not only a deeper understanding of the source (and therefore the validity) of students' knowledge of the wars, but also a heads-up about potential resources for interviews later in the investigation.

Question 2. This item (along with drawings students may produce in Question 4) will help the teacher (1) get to know students better and (2) identify students with an artistic or architectural inclination so that they can be distributed among collaborative groups.

Figure 5.1
Sample Pre-assessment for Memorial Design Challenge

1. What do you know about the U.S. wars in Iraq and Afghanistan? Where did you get this information from (another class, a relative, a trip, a movie)?
2. On a scale of 1 to 10, how interested are you in creating visual designs (e.g., architecture, interior/exterior home design, illustrations for stories or texts, murals)? 1 = don't know or care; 10 = super-interested! Explain your rating.
3. If you had the chance to interview a war veteran (from any war), what question would you ask that person? Why would you have asked that particular question?
4. What would you choose as a symbol for either yourself or your family? You can use an existing symbol or create your own. Draw or describe it. Explain the significance of your symbol.
5. Please read the passage bookmarked on your device. Then share what you think is the main idea and the two most important details (and why).

Question 3. Conducting interviews will emerge as a key component of this historical investigation. This item helps the teacher ascertain what—and how much—instruction is needed to prepare students for this portion of the project. All students may need guidance and practice, some students may be ready to roll, whereas others may need more guidance and experience. Thus, this question can also help the teacher determine the need for differentiated instruction once the unit gets started (for more on this, see Chapter 6).

Question 4. Like Question 3, this item previews students' readiness to employ symbolism and to communicate meaning. Students' answers can inform both whole-group and small-group instruction. In addition, the answers can shed new light on what makes each student tick and provide insights not yet revealed by other community-building activities.

Question 5. This is a skill-based question that allows the teacher to check students' agility in gleaning meaning from text. Because students will be doing much of their own research, the teacher needs to be vigilant about supporting those students who need additional scaffolds in that process.

As this set of questions illustrates, a good pre-assessment will provide teachers with actionable information while providing insight on how to best tailor their instruction to fit students in terms of readiness, interests, and learning preferences. A good pre-assessment will help determine important first steps in teaching for transfer. But student needs may change as they encounter

new material and wrestle with additional skills. Therefore, frequent monitoring during the course of instruction is necessary to make sure students continue to progress (see the section "Formative Assessment: Monitoring Progress" beginning on p. 105).

The Launch: Setting the Tone for Success

From the opening moments of a performance-based unit of study, instructional methods should support critical thinking. Posing an overarching essential question can set the stage for sustained thinking on multiple levels. Beginning a history class by asking students to explore the essential question "Is conflict productive or destructive?" in terms of their *personal* experiences allows students to dig into the conceptual underpinnings of the course in a content-free manner. Students can discuss the implications of the question on their personal lives, drawing from rich and diverse backgrounds to explore those implications in terms of relationships, sports, the arts, and other matters. Such an experience will help students more readily connect with the content as it launches them into the exploration of the same question applied to various conflicts across time periods and parts of the world.

In project-based learning, the "driving question" serves a similar purpose (see Chapter 3). The kind of driving question a teacher chooses will determine how she launches the unit. For example, inquiry that is driven by *Exploring an Abstract Question* invites project launches similar to those for essential questions (as illustrated in the "conflict" example). Other types of driving questions—*Solving a Real-World Problem*, *Meeting a Design Challenge*, *Conducting an Investigation*, and *Taking a Position on an Issue*—invite more concrete launch experiences that both preview the project and foster investment in its outcome:

> **The project is launched** when the teacher conducts an entry event that lets students know this is not just another assignment. The event engages their interest in the project and sparks questions about the topic and the process. After the teacher presents the driving question (or creates one with students), a list of student questions is generated, which will guide the inquiry process.

In other words, all launches should, in some way, connect students in a meaningful fashion to what they are about to study. Figure 5.2 presents specific ideas for launching units. Approaches vary according to the different types of driving questions chosen as the task's focus.

Figure 5.2
Using Driving Questions for Unit Launches

Type of Question	Examples	Potential Launch Ideas
Exploring an Abstract Question	How can art exert influence?	Students identify works of art (e.g., visual, musical, poetic) that have had the power to influence some aspect of their personal lives (e.g., mood, perspective, motivation, behavior). Together the class explores these works of art in terms of (1) the qualities they share and (2) how those qualities have influenced students' lives or the lives of others. This launch sets students up for their investigation of influential artists and ultimately to presenting a case for the artist whose work they believe has had the most significant impact on the world—and why.
Solving a Real-World Problem	How can professional sports teams allocate their resources to improve their records?	Students are asked to consider the relationship between *spending* and *winning* for professional sports teams. Six stations in the classroom include prompts on poster paper. Each station's prompt corresponds to one of the six Facets of Understanding (see sample prompts in Figure 2.5). Small groups of students rotate through each station and add thoughts to the poster paper. Debrief as a whole class, then preview the task at http://www.mathalicious.com/lessons/win-at-any-cost.
Meeting a Design Challenge	How can we design a memorial to honor our community's veterans from the U.S. wars in Iraq and Afghanistan?	Students examine a feature of their school or community that is designed to serve as a memorial and discuss its effectiveness at achieving that goal. They develop a list of questions for the designer regarding background, purpose, process, and medium used. Students then examine select interviews with veterans in which they discuss their wartime experience and challenges in returning from war. This launch sets up the task's driving question and challenge.
Conducting an Investigation	What factors affect erosion? How does erosion affect ecosystems?	The teacher leads a simulation of soil erosion. Using three planter boxes—one containing sod, one with scattered vegetation, and one with bare topsoil—the teacher simulates rainfall with a watering can. Several trials are run, each with varied slopes of the planter boxes. Independently, students make observations about the soil run-off at the bottom of the planter boxes after each trial. The class then discusses what they observed and the hypotheses they have about implications to the environment in their community and beyond.
Taking a Position on an Issue	Should some books be censored?	Read aloud the children's book *Where the Wild Things Are*, by Maurice Sendak. The class is divided into two teams—one that develops reasons for why the book would be good for children to read and one that develops reasons why people may *not* want children to read it. Teams engage in a minidebate over whether the book should be read in school. At the debate's conclusion, the class makes a list of criteria each team considered when preparing its case. These activities lead to the project's introduction.

