The MyWays™ Student Success Series

All reports in the series are available for download at myways.nextgenlearning.org/report.

Visual Summary
Introduction and Overview

Part A: Adolescence in an Age of Accelerations

Summarizes specific real-world realities and conditions confronting today’s young people.

Report 1: Opportunity, Work, and the Wayfinding Decade
Report 2: 5 Roadblocks to Bootstrapping a Career
Report 3: 5 Decisions in Navigating the Work/Learn Landscape
Report 4: 5 Essentials in Building Social Capital
Report 5: Preparing Apprentice-Adults for Life after High School

Part B: Broader, Deeper Competencies for Student Success

Provides a composite definition of student success in learning, work, and life.

Report 6: Welcome to the MyWays Student Success Framework
Report 7: Habits of Success — for Learning, Work, and Well-being
Report 8: Creative Know How — for a Novel, Complex World
Report 9: Content Knowledge — for the Life Students Will Lead
Report 10: Wayfinding Abilities — for Destinations Unknown

Part C: Redesigning the Learning Experience for the MyWays Competencies

Brings the broader and deeper competencies of the MyWays Student Success Framework into educational practice.

Report 11: Learning Design for Broader, Deeper Competencies
Report 12: Assessment Design for Broader, Deeper Competencies

About this report

Report 11, Learning Design for Broader, Deeper Competencies, shares an overview of learner-centered paradigms, focuses on the growing importance of authenticity, and introduces three MyWays learning design constructs that support the broader, deeper competencies — Whole Learning, Wider Learning Ecosystem, and Levers for Capability and Agency. The report also offers resources to support initial moves toward implementation.

Report 11 is the first of two reports in Part C of the MyWays Student Success Series. Part C, “Redesigning the Learning Experience for the MyWays Competencies,” explores how to bring the broader and deeper competencies of the MyWays Student Success Framework into educational practice, focusing on key constructs for learning design and assessment design.

The MyWays Student Success Series examines the through-line of four essential questions for next generation learning and provides research and practice-based support to help school designers and educators to answer these questions. The series consists of 12 reports organized into three parts, plus a Visual Summary and Introduction and Overview.

The primary researchers and authors of the MyWays Student Success Series are Dave Lash, Principal at Dave Lash & Company, and Grace Belfiore, D.Phil., Principal Consultant at Belfiore Education Consulting.

MyWays is a project of Next Generation Learning Challenges, an initiative of the non-profit EDUCAUSE. MyWays is supported through a grant from the William and Flora Hewlett Foundation with additional support from the Bill & Melinda Gates Foundation, the Barr Foundation, and the Oak Foundation.

nextgenlearning.org

© 2017 EDUCAUSE. This work is licensed under a Creative Commons Attribution 4.0 International License.

Cover photo courtesy of Project Lead The Way.
REPORT 11

Learning Design for Broader, Deeper Competencies

Young people need experiences that actualize new cognitive and social skills, that foster curiosity, persistence, and competence; that nurture the will to learn and the desire and the courage to invest in future learning experiences. They need learning settings that are demanding yet also responsive to developmental needs and differences... and they need experiences that provide opportunities to contribute — to a discipline, cause, community, or traditional or emergent cultural endeavor.

—Robert Halpern

Introduction

The previous Parts A and B of this series have explored “Adolescence in an Age of Accelerations” and, as a result, the need for “Broader, Deeper Competencies for Student Success.” Those 10 reports address the Why and the What of student success. Part C, comprised of this report and Report 12, addresses the final two questions in the MyWays Through-line: the interrelated How of learning design and How of assessment design.

In this context, Halpern’s quote is particularly useful if we convert it to a series of questions: How do we create experiences that actualize new cognitive, social, and navigational skills? How do we foster curiosity, persistence, and competence? How do we nurture the will to learn and the desire and courage to invest in future learning?

The challenges the nation faces in preparing our students for a rapidly changing and unpredictable future are not to be underestimated; however, it is also true that our understanding of learning science and adolescent development has never been keener. There is growing consensus for learning experiences that address the whole person, that engage deeper understanding, that prepare learners to ask new questions and seek new types of answers, and that ultimately support learners in their self-development and their ability to continue learning throughout their lives.

The MyWays Project has also suggested two key parameters relating to learning design for broader, deeper competencies. First, competencies build over time, so starting early (in developmentally appropriate ways) is vital. The life-defining decisions that young people make in the wayfinding years immediately following high school require different forms of experience, agency, and responsibility than traditional learning design engenders. Second, there is no substitute for real world immersion and authentic learning. Most of the competencies in the MyWays Student Success Framework require an...
integration of higher thinking skills and real-world abilities. Both these themes are explored in this report, which focuses on three key learning design constructs that we believe are essential to next generation learning: Whole Learning, Wider Learning Ecosystem, and Levers for Capability and Agency.

These themes are not isolated “good ideas” — they emerge directly from the MyWays research on the accelerating world in which we live, and the kinds of competencies our students need to thrive in it. As a quick review for readers who have previously read reports from Parts A and B, and for those other readers who are starting here in Part C, we provide two overview graphics to summarize our analysis. The first features the 5-5-5 Realities, 15 key factors and trends that students will confront. For more on the implications of these challenges, and on the nature of adolescent development in today’s world, see the Part A reports.

The second graphic summarizes the synthesis the MyWays team created of 20 student competencies needed for success in learning, work, and life, clustered into four domains in ways that elevate the agency-driven, agile, and navigational aspects of the broader, deeper competencies. For more on the nature of the domains and key principles for addressing them, see the Part B reports.

In Part C, we deal with learning design and assessment design. While we devote one report to exploring each of these two aspects of learning experiences, they can and should not be separated in practice. In particular, MyWays’ adherence to the idea of assessment as and for learning means that Report 12 is in many ways an extension of the current report, and we urge you to look at the two together.
In this report, we provide an overview of the design of learning for broader, deeper competencies by presenting the following:

- A brief snapshot of efforts to reimagine learning through learner-centered paradigms
- An exploration of the growing importance of authenticity, as illustrated through the MyWays Field of Learning (our “ballfield” graphic)
- An introduction to three MyWays learning design constructs that support authenticity:
  1. Whole Learning through junior versions
  2. Impacts and opportunities of the Wider Learning Ecosystem
  3. Levers for Capability and Agency to help students develop the MyWays competencies
- A quick resource dive for broader, deeper learning that includes
  - Starter resources
  - Three simple MyWays evaluation tools and a case study for how to use them
  - A guide to sources for competency-related deeper implementation tools, such as rubrics and learning progressions

### The learner-centered design landscape

If our analysis of the age of accelerations, the uncertain work/learn landscape, and the essentials in building social capital has taught us anything, it is that we must reimagine students’ experience of “school.” Similarly, if the richer and more agile competencies that learners need to succeed personally and help society thrive drive us to a particular focus for learning, it is toward a learner-centered paradigm.

A range of genuinely inspiring work in this vein is being supported nationwide by education innovators both longstanding (Montessori organizations, the Coalition for Essential Schools, the New York Performance Assessment Consortium) and new (Next Generation Learning Challenges [NGLC], the Hewlett Deeper Learning Network, Digital Promise, EdLeader21, NewSchools Venture Fund, High Tech High, and XQ SuperSchools). However, transforming learning to the extent required for the 5-5-5 Realities — and in ways that will reach all learners — is a substantial undertaking. Education Reimagined, an initiative of the national nonprofit Convergence, brought together a group of “28 influential and diverse education leaders, thinkers, and innovators for a... dialogue process” to tackle this crucial challenge, “uniting those with divergent views to reimagine learning.” The resulting document, *A transformational vision for education in the US*, is “designed to catalyze a new national conversation about education transformation and to become a rallying point for a network of pioneers.... It puts forward a vision for the future of learning but does not provide a one-size-fits-all answer for how to get there,” and is intended to spark “conversations about how this vision could manifest itself in the diversity of communities across the country.”

This new vision for learning is highly aligned with MyWays’ focus on learner agency and with the four MyWays competency domains. The latter is hardly surprising, as Education Reimagined endorsed the knowledge, skills, and dispositions domains of the Council of Chief State School Officers’ competency framework (one of the many consulted in developing MyWays; see the competency framework alignment
chart on page 6 of the *Introduction and Overview of the MyWays Student Success Series*). To ensure
development in these domains for all learners, Education Reimagined envisions learning experiences
characterized by the five interrelated elements illustrated in the following graphic.

![Diagram of five interrelated elements: Competency-Based, Personalized, Relevant & Contextualized, Learner Agency, Socially Embedded, Open-Walled.]

Education Reimagined is careful to assert that these five elements “are not meant to serve as a blueprint
for a rigid model to be implemented everywhere. Instead, they serve as a ‘North Star’ to guide innovation.
They do not create a single roadmap that can be followed the same way in every learning community.
Realizing new designs will be an iterative process....”

We strongly support this inclination to value diverse, user-driven approaches rather than to provide
prescriptions, and to account for local context and different perspectives; indeed, as we discuss in the
*Introduction and Overview* and in Report 6, we follow the same approach in the MyWays Project.

**Education Reimagined’s distillation curates and integrates current efforts in learner-centered learning design, providing a useful context for situating our deeper dive into learning design for broader, deeper competencies.** The organization’s work combines two of the more prominent streams of
next generation learning (competency-based education and personalized learning) with three design
characteristics that we view as essential to addressing the challenges our learners face now and in the
future (opportunities for learner agency, a rich social embeddedness, and the authenticity that comes from
opening walls to the Wider Learning Ecosystem).

While the number of future-ready learning frameworks increases annually, some live at a more granular
level of learning design; we examine a few of those in the section, below, on Whole Learning. The
broader frameworks share many elements, while also contributing valuable additional perspectives based
on their origin and the purposes they serve.

A comparison of NGLC’s Student Perspective of Next Generation Learning with Education Reimagined’s
Learner-centered Design Framework and LEAP Innovation’s Personalized Learning Framework
illustrates the scope of attributes being addressed, as well as a broad convergence around some elements
(see the box below).
## Comparison of Learner-Centric Design Frameworks

<table>
<thead>
<tr>
<th>Ed Reimagined</th>
<th>Next Generation Learning Challenges</th>
<th>LEAP Innovations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Learner-centered</strong></td>
<td><strong>Next gen learning – the student perspective</strong></td>
<td><strong>Personalized learning</strong></td>
</tr>
</tbody>
</table>

- **Competency-based**
  - Organized around my own progress against goals I understand
  - Constantly informed by different ways of demonstrating and measuring my progress
  - Challenging but achievable, with opportunities to become expert in an area of interest (R)*

- **Personalized, relevant, and contextualized**
  - Personalized to the ways I learn best
  - Flexible so that I can try different ways to learn
  - Interactive and engaging so that I participate in the learning
  - Relevant to the life I’d like to lead (R)
  - Agile and supportive when I need extra help
  - Challenging but achievable, with opportunities to become expert in an area of interest (R)*

- **Learner agency**
  - NGLC does not highlight agency as a single competency, as it maintains that students need to develop agency and capability across all competencies. As the following illustrate, agency is embedded in all NGLC competencies:
    - Organized around my own progress against goals I understand (R)
    - Challenging but achievable, with opportunities to become expert in an area of interest (R)
    - Relevant to the life I’d like to lead (R)

- **Socially embedded**
  - Collaborative with teachers and peers, unlimited by proximity (R)

- **Open walled**
  - Collaborative with teachers and peers, unlimited by proximity (R)
  - Relevant to the life I’d like to lead (R)
  - Challenging but achievable, with opportunities to become expert in an area of interest (R)

- **(No equity equivalent)**
  - Available to me as much as it is to every other student (R)

* R = repeated in two or more cells
Clearly, the three frameworks have substantial overlap and synergy. Some differences in content and formulation can be attributed to the context in which they were created, the organizations involved, and the purpose for which they were created. Education Reimagined’s broad, systems-level learning framework arose, as described above, from a consensus exercise among stakeholders from many different types of organizations — from teacher unions to right-of-center funders — and was intended to spark further discussion and collaborative action. Several years before the other two frameworks were created, NGLC intentionally set out to provide a list of attributes of next generation learning from the student perspective, drawing on learner experiences within its network of early innovator grantees. One of NGLC’s Regional Funds for Breakthrough Schools partners is LEAP Innovations, a Chicago-based connector and learning innovation incubator that also leads the Learning Assembly, a national community of practice. While the LEAP framework’s top level (included in the table) broadly matches the others, LEAP has also built out next-level indicators, strategies, and examples to help translate what its personalized learning attributes look like in practice. For additional information on these and other implementation tools, see the resources box at the end of this report.

**Activating learning for broader, deeper competencies**

As our brief scan of learner-centric design frameworks illustrates, there is already some excellent thinking and innovative practice in the design of learning experiences to help students prepare for their (and our) future. Building upon this work, rather than attempting to replicate it across the board, this report focuses on three specific elements of learning design that we identified as essential given our research on the 5-5-5 Realities (Part A, Reports 2–4), on preparing adolescents to become apprentice-adults (Part A, Report 5) and on the resulting competencies students need to address these challenges (Part B). When we pared it all down, we found that the essential design elements all relate in some way to the idea of authenticity. We therefore start with this concept, using a visual thinking tool we call the *MyWays Field of Learning*.

**Extending the Field of Learning**

Recall Halpern’s description at the start of this report notes that students need experiences that “actualize new cognitive and social skills; that foster curiosity, persistence, and competence... and that provide opportunities to contribute — to a discipline, cause, community, or traditional or emergent cultural endeavor.” In particular, a substantial majority of the competencies identified in the MyWays Student Success Framework require an integrated combination of thinking skills and real-world abilities. Not surprisingly, especially in the domains of Creative Know How and Wayfinding Abilities, “textbook learning” is insufficient. Further, brain science has confirmed that students also learn Content Knowledge more durably and transferably through authentic learning activities, while Habits of Success can be developed only in complex, socially situated experiences that require or enable learner agency.

The MyWays Field of Learning (below) is a useful visual device for envisioning learning activities in terms of the thinking skills and real-life abilities they engender. For example, High Tech High’s Mayan Community Project, discussed later in this report and analyzed at depth in a MyWays Toolkit worked case study, is at the high end of the thinking skills axis and spans both simulated and bounded authentic
settings. Later, we will compare this project to learning experiences on a variety of locations on the field. But first, let’s focus on the field itself.

The left axis progression will be familiar to many, but it is worth spending a little time to understand the progression in authenticity represented by the values on the right.

Now that you are familiar with the field itself, let’s look at two versions that illustrate the shift in learning required by the move to a new, broader definition of student success. The first graphic...
that follows maps the common student experience in traditionally-designed public schools, while the second shows a broader, deeper experience that occupies much more of the field.

This first mapping represents the traditional student experience: lots of transmission-based instruction in the classroom, some labs and research projects focused on higher-order thinking skills, a smattering of more authentic extracurricular activities, and, in some cases, simple minimum-wage afterschool or weekend work with little training.

Notice how closely most traditional learning, being transmission-based, hugs the left axis. This approach has dominated school learning, despite the fact that learning science and human development research show that experience-based, student-driven learning in more complex, authentic situations is more durable and transferrable.

To develop broader, deeper competencies attuned to today’s real-world challenges, we need to rebalance the learning field by incorporating more learning that leaves the left-field line and expands into the rest of the field, as illustrated in the next iteration, below.
This second field shows an extended and rebalanced mix of learning experiences, with significant additions further out the right axis in the situated learning zone. In this zone, higher-order thinking skills are engaged within real-world settings that are either bounded (within a controlled setting or one with some constant variables) or complex (unbounded).

**Situated learning** broadly describes many learning approaches that are embedded in activity, context, and culture. In these approaches, knowledge is presented in situations that typically use that knowledge, and social interaction and collaboration are essential, with novices learning from those with more expertise until they eventually become experts themselves. These ingredients are all essential for developing the MyWays Student Success Framework competencies.

We further analyze some of the situated learning models below. Our [set of Field of Learning slides](#) is also freely available, and includes an empty grid on which you can plot your own set of learning experiences.

---

**Knowledge is presented in situations that typically use that knowledge, and social interaction and collaboration are essential, with novices learning from those with more expertise.**
Three constructs to help activate the broader, deeper Field of Learning

To understand more deeply the fundamental changes required to embrace expanded competencies, we offer three key constructs that can be particularly helpful to those committed to including greater authenticity in their students’ day-to-day learning experiences. Because these concepts are interrelated, we start with a brief preview of all three, as fully describing any one of them requires reference to the others.

1. **Whole Learning, through junior versions (seven principles)**
   As we analyzed how design for learning can most effectively support students’ attainment of the richer, deeper definition of success, we were consistently brought back to one foundational concept: the creation of learning experiences that “honor the whole.” That is, learning experiences that, by their holistic nature, are authentic enough to engage learner curiosity, purposeful enough to contribute to the development of learner identity, and complex enough to require the kind of adaptable skills that are needed in a global and accelerating world. To explore this key design parameter, we draw on David Perkins’ principles for learning by wholes, and his guidance on how to do this through “junior versions.”

2. **Wider Learning Ecosystem (five experience zones and a support infrastructure)**
   One of the most striking implications of our exploration of the broader, deeper competencies required for a complex future is the realization that it is difficult, if not impossible, to help learners develop them without going outside the school walls. In the same way, holistic, authentic learning often occurs more readily in the varied and complex experiences available in the “real world.” The benefits of this kind of learning are extensive, as it enables students to practice and develop competencies in the world in which they will live and work — making connections to mentors and brokers, and developing identity, agency, and social capital. We explore wider ecosystem experiences across five zones: school-based extracurriculars, college-based learning, career-related learning, community-mediated learning, and every day formal and informal learning.