No matter what type of question is driving the unit, an effective launch should set both the tone and the groundwork for sustained inquiry, in-depth thinking, and students' application of learning. The unit launch serves as the kick-off (or jump ball, puck drop, whistle blow) to set the game in motion. It also sets the stage for *teaching for transfer* throughout the rest of the unit.

Practice: Rehearsing the Skills of the Game

In every performance-based task or project, certain skills emerge as central to success. In many cases, those skills involve conducting research, evaluating sources, using evidence, and engaging in discussion. Two high-leverage strategies that can help students develop all three skill sets include Socratic seminar and ThinkDots.

Socratic Seminar

Also called a "Paideia seminar," the Socratic seminar puts students at the helm of a discussion. Armed with evidence from reading or research and guided by norms such as *listen actively, ask questions, use classmates' names, share the air[time],* and *reference the text*, students engage in debate and discussion while the teacher chimes in periodically with guiding questions. Socratic seminars can also be conducted in an inside/outside circle formation; the inside circle engages in discussion while the outside circle monitors and evaluates classmates' interactions using a back channel chat—a form of online communication. Inside and outside partners meet to debrief the discussion before switching places (the former outside partner becomes the inside discussant, and the former inside partner becomes the back channel monitor).

Teachers can use this technique with the whole class when launching a unit and at critical checkpoints throughout instruction. Socratic discussions (1) provide the teacher with formative assessment information about students' grasp of content, (2) encourage students to dig deeply and push past obvious answers or solutions, and (3) allow students to practice the skills of respectful discourse. If the teacher notices that students struggle to "share the air," the use of a strategy called Talking Chips may be helpful. Each student receives two to five chips (actual game chips or slips of paper); they must use a chip each time they contribute to the discussion. They are encouraged to use all their chips but to keep in mind that once they run out, they may no longer contribute to the discussion. It's also a good idea to establish the expectation that, if several students begin to speak simultaneously, students should yield to the classmate with the

most chips left. This approach sets the tone for speaking and listening and for considering the perspectives of others. For examples of lessons employing Socratic seminars, visit https://www.paideia.org/our-approach/paideia-seminar/sample-paideia-seminar-plans.

ThinkDots

Conceived by educator and author Kay Brimijoin, ThinkDots provides a structure for thinking and talking about a concept, a topic, an idea, or an issue from multiple perspectives. The teacher creates six ThinkDots cards, numbered 1 through 6 to correspond to the dots on a die. Students work in groups of six with one die and one set of ThinkDots cards per group. Each student is responsible for answering one card's prompt or question. Students roll the die to divide the cards according to "chance"; then they silently read and respond to their prompts. In creating their responses, students may need to engage in research and gather and cite evidence to support their answer. After students have had time to prepare, they take turns sharing within their small group in numerical order. ThinkDots is a versatile strategy that may be introduced as a discussion-starter before being used as a research-based activity. It's also possible to "jigsaw" the process and have students collaborate with students from other groups who have rolled the same number. Together, they discuss or research their prompt, jot down answers, and then return to their home groups to share those ideas (Doubet & Hockett, 2015, 2017a).

Consider the sample prompts, based on the Facets of Understanding, shown in Figure 5.3. These prompts help students consider an issue from multiple lenses. Because the lens each student assumes is literally left to chance (i.e., the roll of a die), in all likelihood, students will be asked to examine an idea from a perspective that differs from their personal lens. This stretches students to push beyond their initial assumptions about a topic and to think both critically and creatively, fueling well-rounded discussion and debate. After modeling ThinkDots with a full group, teachers can use the technique in a variety of ways—for example, assigning different prompts to different groups to target varying needs or assigning a single group to complete a ThinkDots activity to get "unstuck."

Formative Assessment: Monitoring Progress

Throughout the course of a performance-based unit, teachers will need to check in with students to discover how they are progressing. Some of the strategies

Figure 5.3
ThinkDot Prompts for Examining a Current Issue

Explain Explain your current position on this issue. Include the *why* behind your thinking.	**Interpret** What is this issue *like*? What can it be compared to, or what does it remind you of?	**Apply** How does this issue affect or relate to your everyday life?
Have Perspective What are the main "pro" and "con" arguments around this issue?	**Empathize** What might someone who sees this issue differently from you have experienced?	**Self-Reflect** How could personal experience affect how you view this issue?

Source: Jessica Hockett, 2013. Used with permission.

that help to build essential collaborative and thinking skills (e.g., Socratic seminars, ThinkDots) can double as whole-class or small-group check-ins, as they provide important insights into how the class is developing. But progress monitoring must also extend to individuals if teachers are to make sure each student succeeds. Using the prompts in Figure 5.4 may help ascertain how individuals are faring in pursuit of their tasks or inquiries.

Formative Assessment at Its Best

Effective formative assessment must reveal each individual student's grasp of learning goals as well as misconceptions they may harbor. At its best, formative assessment serves as assessment *for* learning (Earl, 2003; Stiggins & Chappuis, 2011) rather than assessment *of* learning. It is not used to grade performance, but to inform and guide instruction. Therefore, at its best, formative assessment is aligned with key learning goals and scattered throughout a unit or project with the goal of tracking students' grasp of small chunks of knowledge, understanding, or skills. And, at its best, formative assessment questions require students to apply or use key understanding, knowledge, or skills in some

way—in essence, to provide evidence that will "convict" them of learning (Wiggins & McTighe, 2005).

Figure 5.4
Sample Prompts to Monitor Progress and Foster Investment

Where Am I?
1. What did I accomplish today? Explain and attach evidence.

- Explanation:
- Attached evidence:

2. What do I still have to do to meet the task goals?

3. What are my next steps? What's my plan of attack for tomorrow? The next day?

Where Were You?
1. Check the learning station(s) you visited today.
___ Station 1
___ Station 2
___ Station 3
___ Station 4

2. Did the task at the station help your learning? Why or why not? (Be specific!)

This Just In!
1. Restate the most interesting thing you've learned this week as either a news headline or a billboard sign.