3. **Levers for Capability and Agency (eight levers for learning)**
   As we describe in the Introduction and Overview of the MyWays Student Success Series, the MyWays idea of *competency* encompasses both capability and agency. We highlight here a set of eight “learning levers” that brain science and learning research indicate are effective in developing these two aspects across all competencies. The levers to enhance and develop capability (defined as “knowledge and the understanding to use it in real-life situations”) include: durable retrieval, desirable difficulties, cognitive apprenticeship, and authentic success. The levers to enhance and develop agency (defined as “a deep and durable self, acting to shape one’s development and environment”) include: scaffolded self-management, supported self-reflection, adult-world immersion, and maker empowerment. We introduce these eight levers in the last section of this report.
LEARNING DESIGN CONSTRUCT 1: Whole Learning, through junior versions

“I’m struck by how visions of meaningful education seem to speak to three basic agendas: enlightenment, empowerment, and responsibility.”

—David Perkins

While developing MyWays, we were heartened to encounter a growing array of learning approaches and models highly relevant to the kind of teaching, learning, and assessing essential to meaningfully address the broader and deeper life competencies that MyWays promotes. Among the many approaches that provided insights on and pathways to the development of the MyWays richer competencies are Robert Halpern’s youth development-informed principles; Big Picture Learning’s *Leaving to Learn*; High Tech High’s personalization and adult-world connections; the Buck Institute’s project-based learning (PBL) Gold Standard and High Quality PBL initiative; Linked Learning’s Behaviors of Learning and Teaching; Digital Promise’s challenge-based learning and maker learning; and NGLC’s school-design grantees.

All of these approaches, at their best, are grounded in more authentic, holistic, and purpose-driven learning that engages whole person competencies. However, each also has its own aims, context, approach, and strengths. In addition, each of these learning approaches is practiced in ways that foster the broader, deeper learning competencies — and also, in other places, is implemented in ways that are highly unlikely to prepare learners for the 5-5-5 Realities. They may fail, for instance, to enable student agency and the development of Habits of Success, to engage creativity and other Creative Know How competencies, or to develop the adaptability and Wayfinding Abilities that today’s learners need to thrive in a disordered world.

We had begun highlighting design elements that we felt were essential for the kind of experiential learning needed to develop the broader and deeper outcomes that MyWays embodies when we were delighted to discover David Perkins’ principles for *Making Learning Whole*. His identified outcomes — “enlightenment, empowerment, and responsibility” — certainly fit with the self-reflective, agency-oriented, and socially situated competencies explored in Part B. His principles also address the most vital implications of advances in learning and developmental science. Perkins, of Harvard’s Project Zero, draws on his previous work in teaching for understanding and other foundations familiar to next generation educators; this connects his work to our other key learning constructs as well: Wider Learning Ecosystem and Levers for Capability and Agency.
Perkins’ principles not only matched our emerging design parameters, they also reflected and extended many of the elements of the next generation approaches mentioned above. Thus, in our view, his principles extend MyWays’ “rosetta stone” functionality from competency definition to learning design (see a crosswalk of selected models below).

**Whole Learning...**

Perhaps most crucially, Perkins’ central message of **learning by wholes** is perfectly aligned with the fact that most of the competencies needed to address the 5-5-5 Realities require the integrated combination of thinking skills and real-world abilities displayed in the authentic, applied, and relevant experiential (or “situated”) learning zone of the MyWays Field of Learning — that is, **Whole Learning experiences that involve real working, playing, and co-creating.** And we embrace his insistence that, while educators need to design learning with detailed forethought and care (more on this below), students’ experience of learning should be largely holistic and purposeful, and full of organic self-discovery.

Perkins points out that learning most meaningful real-world activities, complex career tasks, demanding arts performances, or challenging sports requires more than, on one hand, learning “about” the activity or, on the other hand, developing skills in isolated elements of the activity. Instead, deep and engaged learning requires **understanding how the whole thing works, actively engaging in the different elements of the activity, experiencing what works and what doesn’t, and completing and delivering an authentic product to a real audience.** As Perkins asserts, “the natural engaged purposefulness of such occasions is what learning by wholes aims to capture.”

... through “junior versions”

Because “Whole Learning” (such as doing scientific research, making a commercial, running a community organization, playing tennis, composing a song, or making and keeping friends) is complex, Perkins introduces the concept of a **junior version** — that is, **an accessible experience that is scaffolded in developmentally appropriate ways, while still keeping the essence of “the whole,” with all the purpose, motivation, and complexity that that entails.** Think of the relationship between a science fair project and a real project at your local biotech company; between a high school play or community stage... 

“[P]articipants in a musical theater production have the opportunity to experience the process from soup to nuts: the initial line reading, the blocking, the development of the set design, the back-and-forth between directors and actors, and, ultimately, the integration of these elements in a final performance.”

“The ‘periphery’ of schools was often more vital than the core... extracurriculars like dance, theater, sports, newspapers, and more that were full of student passion and apprenticeship-style learning... [T]hese spaces are not only more fun and engaging, but they also offered better platforms for learning.”

—Jal Mehta
production and a professional show; between shooting a student film and a TV documentary; or between T-ball or Little League and the game of baseball.

Junior versions, we believe, play a vital role in the design of learning to address the breadth and depth of the MyWays competencies, in ways that also promote agency and capability. After presenting the Whole Learning principles in more detail, we will return to junior versions to consider which design characteristics make them work as meaningful and motivating versions of Whole Learning.

For now, it is worth noting that these characteristics can be woven not only into extracurriculars, but also into service-based and work-based learning — as well as into high-quality classroom-based PBL, which perhaps presents the greatest challenge. In school settings, and particularly in core curriculum areas, the environment for Whole Learning, use of the Wider Learning Ecosystem, and development of Levers for Capability and Agency (all of which are critical to designing powerful learning that addresses the richer competency goal-line) is often challenged by existing culture, structures, and accountabilities. That is why, of all the vital aspects required to redesign learning for the world in which our students will live, MyWays highlights these three concepts, starting with the central concept of learning by wholes.

The seven principles of Whole Learning: honoring the whole while embracing the (hard) parts

As the center of the honeycomb below shows, Perkins’ first principle — learn by wholes through junior versions — encapsulates the full model. The other six principles provide essential parameters and criteria that, together with the first principle, create a conceptual tool for understanding and evaluating learning design that enables and promotes the broader, deeper life competencies represented in the MyWays Student Success Framework.

Note: we have adapted the wording of Perkins’ principles slightly, moving away from his strong “game” metaphor — Perkins uses the term “whole game learning” — to a set of wordings that more directly express educational principles and practices; our goal in doing this was to avoid the need for additional translation from principles to implementation. Perkins himself suggests this as an option in his book.
The seven principles of Whole Learning
Learning by Wholes through junior versions

1. Learn by wholes through junior versions
   Engage in learning experiences that capture entire cycles of creation or performance, and provide junior versions of real-world complexities and ambiguities

2. Make the learning worthwhile
   Choose learning that motivates because it addresses significant questions, produces meaningful products, and harnesses personal connection, choice, and creativity

3. Work on the hard parts
   Develop durable skills and competencies through deliberate (brain-science-informed) practice, actionable feedback, and reflection on content and process

4. Learn in a variety of settings & ways
   Include many diverse learning experiences, developing key bridges for transfer, including the making of mental models and exposure to a variety of cues and contexts

5. Uncover the hidden rules & norms
   Get below the surface of learning by discovering the field’s unwritten rules and norms, why they exist, how to work within them, and when to work around them

6. Learn from others & together
   Harness the benefits of learning as a collective and socially situated enterprise, ranging from pairing with peers to joining real-world communities of practice

7. Learn how to learn
   Students drive their own learning through autonomy, choice, self-reflection, and self-management of authentic learning opportunities

In this first introduction to all the principles, we urge you to pause to read through each of the brief descriptions to the right. While described in seven elements, you will see that these principles also cluster into familiar learning design goals: principles 1 and 2 (Learn by wholes and Make the learning worthwhile) focus on the big picture of a meaningful, motivating learning experience. Principles 3, 4, and 5 (Work on the hard parts, Learn in a variety of settings & ways, and Uncover the hidden rules & norms) incorporate important specific practices that help address transfer to the real world. (The Levers for Capability and Agency, covered in the last section of this report, provide additional guidance here.) Principle 6 (Learn from others & together) and Principle 7 (Learn how to learn) bring in the collaborative and self-directed learning approaches that have become essential in a world of accelerations.

While our purpose in this section of the report is to explore the Whole Learning principles in a conceptual way, it is worth establishing that there are thousands of students learning this way right now in schools across the country. The Whole Learning construct aligns well with the learning approaches of many next generation learning approaches, as illustrated in the following matrix, which maps the principles against a selection of well-known models. Following the matrix, we review the Whole Learning principles and then offer an example of how they work in practice using the PBL model.
### How Whole Learning Aligns with Selected Next Generation Learning Models

It is worth reiterating that Whole Learning is a set of principles rather than a model. We use the principles partly because they are so useful in highlighting the elements within most of the leading next generation learning models that are particularly relevant to student agency, capability, and approaches that engage the full range of broader, deeper student competencies. The following matrix illustrates these points.

#### Next Gen Learning Models Mapped to Whole Learning

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Whole Learning, through junior versions</td>
<td>Interactive &amp; engaging</td>
<td>Contextualize: Tie subjects together and keep it real</td>
<td>Authenticity</td>
<td>High quality integrated projects that are: [see rest of column]</td>
<td>Authenticity public product</td>
</tr>
<tr>
<td>Make the learning worthwhile</td>
<td>Personalized to way I learn best; Flexible so I can try different ways; Relevant to life I’d like to lead</td>
<td>Inspire: Customize learning to motivate each student</td>
<td>Relevance; Choice; Play</td>
<td>Relevant</td>
<td>Challenging problem/question; Student voice &amp; choice;</td>
</tr>
<tr>
<td>Work on the hard parts</td>
<td>Organized own progress v. goals; Agile when need help; Different ways to demonstrate &amp; measure progress</td>
<td>Practice; Timing (opportunity to sequence learning); Time (customized learning schedule)</td>
<td>Outcome focused (and Rigorous)</td>
<td>Reflection Critique &amp; revision</td>
<td></td>
</tr>
<tr>
<td>Learn in a variety of settings &amp; ways</td>
<td>Reach: Network beyond school walls</td>
<td>Application</td>
<td>Integrated</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uncover the hidden rules &amp; norms</td>
<td>Challenging but achievable; opportunity to become expert in area of interest</td>
<td>Challenge</td>
<td>Rigorous (and Outcome focused)</td>
<td>Sustained inquiry</td>
<td></td>
</tr>
<tr>
<td>Learn from others &amp; together</td>
<td>Collaborative with teachers &amp; peers, unlimited by proximity</td>
<td>Connect: Create a community of learners</td>
<td>Relationships</td>
<td>Collaborative</td>
<td></td>
</tr>
<tr>
<td>Learn how to learn</td>
<td>Empower: Activate students to lead their own learning</td>
<td></td>
<td>Student directed</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**NOTE:** This matrix is based on lists of elements, strategies, or principles published by the different models, rather than on an exhaustive analysis of each model’s comprehensive set of processes and practices. 

---

**Going deeper with the seven Whole Learning principles**

We have summarized Perkins’ seven principles below, emphasizing the elements most vital to supporting richer, future-ready competencies and the agency and adaptability required to survive and thrive in the accelerating world we described in Part A.

We encourage you to take the time to read and consider these descriptions; the principles encompass approaches and practices that are invaluable in understanding how to foster richer, deeper, more future-ready learning. Indeed, we highly recommend that you refer to Perkins’ book, *Making Learning Whole,*
which provides chapters on each principle that offer rich background, research, and practice examples. Later in this report we illustrate how these principles relate to practice-oriented approaches such as PBL, and provide an example Whole Learning in practice, using simple evaluation tools that you can use to analyze the learning experiences in your own school or network against these principles.

#1 Learn by Wholes through junior versions

The challenge we all face

Formal learning delivered through traditional practices rarely gives us the chance to see, from the start, the big picture of what we are learning (instead of just an element of it), or to play an active role in the learning (rather than simply learning about something). These issues contribute to students’ lack of motivation, ability to retain and build on what they have learned, and opportunity to develop the agency that is central to developing the broader and deeper life competencies.

Key elements

Provide authentic learning experiences that capture entire cycles of creation, production, or performance, and often mirror the complexities and ambiguities of real-world work and life (“the whole”), but are designed and scaled in developmentally appropriate ways or simulated with appropriate scaffolding (“junior versions”). Provide the big picture, even if you need to start with elements, and engage the learner in student-directed work that requires engagement in problem solving, explanation, argument, evidence, strategy, and skill or craft.

Examples

Some examples here include high-quality project-based, problem-based, inquiry-based, and studio-based learning, along with rich simulations, role-playing scenarios, and case-based learning. Other examples are student-led co-curriculars and extracurriculars, such as theater productions and science and history fairs; structured workplace learning such as apprenticeships; “youth-led” boy and girl scout troops; and service learning. The junior version should be holistic, as well as incorporate Perkins’ six other principles.

Later, we offer links to a case study that illustrates how one well-documented High Tech High PBL project — the Mayan Community Project — incorporates Whole Learning principles, as well as links to a set of simple tools to help you plan or evaluate your own junior versions to support broader, deeper competencies.

#2 Make the learning worthwhile

The challenge: Lack of engagement

Students become less and less engaged over their school years because much of the content they are learning does not relate to their lives or their future. The learning process also fails to meet students where they are or to increase their understanding enough to motivate them intrinsically.

Key elements

Make learning worthwhile by focusing on content that motivates students because it yields insights into many circumstances (through the use of big/essential questions, and understandings of wide scope) and because it applies to learners’ lives. This is exactly the kind of content that also enhances transfer (see #4). With regard to the learning process, create engaging beginnings and well-paced formative and performance assessments; cultivate confident, proactive mindsets; foster energy through individual choice and authentic, meaningful products, performances, or outcomes; enable personalization in junior versions so that students can alter the challenge level to best induce flow; and harness creativity through storytelling and inquiry.
#3 Work on the hard parts

The challenge: Developing core skills

Students either avoid the parts of learning that are hard for them, or they spend time working on them in ways that brain science has shown us are less than effective for retaining knowledge and developing skills. And feedback fails to "stick" unless it is integrated back into the whole.

Key elements

Embrace areas of difficulty by pursuing regular episodes of deliberate, brain-based practice (spacing out study periods, and interleaving or alternating study sessions on different topics) for durable retrieval that feeds back into the whole (for more on this, see the “Levers for Capability” section below); use ongoing, actionable, formative peer- and self-assessment; provide informative and timely feedback so students can improve and reapply their skills; and create learning projects, games, or simulations that incorporate opportunities to practice known areas of difficulty at developmentally appropriate levels within holistic, active learning experiences.

#4 Learn in a variety of settings & ways

The challenge: Applying skills and knowledge across domains

The one thing we know about our students is that their future will differ from our reality today in ways we can’t foresee, and that it will encompass ongoing change. The issue of learning transfer is thus critical, but research confirms that learners often do not transfer learning from one context to another.

Key elements

Increase the likelihood of successful knowledge and skills transfer in novel circumstances by: focusing on learning aimed at big/essential questions and understandings of wide scope; using reflection and abstraction to promote mental model-making as a bridge for transfer; and including many diverse applications to increase the likelihood that learners will encounter cues and contexts similar to those they will find in the future. Increasing variety can also be as simple as partnering a student with a learner of a different age or background to discover different perspectives and approaches.

#5 Uncover the hidden rules & norms

The challenge: Making sense of it all

Learning in school, work, and society has significant aspects that are invisible to learners but essential in developing expertise and efficacy. This applies within the disciplines of Content Knowledge and the applied skill areas of Creative Know How, Habits of Success, and Wayfinding Abilities. So, why not just make the tacit aspects visible as strategies and teach them? Because research shows this alone doesn’t work.

Key elements

Deeper learning in any competency requires students to get below the surface of learning. To progress from novice toward experienced practitioner, learners need scaffolding to uncover strategies, understand causality and power, and pursue inquiry. Although it helps to make the rules or strategies explicit, real understanding of the hidden rules and norms can come only from participating actively, applying strategies, and personally managing this process. Basically, you have to participate, make missteps, and iterate. Offering access to “very junior versions” and mentoring/modeling by adults and peers, as well as paying attention to both process and product in learning design, are particularly relevant here.
#6 Learn from others & together

### The challenge: Learning to collaborate

*Much of traditional school learning is a solo exercise. Yet both learning research and the experience of real-world learning illustrates the benefits of learning from and with others. In particular, the development of student agency, as well as capability in all of the broader life competencies, requires opportunities to apply knowledge, skills, and self-management within a social context.*

### Key elements

“Learn from others & together” involves harnessing the benefits of learning as a collective enterprise by paying attention to participation structures. These structures range from discussion and dialogue, pair problem solving, and cross-age tutoring to learning systems designed around zones of proximal development with social scaffolding. The concept of situated or social learning suggests that, to be truly meaningful, learning requires an authentic context of social endeavor. In practice, all of this adds up to a true community of practice that includes students and adults across the Wider Learning Ecosystem, where students engage in legitimate peripheral participation, taking on simple but productive tasks that further the community’s goals while enabling the students to both become familiar with community principles and progress in competence.