2. What made this interesting to you? Explain.

How Will You Learn Best?
As we continue our lesson, would you rather learn about _____ by
- Watching _____?
- Reading _____?
- Listening to _____?

Source: From *Differentiation in the Elementary Grades: Strategies to Engage and Equip All Learners* (pp. 187–188), by K. J. Doubet and J. A. Hockett, 2017, Alexandria, VA: ASCD. Copyright 2018 by ASCD. Adapted with permission.

Frequency and Types of Formative Assessment

Many teachers ask us how often they should use formative assessment. Should it be every day? Every week? How much is enough? Too much? A good rule of thumb is that formative assessment should be used regularly enough for (1) students to be accustomed to its purpose and classroom use and (2) teachers to be able to use the information to guide their instruction. In other words, if you don't plan to examine and use the results, don't give the formative assessment. Using too much formative assessment can cause teachers to feel buried in piles of exit slips or other evidence, and students may see it as a meaningless exercise without purpose. On the other hand, not using enough creates conditions in which large learning gaps can form without the teacher's (or the student's) knowledge. Used properly, formative assessment provides teachers with the fuel to plan informed, targeted lessons and interventions and gives students a sense of both accountability and support when they see that their responses are being used to help them grow.

Formative assessment may be productively used after a lesson (or minilesson) in the following circumstances:

- To monitor progress with a key skill
- After an important learning experience (interview, guest speaker, field trip)
- After individuals or small groups have worked autonomously for a length of time
- Before moving to a new topic or skill (to make sure students are ready for the transition)

Let's return to the driving questions used for unit launches presented earlier in the chapter (see Figure 5.2) to see where and how formative assessment can be used to gauge student learning and growth. Each of these units should be punctuated by formative assessment to gauge student growth. Figure 5.5 presents sample formative assessment prompts around important learning goals in relationship to the purposes outlined in the bulleted list above.

Each formative assessment prompt featured in Figure 5.5 moves beyond checking for student compliance or memorization. Each requires students to apply what they've learned in context; in other words, each prompt is structured so that students can provide evidence that will let teachers know if they are "getting it" and determine the feedback students will need to grow.

Figure 5.5
Sample Prompts to Gauge Students' Grasp of Learning Goals

Driving Question	Sample Formative Assessment Prompt	Purpose/Use
How can art exert influence?	• Make one claim about why your artist is influential. • Provide two pieces of evidence to support your claim. Be sure to cite sources properly.	Used to check understanding following a minilesson on using evidence to support a claim.
How can professional sports teams allocate their resources to improve their records?	Data have been collected on the number of years NBA players have played and the salaries they have received. Examine the following linear model that presents a summary of the data, where t is the number of years played and d is the salary in dollars. Then answer the following questions: • What is the equation for the model? • What is the slope? • What is the intercept? • Make one prediction based on the graph.	Used as a check for students' grasp of a key unit skill: *Interpret the slope of a linear regression function in context.*
How can we design a memorial to honor our community's veterans from the U.S. wars in Iraq and Afghanistan?	Defend and destroy the following claim using evidence from the primary sources you studied today: "The Iraq War was winnable." (Adapted from Doubet & Hockett, 2015, p. 165)	Used after students have worked in small groups to conduct research on primary sources curated by the Carnegie Council.
What factors affect erosion? How does erosion affect ecosystems?	• List three criteria the World Wildlife Fund (WWF) considers when deciding to intervene in an ecosystem. • Describe two sites that have met these criteria. • List one thing you hope I will clarify tomorrow.	Used following a presentation, via video chat, by a guest from the WWF.
Should some books be censored?	• One misunderstanding someone might have about censorship and free speech is _____. • Here's what I might say to help someone better understand the issue. (Adapted from Doubet & Hockett, 2015, p. 165)	Used as a misconception check to determine student readiness to move on to next lesson.

Assessment Response: Providing Targeted Feedback to Individuals and Groups

In Hattie's (2012) meta-analysis of the effects of instructional interventions, *feedback* was included as one of the practices with the most influence on student learning. The most effective feedback provides guidance for each student that is "'just in time,' 'just for me,' 'just for where I am in my learning process,' and 'just what I need to help me move forward'" (Hattie, 2012, p. 122). Giving instructional feedback, then, is the process by which we use what we know about a student's learning (gleaned from formative assessment) to move that student forward.

Qualities of Effective Feedback

As Wiliam (2011) and Wiggins (2012) point out, feedback is not about value judgments or praise; rather, it focuses on providing targeted information that will help students reach established goals. According to various sources (Fisher & Frey, 2009; Hattie, 2012; Wiggins, 2012; Wiliam, 2012), the most effective feedback has the following characteristics:

- Specific and descriptive
- Goal specific (not personal)
- User friendly (understandable to the receiver)
- Guided by clear criteria
- Timely (based on recent evidence)
- Actionable

As this list implies, feedback is an exchange between the teacher and the learner—or between peers. It can be delivered in written or oral form (e.g., conferencing) and can be directed to individuals or to small groups of students who require the same type of feedback (more about this in Chapter 6). Although the qualities of effective feedback remain the same regardless of grade level or subject matter, the nature of it (e.g., level of vocabulary, number of facets, mode of delivery) may change to suit learner needs. Figure 5.6 provides examples of teacher feedback that adheres to the bulleted list of characteristics.

This kind of feedback, delivered at key points throughout the investigation or unit, will help students stay on track and continue to improve. The practice of frequent monitoring and feedback catches gaps in performance and nips misconceptions in the bud (shown in the math and social studies examples in

Figure 5.6
Examples of Effective Feedback

Content Area	Feedback Example
Math	You have properly distributed the term with the variable and even properly distributed the term with the negative sign, but you made a mistake when distributing the *x*. What should happen when you multiply 3*x* by 2*x*?
Science	You accurately captured the differences between positive and negative feedback in a system. Because this is a confusing concept, please add at least one example of each to make the distinction clear.
English/ Language Arts	Good character descriptions reveal how a character reacts to people and situations *and* how other characters react to her. I see clear examples of your main character reacting to other people and situations. Can you add a few examples of characters reacting to her?
Social Studies	Your blog post is informative. You have clearly described the common characteristics and roles of special interest groups in a democracy. Now, help your readers understand the concerns some people have about how interest groups might undermine democracy. Be sure to highlight examples of important regulations.