#7 Learn how to learn

### The challenge: Becoming a habitual learner

*Students within traditional schooling are more passengers than drivers of their own learning. Even within more active learning models, students may not meaningfully direct their own learning or be supported to reflect on it. To thrive in a world of change, however, learning to learn — which is critical both as a Habit of Success and as an element of agency across all the competency domains — is the most important learning our students can do.*

### Key elements

Learning design must put students in the driver’s seat and give them significant autonomy and choice. In addition to specific learning skills such as study practices, time management, and problem solving (reflected in the MyWays capability levers), learners need to develop the skills of self-reflection and self-management (reflected in the first two MyWays agency levers). Attention to these skills should be explicit, as well as infused within core learning with appropriate “just-in-time” direct transmission or other stand-alone instruction as needed. Like any other type of learning, this works best within a Whole Learning approach, starting with scaffolded junior versions of holistic experiences that involve a gradual release of responsibility.

### How to design a junior version

To reap the benefits of learning by wholes, educators need to be able to structure learning experiences in a way that is both practically feasible and supports their students in developmentally appropriate ways. This is where the “junior” part of “junior versions” comes in. Perkins provides guidance on designing these learning experiences, suggesting that the exercise is part process and part art. We have interpreted and organized his suggestions into a single set of design parameters. As we mentioned earlier, creating a junior version is like inventing a Little League, lab environment, or Model UN for the full activity — transforming a real-life working, creating, or playing experience into a developmentally appropriate learning experience as follows:
• Capture the basic structural features of the full-scale activity.

• Throw out less important aspects of the activity, while leaving its spirit and shape intact.

• Swap in simulations, replicas, or scaled-down versions for elements of the activity that are not developmentally appropriate or practically possible.

• Set and maintain a reasonable level of challenge for the group and for individual learners; this essential step requires educators to know
  – the learners, including their prior knowledge, interests, and learning agility; and
  – the stages of developmental readiness, or “what happens to knowledge, understanding, and self-awareness as children advance from kindergarten through high school and beyond.”

• Include all seven Whole Learning principles, balancing an experience of the meaningful whole with attention to the hard parts, hidden norms, and group work, as well as with reflection on how elements of the learning are happening.

• Prototype and tune the learning experience to align with student capabilities. “The first time around,” says Perkins, “involves at least as much learning for you as it does for the learners, because you are almost always wrong in some ways… Only over two or three cycles of working with real learners in real situations can we expect to home in on truly well-calibrated junior versions.”

An example of Whole Learning: PBL that honors the whole

As mentioned above, most educators are familiar with examples of junior versions. These examples include well-designed project-based, inquiry-based, and studio-based learning; rich simulations; student-led co-curriculars, such as theater productions, history fairs, and DECA; service learning; youth development projects; scouting or Odyssey of the Mind programs; and apprenticeships. All such experiences can be valuable junior versions — if they capture the essence of a “whole” and embed the remaining six Whole Learning principles.

Like most educational endeavors, Whole Learning is a complex enterprise. The devil here is in the details of implementation, and in building the culture and capacity to “hold the whole.” Take PBL, one of the fastest growing and perhaps most broadly developed implementations of Whole Learning practice. These days, shout-outs to PBL come from all corners of the education world; examples include the focus on High Tech High in Ted Dintersmith’s documentary Most Likely to Succeed, Getting Smart’s It’s a Project-Based World campaign, The Buck Institute’s High Quality PBL initiative, and New Hampshire’s pairing of PBL professional development with its longstanding focus on performance assessment.

At the same time, organizations such as the Buck Institute, EL Education, Big Picture Schools, New Tech Network, and others have been practicing PBL for decades, developing its culture and iterating its processes and tools. The combination of a mature community of practice, the challenges of popularity, and calls to scale make PBL an instructive case study in the paradox of Whole Learning and how intentional design is needed to address it.
A Whole Learning Movement: High-Quality PBL

“It’s easy to do project-based learning,” notes Tom Vander Ark, “it’s just hard to do it well.” What longtime PBL practitioners know is that authentic learning experiences contain a paradox. Learning science, deeper learning practice, and our analysis of the needs of an accelerating world all indicate that the most effective learning experiences are holistic and authentic, giving learners organic opportunities for ownership and agency. Yet behind the scenes the experience also often needs enough — but not too much — intentional design and developmental scaffolding to ensure that learners can discover, practice, develop, and interact in ways that will enable them to move toward their richer learning goals.

Perkins’ Whole Learning principles provide direct guidance on addressing this paradox. Principle 1 can be thought of as the prime directive: learn by wholes. Whole, authentic, purposeful learning creates a culture aimed at engaging learner identity, deepening understanding, and preparing learners to work in and contribute to the real world. At the same time, principles two through seven are also essential, driving the hard, behind-the-scenes work of enabling students to develop durable skills, self-reflect, collaborate, and learn to drive their own learning. Those ready to embrace these principles need to come to grips with the underlying learning architectures and the carefully developed processes and tools — the planning templates, learning progressions, rubrics, and protocols for critiques and performances — that make these learning experiences work effectively. The MyWays Levers for Capability and Agency (outlined later in this report) highlight the learner, educator, and interpersonal practice elements of this considered practice.

Concerns about PBL, like other types of Whole Learning, often focus on one side of this paradox or the other. Some educators are concerned that competencies, progressions, and rubrics, instead of being used appropriately within a Whole Learning framework, will instead be used to organize the learning or assessment in ways that “atomize” skills and learning. For how it could all go wrong, see the “remedial creativity” box in Report 6, and the whole food versus “nutritionist” processed food analogy in this blog by Michael Petrilli. “Right now,” PBL expert Thom Markham asserts, “not all PBL is equal, and we’re not to the point in which all PBL supports the whole child. Too often, the goal is to cover standards under the guise of ‘student-centered’ instruction.”

Other educators are worried that PBL may be authentic, and even holistic, but not rigorous. PBL’s growing popularity has raised a concern that hands-on activities or interesting experiences are being tacked on to other types of instruction and labeled PBL, without resulting in deep and engaging learning. How to balance the two sides of the paradox?

First, honor the “whole”

Markham, in this MindShift blog, provides excellent advice on how to design the kind of PBL likely to “break students out of the box of conventional thinking” through five big ideas, all of which live within the holistic, authentic experience:

- **See PBL as a mindshift, not a method.** “When done well, [PBL] takes students deep. It can awaken as well as teach, help students dig into their psyche a bit, and actually mature young people... PBL gives us a path forward out of the industrial past and into a world that requires a deep set of attitudes and skills necessary for navigation.”

- **Put challenge first.** “Obviously standards need to be addressed.” However, “start with a challenge that excites students. Daydream. Muse. Envision students’ faces at the end of the project. Once the vision and
intention is fixed — and a teacher feels the challenge — that’s the time to return to linear mode: What standards will students learn, and how?”

- **Get a lot better at Driving Questions.** It is not “well understood that the question or the problem is the high leverage key to deeper learning.”

- **Turn skills and content into one conversation.** “PBL offers a learning experience that seamlessly blends core concepts, key facts, reflective thinking, careful judgment, and skillful application of knowledge — all of which coalesce into a solution to a meaningful problem.”

- **Coach for openness.** “A skillful PBL teacher does much more than teach, and PBL offers amazing opportunities to go for the real gold in education: helping young people become open, curious adults.”

Markham’s advice is highly aligned with both the MyWays competencies and the seven Whole Learning principles in that it also consciously targets “innovation, design thinking, self-directed learning, and, most critically, the kind of wisdom required in today’s world rather than the 1950s.” (See the related reference to “knowledge on the way to wisdom” in Report 9’s box on high-leverage concepts.)

**Second, ensure effectiveness and quality**

As the demand for and interest in PBL increases, a growing resource set of processes, tools, exemplars, and case studies are being shared and published with the intention to improve practice on PBL’s “hard parts.” Following are three types of resource:

- **The Buck Institute** updated its 8 Essential Elements of PBL to a new Gold Standard PBL model in 2015 and contributed to Getting Smart’s It’s a Project Based World campaign in 2016; it has now launched the High Quality Project Based Learning (HQPBL) initiative. Iterative and collaborative, HQPBL is creating a High Quality PBL Framework focused on processes, products, principles, and purposes, and guided by a 27-member steering committee and 90-member advisory committee. The Spring 2017 draft is currently available for use and comment.

- **Next Generation Learning Challenges** has connected the dots between the MyWays Student Success Framework, Whole Learning, and PBL, and curated some of the relevant resources in two Whole Learning/PBL blogs: “Hard to Do Well: PBL and Authentic Learning Design,” and “Embracing the Hard Parts: 8 Video Resources for Authentic Learning Design.” (We put the focus on video resources because we feel that Whole Learning PBL is one of those things you just need to see in action!)

- **Newtech Network**, a leading design partner focusing on student-centered PBL, offers a graphic that captures the difference between doing projects as “dessert events” (top line) and a PBL learning experience that starts with a complex challenge and includes iteration, reflection, and authentic demonstration of learning. As the graphic illustrates, Whole Learning PBL is an engaging experience of discovery based on an intentionally designed process. It’s “both/and.”

- **Other avenues** for schools looking to join communities of practice with well-regarded offerings in project design, significant teacher development, and a culture of student empowerment include Project Lead The Way and Virtual Enterprises. The key with any implementation of PBL is for school designers, educators and, indeed, learners to invest in constructing their own authentic learning experiences that incorporate the Whole Learning principles, but these programs offer valuable and highly aligned resources and supports for this work.
What Whole Learning PBL looks like in action: a sample project and tools for your use

We provide further resources to help you understand Whole Learning in action and to assist you in evaluating your own projects and approaches through the analysis of a sample Whole Learning PBL project: the Mayan Community Project, from a High Tech High middle school using some simple MyWays matrix tools based on the concepts and constructs in this report. For further description of these resources see the MyWays Tools and Mayan Worked Case Study resource box at the end of this report.

The seven Whole Learning principles work together with the Wider Learning Ecosystem and the Levers for Capability and Agency. While, as mentioned previously, the Levers provide additional support to the Whole Learning principles relating to how learners acquire, retain, and use knowledge and skills, harnessing a broader range of complex, rapidly-changing, and diverse experiences that exist outside the classroom walls is vital to developing the kind of competencies our students need. We turn next, on the following page, to explore this Wider Learning Ecosystem, survey the various experience zones within it, and look at some of the key issues involved in harnessing its potential for Whole Learning.
LEARNING DESIGN CONSTRUCT 2: The Wider Learning Ecosystem

“Clearly, we face an urgent need to open up the learning landscape in America.... To do so, we need to create a richer fabric of learning opportunities for a diverse population of youth. The ‘we’ in this reform extends beyond traditional academic resources. A much broader segment of society needs to collaborate to find the domains and means to engage our young people in meaningful learning. Only then can we provide growth experiences that focus our young people’s passion and energy.”

—Robert Halpern, It Takes a Whole Society

One of the most striking implications of our exploration of the broader, deeper competencies required for a complex future is the realization that it is difficult, if not impossible, to help learners develop them without going outside the school walls. As definitions of readiness and success expand from good grades, high test scores, and a high school diploma to the kinds of agency and capability required for the age of accelerations, our students need new competencies: Content Knowledge that will enable learners — just as it does real-world practitioners — to solve problems, weigh options, and make decisions; Creative Know How, optimized for transfer in rapidly changing situations; Habits of Success that can be developed robustly in a variety of learning and work contexts; and Wayfinding Abilities that require “lines of sight” to careers and the adult world. As Halpern notes, “It makes little sense to take large numbers of inexperienced individuals who are the same age and relative maturity, place them in an isolated setting, and ask them to use that particular setting to grow, mature, gain knowledge, and experience.” But this is exactly what traditional schooling does.

A range of established learning opportunities for students already exists outside the formal school walls and day, including afterschool activities, library programs, and internships. While some of these offerings are excellent, the vast majority of students lack access to many of them. Students who do have access to such opportunities are likely to find what 2Revolutions calls “a labyrinth of siloed program sectors” with offerings that vary in quality, have little connection to academic work, and pay little attention to helping learners build social capital. To address the MyWays broader, deeper student competencies, schools need to better integrate the higher quality offerings from the established out-of-school sectors, offer students an even wider range of learning opportunities, and embed all of this into all students’ personalized learning paths. As Big Picture Learning says, “All students need to leave school — frequently, regularly, and of course, temporarily... To accomplish this, schools must take down the walls that separate the learning that students do, and could do, in school from the learning they do, and could do, outside.”

Elliott Washor and Charles Mojkowski
temporarily... To accomplish this, schools must take down the walls that separate the learning that students do, and could do, in school from the learning they do, and could do, outside. The learning in both settings and contexts must be seamlessly integrated.” Big Picture calls it “leaving to learn.” As Michele Cahill describes it, this means, in essence, that “we need to redefine ‘school’ as a porous organization.”

We think of the Wider Learning Ecosystem as the broad expanse of opportunities beyond classroom learning that can enrich collective and individual learning as well as student agency — an ecosystem that is ever expanding and changing, with a spectrum from formal to informal prospects, accessed through a wide range of settings, media, and players. Our MyWays team is so convinced of the critical importance of engaging with this Wider Learning Ecosystem in a systemic and networked way that we are creating a separate resource on this topic, funded by the Barr Foundation; the forthcoming resource will be available on the MyWays website.

In this report, we provide a preview of what we’re finding, including a look at the benefits of wider ecosystem experiences in addressing the 5-5-5 Realities, the MyWays competencies, and Whole Learning. We also offer a model that organizes the ecosystem into five zones and a support infrastructure; describe a set of three engagement models for how schools, networks, and districts can incorporate the overwhelming benefits of “the real world” in their learning model; and provide a glimpse into a few design considerations for incorporating these benefits.

Exploring the Wider Learning Ecosystem

“At the heart of an ecosystem for learning is an ability to draw upon the assets of an entire city or community to support students as they grapple with the two primary tasks of adolescence: building competencies and forming their identities.”

—Michele Cahill, Smart Cities

Opportunities for learning are everywhere around us, presenting themselves all the time. While there is much joyful life learning to be pursued in this way, our work on the 5-5-5 Realities, adolescent development, and Whole Learning suggests that our students also need more intentionally organized and supported real-world learning experiences to help them prepare to navigate in an accelerating world. With the student at the center, the full spectrum of learning opportunities outside of classroom learning become what MyWays, with its focus on a broader, deeper set of competencies, calls the Wider Learning Ecosystem, or WLE.

In exploring the various ways that individual students can engage with learning, we found it possible to group most of the experiences relevant to K-12 learners that relate to learning, development, identity building, and social capital into five experience zones:
Navigating any of these zones requires a support infrastructure that enables young learners to access, engage with, and get the most out of the learning, growing, and networking they do outside the school walls. These supports echo the three parts of the MyWays Developmental Framework for Social Capital depicted in Report 4 as a tree, extending from root social supports that “sustain human well-being and growth,” through the trunk of adult developmental relationships that “foster self-exploration, growth, and engagement in the larger world” to the branches of connections and networks that provide the “resources needed to accomplish one’s goals.” In the Wider Learning Ecosystem, the webs of support and roles of institutional agents discussed in Report 4 are, as in the work/learn landscape, necessary for all young learners and absolutely vital for those who might start with fewer resources to begin with.

For more on the five zones, see the boxes at the end of this WLE learning section. But first, we explore why embracing WLE experiences is worthwhile. We also examine how educators can approach this opportunity to give their learners experiences that help them learn in ways particularly suited to a world that demands that they navigate complexity, exercise empathy, and practice other broader, deeper competencies.
The benefits of engaging with the Wider Learning Ecosystem

Engaging with the real world outside the school walls offers extensive benefits for learners, for educators, for schools, and for communities. The potential is still being explored, but some of the benefits already identified by those involved in wider ecosystem learning include the following:

- **Provides the opportunity and conditions for “whitewater learning”**
  
  A core benefit of this type of learning is that it offers students an authentic acceleration lane for dealing with our complex, uncertain world and its plethora of challenges and opportunities. This benefit is captured nicely by Douglas Thomas and John Seely Brown’s concept of “whitewater learning.” They define whitewater learning as
  
  “the ability to acquire useful knowledge and skills while at the same time practicing them in an environment that is constantly evolving and presenting new challenges.... Our learning environments need to match the speed and degree of change happening in the world around us. Rather than systematically accumulating static ‘stocks’ of knowledge, students now need to learn how to actively participate in ‘flows’ of knowledge by engaging with others in the construction of new knowledge. This kind of knowledge is often put to use at the same time it is learned. It is most effectively acquired through solving problems with others in an environment that offers an abundance of challenges and unlimited opportunities.”

  Employers have been acknowledging this for some time; when asked for the most important factors in hiring a recent college graduate, their top choices relate not to academic performance but to more contextual, real-world experiences — including internships, jobs, volunteering, and extracurriculars.

- **Enhances deep learning through increased authenticity**

  Earlier in this report, we explored the need to increase the authenticity of learning experiences at the same time as we increase the level of critical thinking required of our learners. Engagement with the WLE offers a vastly increased array of learning experiences moving out the right hand real-world abilities axis, including those in the “golden rectangle” of situated learning. As highlighted by Thomas and Seely Brown earlier, such real-world settings are vital today because “our learning environments need to match the speed and degree of change happening in the world around us.... This kind of knowledge is often put to use at the same time it is learned. It is most effectively acquired through solving problems with others in an environment that offers an abundance of challenges and unlimited opportunities.”