Figure 5.6). Further, it provides all students with a next step (as in the science and ELA examples in the same figure), even if they've completed work in a technically correct fashion. This kind of teacher feedback reinforces the growth mindset and propels *all* students forward.

Peer Feedback

When students work as part of a collaborative team, they must be willing and able to provide support and guidance to one another. Students in performance- and project-based classes, then, must become adept as peer reviewers. As students work to fine-tune performance tasks and project presentations, they will need to provide each other with feedback. To do so, they need guidance on how to give—and receive—feedback in ways that lead to improvement. Peer feedback is enhanced when students (1) understand the purpose of constructive feedback; (2) base their feedback on established criteria, through rubrics and models; and (3) follow an established protocol for giving and receiving feedback.

Understanding the purpose of constructive feedback

Practically everything is reviewed online in both formal and informal ways, with valid and invalid claims, and in both respectful and (more commonly) disrespectful fashions. Together, teachers and students can explore and evaluate feedback on a variety of online forums (e.g., YouTube, blog posts, news stories, music/movie sites), gathering a collection of examples and nonexamples of effective reviews. Using these for guidance, students can create their own responses with the goal of emulating constructive responses and eliminating unhelpful or hurtful comments.

Younger students might benefit from a more concrete approach, such as a sorting activity to illustrate the difference between appropriate and inappropriate comments. In one such approach, the teacher distributes small bags containing slips of paper printed with online comments of varying degrees of positivity (e.g., "I'm not sure I agree," "That's a silly thing to say," and "You're a moron"). In small groups, students sort these into categories, name the categories, and share with the class to help them distinguish helpful from unproductive comments (Carbaugh & Doubet, 2016).

Using rubrics and models

As discussed in Chapter 4, a well-designed rubric given to students before an assessment can provide support during both peer and self-evaluation. To be sufficient, however, the meaning of each criterion and descriptor must be clear to students. Phrases on the rubric such as "logically organized," "insightful interpretation," and "sufficient evidence" may have little meaning for inexperienced students. Before asking students to use rubrics to provide peer feedback, share examples of what would constitute a high-quality performance. Supplementing rubrics with models showing a range of products (excellent, good, fair, and poor) helps students better understand the performance levels of a rubric. Teachers can then use modeling or role-play to illustrate how to review draft work against the rubric criteria in order to provide specific, actionable, and constructive feedback.

Following a protocol for giving and receiving feedback

Based on a discussion technique developed by Himmele and Himmele (2011), Debate Team Carousel provides an effective protocol for peer evaluation and requires students to provide both praise and constructive criticism about a draft product in a specific, actionable fashion. Sitting in groups of five or six,

each group member receives a full-page, four-square peer review protocol such as the one shown in Figure 5.7.

The students attach the protocol to their draft and pass the work to the classmate on the left to begin the carousel, which proceeds as follows (adapted from Doubet & Hockett, 2015 & 2017a):

1. Students review the rubric criteria associated with the task or project.
2. Students carefully study their peer's draft in relationship to the rubric criteria. In box 1 of the protocol, students respond to the prompt, supporting their assertion with both reasoning *and* evidence from their classmate's work and language from the rubric. They initial their comments in the box they just completed, then pass both their classmate's draft and the protocol (with box 1 completed) to the group member on their left.
3. Students study the new draft they have received, as well as their peer's response on line 1, before answering the prompt in box 2 (again using reasoning and evidence). They then pass the draft and protocol to the group member on their left.
4. Students repeat step 2 for boxes 3 and 4.
5. Students return the papers to their original owners and read their classmates' responses to their work. They ask for clarification if necessary, and they begin revising their drafts according to the feedback they've received.

Figure 5.7
Debate Team Carousel Protocol for Peer Feedback

Box 1	**Box 2**
The biggest strength of this draft is _____, because _____.	Other strengths include: _____ _____
Box 3	**Box 4**
Some small changes that could make a big difference include: _____	The change that could make the biggest improvement might be _____ because _____.

Paired with the discussion frames presented in Chapter 7 (see Figure 7.3, p. 149), this protocol sets the expectation that there are always next steps we can take to make our work stronger.

Minitasks: Incorporating Opportunities for Scrimmage

Used regularly, formative assessment and feedback are keys to student success in any classroom. In a performance-based classroom, however, an additional practice component is necessary to support student success: the scrimmage. Recall our definition of *scrimmage* is "a practice game." If the game is the final performance or presentation, then students must have opportunities to approximate part or all of that performance or presentation. Those approximations should (1) have lower stakes than the game itself, (2) provide opportunities for the "coach" to provide more nuanced feedback, and (3) mirror the authenticity of the game. Students scrimmage when they complete miniversions of the final task, engage in smaller performances that target key skills, and conduct dry runs of the performance or presentation. Let's examine some content-specific examples.

Content-Specific Examples

Athletes may scrimmage for a quarter rather than for an entire game just as actors may concentrate on one scene in a rehearsal. Likewise, as students work toward completing a major performance or project, they can complete several smaller versions of the task as a way to approximate the final performance. These minitasks may consist of short research projects or mini-investigations on topics of high interest to students. Students can engage with all the steps of the design or research process in a timely manner if they are focused on a discreet topic. Here are some examples of mini-investigations and projects:

- To introduce his 4th graders to the design process, Mr. Parker grouped them according to their favorite fast-food restaurant and charged them with designing a new advertisement for one of its products. He introduced the steps of the design process one at a time—*define the problem, collect information, brainstorm and analyze ideas, develop solutions or build a model, present idea and get feedback, improve the design*—and gave students time to work on each. After students presented their ads, Mr. Parker reviewed the design process itself. Students made posters clarifying each step; these were hung around the room to serve as supports as

students engaged in their actual (more lengthy, authentic, and rigorous) design challenge around the driving question, "How can we transform the display case in our school into a celebration of civil rights heroes?"