  This is one of the most compelling reasons to embrace WLE.
**Increases opportunity to engage the seven principles of Whole Learning**

Also earlier in this report, we presented the concept of Whole Learning, which draws together the characteristics of learning that targets the broader, deeper competencies, while incorporating lessons from learning science and successful deeper learning models. The seven principles of Whole Learning, repeated to the right, illustrate just how important a Wider Learning Ecosystem is to the practice of Whole Learning. While some of these principles rely fully on wider ecosystem opportunities, each of them is enhanced by learners acting in a variety of real-world communities alongside adults in meaningful work.

**Provides fertile ground for developing all four MyWays success domains**

The variety of settings, challenges, and contexts available in the WLE provide rich opportunities for learners to work on all four MyWays competency domains. The exposure to authentic contexts and professional communities of practice enhance the application of Content Knowledge and opportunities to develop agile, transferable Creative Know How. The need for increased personal responsibility and social skills, the opportunities for personal choice, and the chance to test one’s responses to new and changing environments open doors to developing Habits of Success that more teacher-driven, static learning environments struggle to provide. The WLE offers perhaps the greatest additional opportunities for developing Wayfinding Abilities. Community and work-based learning in particular offer learners access to what Generation Schools Network calls “Visions of the Possible,” and Educurious calls “Lines of Sight” to career and adult life choices that schoolchildren from any background are less and less likely to be exposed to; such access is even more crucial for learners with deep but not wide or extensive networks. When out in the world, students can begin to try out acceleration lanes to their adult lives, finding out that more is expected of them, testing which learning strategies work when they are learning and doing at the same time, and asking themselves whether they are using all the assets they have.

**Offers connection to mentors and brokers, and other forms of social capital**

As noted at the start of Report 4, “Opportunities do not float like clouds. They are firmly attached to individuals. If you’re looking for an opportunity, you’re really looking for people.” In that report, we show just how important the development of social capital is to the success of young people in the more uncertain, self-driven, flexible, and ever-changing society and economy they will need to navigate. In fact, we argue that social capital may be one of the key factors for success, as well as the limiting factor driving the opportunity gap for low-income students and students of color. Situating learning within real-world projects or work that involves adults, near-peers, community networks,
and professional communities of practice greatly increases the opportunities for youth to interact with mentors, coaches, brokers, and others who can act as connectors as these learners move out into the work/learn landscape in their wayfinding decade. As Report 4 points out, many internships and other WLE experiences fail to harness the potential for building social capital, but High Tech High, among a few other models, has long focused on this benefit (see the box at right).

- **Develops youth identity and learner agency**
  In Report 5, we discussed five developmental tasks of adolescence. Two of those — finding self, strengths, and direction, and acquiring capability and agency — are critically important to all students in developing success competencies; both tasks cry out for learning in the wider ecosystem, in which learners are called upon to develop their own resources and directions within highly challenging, and therefore stretching, situations, while also being surrounded by views of possible role models and (if they are fortunate) other supports that will enable them to safely prototype versions of themselves and work toward the self they want to be. As research cited in Report 4 suggests, the identity challenge for young people today is no longer about choosing fixed roles, but about ambiguity and continual choice. For this reason, “we need to take a long look at the conditions that prepare youth for a changing, uncertain future, including the experiences provided by the family, the peer group, the school, and the community as a whole”\(^\text{31}\) — precisely the developmental experiences in adult settings that occur across the WLE. At the same time, the development of *agency*, which MyWays defines as “a deep and durable self acting to shape one’s development and environment,” also varies by situation and is challenged by disorderly, unfamiliar circumstances. Experience in real and diverse situations is key to agency, and to help achieve growth, educators and youth advocates need to help students access and utilize a WLE that is unprecedent in its breadth and depth.

- **Improves student engagement**
  Student engagement is improved through a variety of factors, including greater satisfaction gained through the creation of productive and authentic outcomes, and greater meaning and the development of identity through connections to learners’ personal and community lives. Indeed, most of the other benefits listed above also result, as a secondary benefit, in the kind of deep student engagement in learning that improves and extends learning outcomes.

---

Ben Daley, CEO of High Tech High, tells students to choose a good mentor over what might seem like the perfect experience: “While students should look for an internship in an area of interest, they should also *carefully pick a mentor, a key piece of the experience*. It’s not about narrowly predicting what they are going to spend the rest of their life doing, *It’s much more about the relationship between mentor and student.*”\(^\text{29}\)

---

"Ultimately, the internship experience is a taste of the real world, a glimpse into various fields of interest and an enticement for what school can help students achieve. But the experience often develops personal growth, as well. I *think that internships are really, in essence, about an expansion of identity, of incorporating what you couldn’t have done before, and new relationships that you didn’t have before, into your sense of who you are. And that’s something that’s a rare commodity in our classrooms, but it’s there in abundance in the internship experiences.*”

—Rob Riordan, High Tech High\(^\text{30}\)
• **Offers additional opportunity to address equity issues**
Low-income learners, students of color, English-language learners, and those with disabilities often live in worlds with less wide-ranging community and work connections and fewer opportunities to develop other forms of social capital, while at the same time offering their own assets and funds of knowledge. In turning attention to the Wider Learning Ecosystem, we acknowledge this set of challenges up front and have designed into WLE programs and infrastructure ways to develop and enhance all learners’ abilities to build their own social capital offering. Since the 1990s, increasing income inequality and district funding cuts have only widened the extracurricular and enrichment participation gap between more- and less-advantaged families. While upper- and middle-class students have become more active in school clubs and sports teams over the past four decades, their working-class peers “have become increasingly disengaged and disconnected.”

This is particularly counterproductive, as we begin to realize the ways in which active/authentic experiences might in fact play to the strengths of these students, and just how greatly these WLE experiences may effect later outcomes. We therefore need to ensure not only that all learners have access to potentially transformative experiences, but also that those who need it are given an enhanced support infrastructure. This infrastructure should support the development of critical consciousness to help learners access the WLE themselves. Efforts should also be aimed at structural change to make their ecosystem more equitable for other learners. MyWays, like UChicago’s Foundations for Young Adult Success developmental framework, highlights the need “to strike a balance between helping youth thrive in the world as it is, and develop the skills and dispositions they need to challenge a profoundly unjust status quo.”

---

**Three ways schools engage with the Wider Learning Ecosystem**

In much of our exploration of the Wider Learning Ecosystem, we worked to keep the learner front and center. We adopted an institutional lens, however, to examine how schools organize their interaction with the Wider Learning Ecosystem in order to bring a transformed learning experience to their students. Schools and networks/districts start in different places and also have different aims for how they incorporate the WLE. In our initial scan of current practice, we’ve tracked three different approaches to such engagement:

- **Integrated engagement:** Wider Learning Ecosystem experiences are fully embedded and integrated in the school’s learning design.
- **Connected engagement:** schools connect directly at an institutional level with organizational partners to offer a particular set of WLE opportunities.
- **Facilitated engagement:** schools facilitate the engagement of individual learners with organizations or experiences of their choice within the Wider Learning Ecosystem.
Each of these approaches can be implemented along a spectrum of intensity. In addition, it is critical to note that *these approaches are not mutually exclusive; some schools use two or more in combination.* Schools looking for first steps, and those thinking deeply about longer-term strategies, should be able to find, somewhere in these conceptual options, inspiration for how they might increase their students’ engagement with the wider world.

**Integrated engagement**

Some schools’ learning designs have Wider Learning Ecosystem experiences baked into their DNA. In these cases, the wider ecosystem learning is almost always a rich “junior version,” structured to involve authentic process and meaningful product as well as real-world exposure, and to loop reflection and learning back into each student’s personal and academic learning plan. We will be exploring and analyzing these models further in our forthcoming WLE resource as they provide clues to vital design principles that can also be built into more circumscribed WLE experiences.

Perhaps the most succinct way to illustrate what makes these models different is to look at a well-known example: Big Picture Learning, the Rhode Island-based charter, which we cited at the start of this report for its practice of “leaving to learn.” Big Picture’s criteria for leaving to learn (see the box at right) illustrate what makes this embedded approach different from field trips, siloed service requirements, or individually organized, unconnected senior internship quarters: 

**integration, reflection, personalization, and the value assigned to the WLE experience.** Learners’ work inside and outside the school walls are connected and integrated in a way that genuinely changes both sides of the learning experience. Although it may not be surprising that these characteristics are visible in Big Picture Learning’s criteria for WLE opportunities, they are also woven through every one of the organization’s broader “10 distinguishers.” Learning Through Interests and Internships (LTI) clearly reflects this approach, but it is also evident explicitly or implicitly in almost every other distinguisher (look for parent and family engagement, treating each student holistically, assessment through public display of learning, an interdependence between school and community, and so on). As Elliott Washor and Charles Mojkowski put it in *Leaving to Learn,* “It’s not just about getting students out early and often, but about what they do when they get out, and how they bring their learning and accomplishments back to school.”