- Students in Ms. Buquoi's 1st grade class were charged with creating a persuasive presentation to deliver to the manager of their local pet store in an effort to convince him to donate an animal to be their class pet. Before creating their presentations for the manager, the students explored the elements of effective persuasion in minilessons and created smaller practice presentations for their friends and family on topics of their choice. These practice presentations allowed students to experiment with persuasive techniques in low-stakes situations before using them in their presentations to the store manager. (See the video at https://www.youtube.com/watch?v=fsJXcaF6vHo.)
- For their 11th grade project around the driving question "Should books be censored?" (see the "Taking a Position on an Issue" component, p. 103, in Figure 5.2), students in Ms. Robertson's class read various books that have been censored and conduct research on censorship laws and court decisions. For the production phase, they were to create infographics summarizing the issue for the public and write letters to the National School Board Association expressing their views (Larmer et al., 2015). To prepare students for the production phase while encouraging text analysis, Ms. Robertson had students practice making mini-infographics using Canva.com, a graphic-design tool website. Students chose a "process" infographic template and used it to chart the evolution of a character from one of the books they were reading. This exercise gave them (1) experience with the software and (2) a chance to demonstrate their understanding of character development.
- High school pre-calculus teachers designed a simulated performance task around the idea of disaster mission relief. In the final performance, teams of three or four students acted as air traffic controllers (housed in classrooms) and pilots (in the gym). Using a video chat application, the air traffic controllers gave pilots the polar coordinates to help them navigate toward a location to save citizens from a disaster. In the final performance, students had to navigate to four different disaster sites, choosing from all available formulas to do so. (See https://www.edutopia.org/video/performance-based-assessment-making-math-relevant.) As a dry run, students worked with a partner to produce and interpret *one* set of

written directions for a *single* navigation completed in the hallway. Practicing the skill in a simpler context gave students a preview of the kind of computational and communication skills they would need to perform successfully on the final task.

Targeting Key Skills

In a scrimmage, a coach may focus on running specific plays rather than incorporating all of them. So it is in performance-based classrooms. Sometimes a teacher needs students to exercise key skills in context before they are ready to transfer those skills to the final product or performance. For example, students can have the opportunity to analyze and interpret data sets in groups before they attempt to analyze and interpret the data they have collected on their own. Likewise, full-class validity checks of online sources could precede the research phase of a project. Students could practice investigations of sources (much like those conducted by the website Snopes.com) and debrief their process and findings together to set the expectation—and build the skills—to evaluate the credibility of the sources they employ in their own research projects. Here are some other examples:

- For one of their projects, students in Ms. Dawson's 6th grade class were exploring the driving question "How does rainfall affect soil on slopes?" (See Appendix L for a more thorough description of this project and Figure 5.2 for its launch.) As part of this investigation, students would conduct virtual interviews with members of the World Wildlife Fund about the effects of soil erosion in different parts of the world. Ms. Dawson knew her students needed to become skilled in crafting and posing interview questions, so she required them to conduct several mock interviews—face-to-face interactions with peers and virtually with others in the school—for which they were responsible for writing the interview questions. After each mock interview, the class would debrief about which questions teased out information effectively and which did not. They searched for common patterns and made a list of criteria to drive the creation of questions for the experts they would interview. This targeted rehearsal led to more effective interviews during the performance.
- Students in Mr. Gregory's 10th grade history class were researching the U.S. wars in Iraq and Afghanistan as part of their design challenge to build a community memorial for war veterans (see the list of pre-assessment

questions in Figure 5.1 and the "Meeting a Design Challenge" component in Figure 5.2). Because these two wars could be controversial topics, Mr. Gregory wanted his students to become skilled in the art of civil discourse; so he took several opportunities to engage his students in structured arguments using both claim and counterclaim. He used the Debate Team Carousel protocol similar to the one depicted in Figure 5.7 to evaluate the strength of arguments (rather than drafts) and Structured Academic Controversy to examine all sides of central issues (for more on Structured Academic Controversy, see http://teachinghistory.org/teaching-materials/teaching-guides/21731). Because they practiced the art of diplomatic argument in contained settings, Mr. Gregory's students were able to use it fluidly when engaging in authentic conversations with both peers and experts.

- Ms. Harris's 8th grade students spent the entire school year curating their own personal young adult book collections (with summaries and recommendations) on the website Goodreads.com. They created several digital "bookshelves" for different genres and added texts to those shelves throughout the year. Because this cumulative task required students to write a *review* of each text, Ms. Harris began the year by exploring the hallmarks of effective reviews. She used a strategy originated by Kelly Gallagher (2011) to provide students the opportunity to practice the skills of review in a high-interest/low-stakes setting: Students chose a product that they were excited about *or* a product they were interested in purchasing. They looked up the item on Amazon.com (or another website) and read the product's reviews. After surveying the reviews, students chose the three most "helpful" ones and made notes about why they were helpful. They also chose the worst reviews and made notes about why they were *not* helpful. After this independent portion of the investigation, students shared their findings, and the class made a list of criteria for a helpful review. Each student then wrote a product review, posted it on an online bulletin board using the application Padlet, and partnered up for a peer review using the class-generated list as a set of guidelines. They also received feedback from Ms. Harris (on Padlet) and had to receive her approval before posting the review to the actual product website. The list of review criteria and the models explored through this scrimmage activity supported students throughout the year as they wrote reviews on their young adult book choices. Because students finished their texts

at different rates, Ms. Harris needed them to be able to review and post independently; this scrimmage set them up to do so.

Each scrimmage example presented in this chapter reflects a relevant, real-world scenario, designed to give learners a sense of purpose. Engaging in these minitasks exercised both disciplinary and 21st century skills while providing students with practice opportunities. Teachers used these scrimmages to gather formative assessment data and provide targeted feedback to prepare students to effectively tackle the summative task or project. The "Planning for Instruction" portion of the planning tool in Appendix B prompts teachers to proactively consider opportunities for assessment, practice, and scrimmage within their own performance-based units of study.

Shaping Instruction as the Unit Concludes

Returning to our athletic metaphor, good coaches consider the culminating performance—the game or the meet—as a learning opportunity in itself. It is like a summative assessment in that it counts—scores or times are posted on a scoreboard, in the paper, and on websites. Moreover, athletic events embody authentic performance—that is, the players compete against others, and there is usually an audience (spectators) watching the performance. But effective coaches don't simply celebrate victories or lament defeats and move on. They use the game performances, win or lose, as rich learning experiences.

A teacher in a performance-based class can also treat the summative assessment—the final performance or project presentation—as a formative experience. Although a summative assessment most likely results in a grade in the gradebook, lessons learned from it can inform success in future assessments (projects or performances). Using valid, reliable rubrics (as described in Chapter 4) is part of this process. Students should know exactly why they were or were not successful on each aspect of the performance or project. Some teachers approach the evaluation of a final project or performance as a game tape—they allow students to study their feedback, make necessary revisions, and resubmit. Other teachers prefer to address any patterns of weaknesses and shortfalls in student performance through targeted instruction in the future.

Although individual teachers can use authentic tasks and projects to benefit their own students, having a common set of performance tasks or projects opens up the potential for teachers to examine student work together through professional learning communities (PLCs). McTighe (2013) describes the benefits of such a PLC process:

> When teachers meet in role-alike professional learning teams (e.g., by grade level and subject areas) to evaluate the results from assessments, they begin to identify general patterns of strengths as well as areas needing improvement. By regularly examining student work, teachers properly focus on the broader learning goals (including understanding, transfer, habits of mind), while avoiding a fixation on standardized test scores only. The regular use of such a professional learning process provides the fuel for continuous improvement while establishing a professionally enriching, results-oriented culture. (p. 5)

Finally, like a good coach, a good teacher is mindful that the game isn't everything. Accordingly, teachers in performance-based classrooms collect and report on *multiple measures* of student learning. Although we are advocates for increased use of authentic assessment tasks and projects, these do not come at the expense of more traditional assessment measures. Certainly, teachers will continue to use tests, quizzes, and skill checks to assess students' learning of basic knowledge and skills. Teachers may use a test to assess knowledge and a performance to assess key skills and understandings (Wiggins & McTighe, 2005).

Conclusion

Teachers in performance-based classrooms function like coaches in athletics. They recognize that their goal is not to simply cover the playbook, page-by-page. Instead, they focus on the game—the authentic performances that are targeted—and plan backward from them so that their learners can develop the necessary knowledge, skills, and strategies to perform successfully. Like coaches, performance-oriented teachers launch their season by setting the tone for success. They assess students at the start to determine the priorities for instruction and practice. Rather than waiting until the final game to see how their students are doing, they use ongoing formative assessments and scrimmages (e.g., minitasks) to determine the feedback students will need to improve.

Just like coaches on the field or on the court, effective teachers are also mindful that their students differ in their prior knowledge, interests, and preferred ways of learning. Accordingly, they will look for opportunities to tailor their teaching and assessment to meet the diverse needs of the students they serve. We'll dive into this topic in Chapter 6 as we explore specific ways of ensuring that every student finds a way to be successful.

Appendixes

Appendix B
A Planning Tool for Tasks and Projects

This tool includes a variety of prompts to consider during task or project planning. Not all prompts require consideration, so focus on those that most closely align with the purpose of the task or project, student needs, and available resources (including time). See Chapter 3 for a more detailed overview of the design variables. We've noted alignment to the chapters for ease of reference.

Content Area(s): Topic:

Grade Level: Time allotted:

Planning Task/Project Elements

1. What key learning goals will be targeted (including transfer goals)? (*Chapters 1 and 3*)
2. What are the Driving Questions? (*Chapter 3*)
3. How will authenticity be achieved? Select as many as are applicable. (*Chapters 2 and 3*): ☐ Context ☐ Impact ☐ Processes ☐ Product ☐ Audience ☐ Personal Connection
4. Individual Element (*Chapters 2 and 3*):
5. Collaborative Element (*Chapters 2 and 3*):
6. What are the success criteria (i.e., rubric categories)? (*Chapters 4 and 7*)
   a. Individual Element(s):
   b. Collaborative Element(s):
7. Task/Project Vignette (brief description) (*Chapters 2 and 3*):

Planning Instruction

1. What kind of research–if any—will students complete? (*Chapters 5 and 6*)
   a. What *digital* resources may you need (e.g., websites, tools [see Appendix C])?
   b. What *physical* resources will you need (e.g., supplies, equipment)?
   c. What *personnel* resources will you seek (e.g., experts, audience)?

2. What authentic models or examples of previous student work might you present as exemplars? (*Chapter 4*)
3. What information do you want to gather/pre-assess before you launch the task/project? (*Chapter 5*)
4. How will you launch the task/project? (*Chapter 5*)
5. What topics/skills may require full-class instruction? Small-group instruction? (*Chapter 5*)
6. What topics/skills may require iterations of practice? (*Chapter 5*)
7. What "scrimmage" opportunities will you provide? (Chapter 5)
8. When and how will you monitor progress and provide feedback throughout the unit? (*Chapter 5*)
9. What additional assessments may be needed to supplement the evidence gained from the task or project (e.g., tests, quizzes, skill checks)? (*Chapter 5*)

Planning for Differentiation

1. What additional scaffolds might be needed? (*Chapter 6*)
   a. For students who need support with time management:
   b. For students who are learning English:
   c. For students who need reading support:
   d. For students who need writing support/alternative modes of delivery:
2. When might you need to provide targeted tasks to different groups of students (e.g., through stations)? (*Chapter 6*)
3. What opportunities might you provide for student choice? (*Chapter 6*)
   a. Personalizing or generating the driving questions:
   b. Providing options for project focus:
   c. Providing product, performance, or audience options:
4. How might you provide additional challenge to students needing more advanced work? (*Chapter 6*)
   a. Providing more complex readings and resources:
   b. Introducing alternative perspectives:
   c. Increasing the level of expertise:

Crafting the Environment

1. How might you structure the physical arrangement of your classroom for different parts of the task/project? (*Chapter 7*)
2. How might you build a culture of teamwork? (*Chapter 7*)
3. What roles are needed and how should they be assigned? (*Chapter 7*)
4. What channels of communication will you establish so that students can voice their needs, both to you and to other students? (*Chapter 7*)
5. What time management tools might you and your students employ to increase the efficiency of task and project implementation? (*Chapter 7*)

Appendix F
PBL for 3rd and 4th Grade ELA and Math

Children's Book Challenge

Transfer Goal:

- Research a need and plan strategically to address it

Driving Question:

- How can we enhance the number and selection of children's books in our local library?

Knowledge:

- Characteristics and examples of various literary genres/purposes: *realistic fiction, historical fiction, traditional literature, science fiction, fantasy, mystery, informational text, biography, autobiography, poetry*
- How to analyze data
- How to create picture graphs, scaled bar graphs, and line plots to display data sets
- Organizational structures and tools for writing

Skills:

- Analyze texts for purpose/genre, topic, and intended audience
- Create and administer surveys to determine favorite topics and genres of the student body
- Conduct research to evaluate text selection for variety in terms of purpose, topic, and intended audience
- Collect and organize facts, details, and reasons to support a main point
- Convey research findings through text and images
- Convey research findings through charts and graphs
- Craft informative and opinion pieces to encourage community action

Project Description:

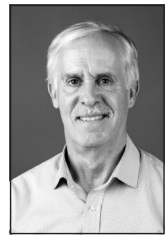
- We know our school library has a wonderful collection of books for students of all ages. It also offers many choices to students with many different interests in topics and genres, so that—during the school year—we all can be reading something we like.
- We also know that it's important for students to continue reading even when school is closed for winter, spring, and summer breaks. Our local library can help us find books we like even when school is closed. But does it have as wide a selection of book levels, topics, and genres as our school library? Does it have enough books to allow many kids to check out books they like at the same time?
- We will investigate the book topics and genres available in our school library. We will also conduct research to figure out the favorite topics and genres of the students at our school (each group will survey a different grade), as well as how many books they read during school breaks.
- Next, we will investigate the selection of children's books at our local library and decide what kinds of books it might need to add to its collection to meet all students' reading needs.
- We will analyze our research findings and create a list of recommendations for our local library. We will present our findings and recommendations through persuasive presentations that convey facts, reasons, and personal stories through words, images, charts, and graphs.
- Members of the local library staff, city council, and local community groups will attend our presentations, so we must be professional and persuasive if we want to enlist their help!
- Our school librarian and the local librarian will serve as experts for us as we work on this project, so we will need to prepare and ask them good questions.

	Ready to Present	Minor Revisions Needed	Major Revisions Needed
Research on the number and kind of books in the school library (ELA Content and Process)	• Your explanations of each genre's purpose and characteristics are expertly captured in your descriptions and examples. Students would know exactly how to find books they like. • Your examples reflect a wide variety of topics and grade levels. There is something every reader would relate to.	• Your explanations of each genre's purpose and characteristics are captured in your descriptions and examples. Students would have some idea how to find books they like, but more detail would be helpful. • Your examples reflect a variety of topics and grade levels. There is something most readers would relate to, but more examples would help.	• Your explanations of each genre's purpose and characteristics are incomplete or unclear. Students would need more detail and more examples to find books they like. • Your examples need more variety in topics and grade levels, or more examples are needed for readers to be able to find something they like.
Survey Research (ELA Process)	• Your survey is expertly worded to specifically address students in your target grade level. • Your survey is designed so that it targets only one "data point" per question. • Your survey questions are so clear that students will know exactly how to answer them.	• Your survey is worded so that it would make sense to the students in your targeted grade level. • Your survey is designed so that students might give more than one "data point" per question. • Your survey questions are clear, but students may be confused about how to answer a few questions.	• Your survey needs to be reworded to make sense to the students in your targeted grade level. • Your survey is designed so that most students would give more than one "data point" per question. • Students will be confused about how to answer almost all of your questions.

	Ready to Present	Minor Revisions Needed	Major Revisions Needed
Research on the number and kind of books in the public library (ELA Content and Process)	• You conducted such a thorough examination of library books that we understand exactly what kinds of books are and are not available to readers in your grade level. • You provide such crystal-clear examples of books that are "plentiful" and books that are "scarce" that the library will know exactly what kinds of books are needed.	• You conducted a thorough examination of library books. We have a good idea of what kinds of books are and are not available to readers in your grade level, but we might need to investigate a bit more. • Your examples of books that are "plentiful" and books that are "scarce" are clear but lack detail. The library may need to do some more research to figure out exactly what kinds of books are needed.	• Your examination of library books needed a closer eye for detail. We have a fuzzy idea of what kinds of books are and are not available to readers in your grade level. • The library staff will need to do more research to figure out what kinds of books are well-stocked and what kind of books they need to add to their collection.
Picture Graph, Scaled Bar Graph, and Line Plot (Math Content and Process)	• You accurately capture and display all important data from your survey research and your library research. • You include at least one of each type of graph (picture, bar, and line); you make wise decisions about which graph to use when so that your data are clearly and expertly communicated.	• You capture and display important data from your survey and your library research with a few missing or inaccurate points. • You include at least one of each type of graph (picture, bar, and line), but your decisions about which graph to use in each situation makes it difficult to understand your findings.	• Your data from your survey and your library research are incompletely or inaccurately captured and displayed. • You are missing at least one type of graph (picture, bar, and line), or you have chosen graphs that are not suited for the kind of data you are trying to display.

	Ready to Present	Minor Revisions Needed	Major Revisions Needed
Picture Graph, Scaled Bar Graph, and Line Plot (Math Content and Process) —(*continued*)	• Each graph is constructed accurately in both scale and data display.	• There are minor errors in the scale and/or the display of your data.	• There are major errors in the scale or the display of your data.
Presentation (ELA Process)	• Your persuasive argument is expertly supported by important facts, convincing reasons, and moving personal stories. • You used a balanced combination of words, images, charts, and graphs to present your case. • Ideas are compellingly presented, engagingly organized, and easy to follow.	• Your persuasive argument is supported by clear facts, logical reasons, and personal stories. • You used a combination of words, images, charts, and graphs, but one mode was used much more than the others. • Ideas are clearly presented, logically organized, and—for the most part—easy to follow.	• Your argument would be more persuasive if you included more or clearer facts, reasons, and stories. • More images, charts, graphs, or words are needed to make your presentation clear. • Ideas are difficult to follow at times.
Professional Quality and Impact	• Writing style, choice and presentation of visuals, proofreading, and presentation style enhance the credibility of your argument. You make the audience pay attention and motivate them to help the library get more books.	• Writing style, choice, and presentation of visuals, proofreading, and presentation style do not detract from the credibility of your argument. You make the audience pay attention to your whole presentation.	• Writing style, choice and presentation of visuals, errors, and presentation style detract from the credibility of your argument. Your audience pays attention to most but not all of your presentation.

About the Authors



JAY McTIGHE

KRISTINA J. DOUBET

ERIC M. CARBAUGH

Jay McTighe brings a wealth of experience from a rich and varied career in education. He served as director of the Maryland Assessment Consortium, a collaboration of school districts working together to develop and share formative performance assessments. Previously he was involved with school improvement projects at the Maryland State Department of Education, where he helped lead standards-based reforms, including development of performance-based statewide assessments. He directed development of the Instructional Framework, a multimedia database on teaching. Well known for his work with thinking skills, Jay coordinated statewide efforts to develop instructional strategies, curriculum models, and assessment procedures for improving the quality of student thinking. In addition to his work at the state level, Jay has experience at the district level in Prince George's County, Maryland, as a classroom teacher, resource specialist, and program coordinator. He also directed a state residential enrichment program for gifted and talented students.

Jay is an accomplished author, having coauthored more than a dozen books, including the award-winning and best-selling *Understanding by Design* series with Grant Wiggins. His books have been translated into six languages. Jay has

also written more than 35 articles and book chapters, and has been published in leading journals, including *Educational Leadership* and *Education Week*.

With an extensive background in professional development, Jay is a regular speaker at national, state, and district conferences and workshops. He has made presentations in 47 states within the United States, in 7 Canadian provinces, and internationally to educators in 37 countries on six continents.

Jay received his undergraduate degree from the College of William and Mary, earned his master's degree from the University of Maryland, and completed postgraduate studies at the Johns Hopkins University. He was selected to participate in the Educational Policy Fellowship Program through the Institute for Educational Leadership in Washington, D.C., and served as a member of the National Assessment Forum, a coalition of education and civil rights organizations advocating reforms in national, state, and local assessment policies and practices. Jay may be reached via e-mail at jay@mctighe-associates.com and on Twitter @jaymctighe.

Kristina J. Doubet is a professor in the College of Education at James Madison University in Harrisonburg, Virginia, where she has received the Distinguished Teacher Award, the Madison Scholar Award, and the Sarah Miller Luck Endowed Professorship for Excellence in Education. As an independent consultant and ASCD faculty member, Kristina has partnered with hundreds of schools, districts, and organizations around initiatives related to differentiated instruction, the Understanding by Design framework, classroom assessment, digital learning, and classroom management and grouping. In addition to authoring numerous articles in journals including *Kappan* and *Educational Leadership*, she is the coauthor (with Jessica Hockett) of *Differentiation in Middle and High School: Strategies to Engage All Learners* and *Differentiation in the Elementary Grades: Strategies to Engage and Equip All Learners*. She also coauthored *The Differentiated Flipped Classroom: A Practical Guide to Digital Learning* (with Eric Carbaugh) and *Smart in the Middle Grades: Classrooms That Work for Bright Middle Schoolers* (with Carol Ann Tomlinson). Kristina's current research focuses on adolescent literacy and innovative school structures for adolescent students who are learning English. She taught middle and high school language arts for 10 years and has also served as an instructional coach and a curriculum developer in elementary and middle school classrooms. Kristina resides in Harrisonburg, Virginia, and can be reached at doubetkj@jmu.edu, www.KristinaDoubet.com, and on Twitter @kjdoubet.

Eric M. Carbaugh is a professor in the Department of Middle, Secondary, and Mathematics Education at James Madison University, where he has received the College of Education's Distinguished Service Award, Madison Scholar Award, and been twice nominated for the college's Distinguished Teacher Award. Eric has worked with more than 80 schools and districts on performance-based assessment, differentiated instruction, the Understanding by Design curriculum framework, effective use of instructional technology, and other various educational best practices. In addition to numerous articles and book chapters, Eric is coauthor, with Kristina Doubet, of *The Differentiated Flipped Classroom: A Practical Guide to Digital Learning*. He is the journal editor and board member for the Virginia ASCD chapter. Eric taught secondary school social studies as well as elementary language arts and history. He lives near Charlottesville, Virginia, and can be reached at carbauem@jmu.edu and on Twitter @emc7x.

Related ASCD Resources: Authentic & Project-Based Assessment and Learning

At the time of publication, the following resources were available (ASCD stock numbers in parentheses).

Print Products

Authentic Learning in the Digital Age: Engaging Students Through Inquiry, by Larissa Pahomov (# 115009)

Cultivating Curiosity in K–12 Classrooms: How to Promote and Sustain Deep Learning, by Wendy L. Ostroff (#116001)

Everyday Problem-Based Learning: Quick Projects to Build Problem-Solving Fluency, by Brian Pete and Robin Fogarty (#117057)

Learning in the Making: How to Plan, Execute, and Assess Powerful Makerspace Lessons, by Jackie Gerstein (#119025)

Project Based Teaching: How to Create Rigorous and Engaging Learning Experiences, by Suzie Boss and John Larmer (#118047)

Real-World Projects: How do I design relevant and engaging learning experiences? (ASCD Arias), by Suzie Boss (#SF115043)

The Relevant Classroom: 6 Steps to Foster Real-World Learning, by Eric Hardie (#120003)

What If? Building Students' Problem-Solving Skills Through Complex Challenges, by Ronald A. Beghetto (#118009)

ASCD myTeachSource®

Download resources from a professional learning platform with hundreds of research-based best practices and tools at http://myteachsource.ascd.org.

For more information, send an e-mail to member@ascd.org; call 1-800-933-2723 or 703-578-9600; send a fax to 703-575-5400; or write to Information Services, ASCD, 1703 N. Beauregard St., Alexandria, VA 22311-1714 USA.