**Big Picture Schools’ criteria** for leaving-to-learn opportunities:36

- They are **open to all students in all grades.**
- They are an **integral part of students’ learning trajectory,** merging in- and out-of-school learning.
- They **address important learning standards** (academic, workplace, and personal).
- They **complement and supplement the in-school experience,** providing productive learning experiences that students cannot get in school.
- They **address students’ expectations.**
- They **contribute to productive learning.**
- They are awarded **academic and graduation credit.**

See also Ed Reimagined’s Open-Walled learning characteristics, and sets of principles from the National Society for Experiential Learning and the Association of Experiential Learning.37 Examples of integrated, baked-in WLE exist throughout the five WLE zones, and seem particularly strong in career-
related learning; see, for example, Generation Schools Network and Da Vinci Schools (both NGLC grantees) and Linked Learning.

**Connected engagement**

Schools may also opt to connect directly with organizational partners to offer a particular set of Wider Learning Ecosystem opportunities to their learners. This model offers the advantage of creating opportunities for a school’s entire student body, rather than relying on individual learner initiative (though within the partnerships, schools can still require learner initiative to locate and pursue particular learning opportunities). Further, some schools may see this model as easier to manage and quality-secure than individually-facilitated WLE learning, and the partnerships they pursue may further broader school/community goals.

Connected engagement often involves one-to-one partnerships between a school and one (or more) local companies, nonprofits, or community organizations for identified purposes. Schools might have such a partnership with a local community college for dual enrollment or early college programs, and/or with a local nonprofit that manages middle school shadow programs and high school internships.

Establishing and managing these partnerships is a major undertaking, but can leverage broader innovation. Resources, toolkits, and exemplar cases provide guidance on setting up and managing such partnerships.

An alternative partnership model is to join in a multi-partner collective impact initiative with an existing (or forming) initiative. High-profile examples of learning collectives include Hive and LRNG (introduced in Report 4) and Education Innovation Clusters such as Remake Learning in Pittsburgh (see also the brief description of Hive in the box to the right). Hive and/or LRNG networks exist in more than a dozen US cities as well as globally, and other types of collective impact partnerships that include learning as at least part of their purpose also exist in some form in other cities and rural regions. The community-mediated learning zone section later in this report has more on this collective approach, as will the forthcoming MyWays Wider Learning Ecosystem resource. Full participation in this kind of collective impact requires a significant commitment, but also provides a potentially transformative way to engage learners with a participatory local learning ecosystem that offers not only an exciting, broad range of learning experiences, but also offers opportunities to build social capital that will serve participants well when they transition into the local work/learn landscape. For some insight into the process of creating such a network, see the Remake Learning Playbook, which covers “the
theory and practice of building learning innovation networks, the resources and strategies required to put networks into action, and the impact of the network in schools, museums, libraries, communities, and more.”

**Facilitated engagement**

In this model, the school’s role is to *facilitate the engagement of individual learners with organizations or experiences of their choice within the Wider Learning Ecosystem*. This may entail, for example, helping a student locate opportunities and navigate connections, as well as overseeing quality and outcomes. This model can be implemented on a limited front or become the core of the educational experience. On the more limited end, some high schools let learners take part in WLE learning for a few courses or credits of their curriculum or outcome requirements. Such schools may have one WLE facilitator to help guide and monitor students who are self-directed enough to organize an experience (such as an internship, service learning, or an independent online learning course for credit).

At the other end of the spectrum are schools that are all about facilitation. The Virtual Learning Academy Charter School (VLACS), an NGLC grantee, has created an entire online system designed and built to support WLE learning in project- and competency-based ways; that system is now available for use by any individual student, school, or district in the country. Students can create their own flexible learning pathways of defined competencies through a mix of online courses, real-world projects, internships, and other experiences to earn a high school diploma. Relationships with their teachers, their college, career, and citizenship counselors, and their skills coaches are central to making this system work.

![Box]("Students will have the option to meet competencies in the learning environment that best fits their needs. This may mean that a student starts their study of English by interning at a local newspaper (LTE), completing two career related projects (LTP), mastering two English competencies while taking a college course, and completing the competency group known as English I by enrolling in two modules of an online course.”

—Steve Kossakoski, VLACS

Many next generation learning models offer education that is personalized within the school or program, though few models accomplish this personalization by facilitating individual student-initiated access to diverse wider ecosystem learning on a large scale. Schools with integrated models, such as Big Picture, Da Vinci, and Del Lago Academy, often support this approach as well. For examples, see individual stories in Living Your Future’s blog on Nashville Big Picture High School and DaVinci Schools’ new non-classroom-based independent study RISE High, opened in fall 2017, to serve homeless, foster youth, and other students with diverse learning needs.

**Other design considerations for WLE experiences and systems**

Practitioners convinced of WLE’s significant value may wish to know more about how to design it into a new learning model, how to introduce it to an existing school-based design, or to how to build on a few successful but isolated real-world components. In our forthcoming MyWays WLE resource, we will explore these issues further, as well as curate existing tools to support the various development processes.

*Here, we highlight a few key issues and considerations flagged by our initial scan.*
**Essential design components**

Two components that are clearly central are developing partnerships and establishing the necessary support infrastructure; the nature of each will depend on the engagement model you choose.

**Partnerships that employ design thinking**

Working outside school walls naturally calls for working with either organizations or individuals who live and work out there. Michele Cahill’s take emphasizes the centrality of such partnerships, as well as the agile, iterative way they need to work:

“[W]e needed to redefine ‘school’ as a porous organization and redefine ‘partnership’ as a core design element, not an add-on. When partnership is a core element of school design, students have opportunities for relationships with adults and experiences that literally expand the world that is well-known to them through connections with cultural organizations, professional and business settings, science and technical organizations, or community services.... Partnerships that are designed as core to schooling also can expand and deepen curriculum through themes, project-based learning, internships, student research, and expeditions. Design thinking gives real roles to partner organizations in a learning ecosystem.”

Tom Vander Ark’s [interview with Cahill](12m) offers more on partnerships, listening for discussion of design elements and principles, as well as the different types of partners. See also the Hive Learning Network and its collective impact partnership’s [five core principles] — creative & innovative, collaborative & cooperative, experimental & catalytic, relevant & consequential, equitable & open, and engaging & participatory — as well as Remake Learning’s [seven lessons learned] from its networking efforts over the past decade.

**A broader, deeper support infrastructure**

As our WLE construct suggests, appropriate supports are essential if learners are to benefit optimally from WLE learning. Given the nature of the wider ecosystem learning experience (increased learner agency, enhanced choice, new environments, more complexity, and greater real-world challenge), we urge educators to find inspiration in excellent youth development and school models that incorporate greater personalization and experiential learning programs (see the links at various points in this and other reports), as well as in Report 4’s MyWays Developmental Framework for Social Capital. A WLE infrastructure will need to emulate this framework’s attention to fostering well-being and self-exploration while also providing resources to enable learning and accomplishment of goals, all of which are particularly important for learners with social, emotional, or other challenges. Community partners can provide elements of this support, but schools will have to lead or instigate collective efforts on these fronts and ensure that (in all cases) the WLE experiences are integrated with classroom learning. This is likely to call for increased attention to advisories, guidance, coaching, and mentoring for all learners, and, for disadvantaged learners, even more intensive supports similar to those in the youth development programs featured in Report 4.
This support infrastructure will also need to be designed to support individual learner pathways that extend from middle school through to the wayfinding decade and the work/learn landscape described in Report 3 (particularly in the “Takeaway 4” section).

**What’s your goal? Depth and stages of implementation**

Deeply embedded and integrated Wider Learning Ecosystem learning offers substantial benefits to learners preparing for the complex and uncertain future. However, schools do not need to incorporate WLE into every aspect of their design to incorporate some of its benefits. Da Vinci Schools and Big Picture Learning represent one end of the spectrum: WLE design affects all aspects of the schools. (At Big Picture, for instance, “industry/third sector/community partners co-construct the assessment rubrics, so their standards and expectations become part of the school operating system and culture” and “relationships are horizontal, with learning being facilitated by a wide variety of adults and mentors”).

However, deep interaction with the WLE can also grow out of a defined service-learning component, such as the Cesar Chavez School for Public Policy’s progression of increasingly complex service-learning components, or a particular content focus, as in Colorado, where St. Vrain Valley public school district has partnered with IBM to integrate design thinking across its whole system. Authentic WLE learning can be included solely in parts of your curriculum, course, or schedule, and such opportunities can be implemented in stages over a period of years. One option, noted by Ron Berger of EL Education, is to try turning your field trips into “fieldwork,” having your students conduct research for a productive project by taking notes, taking photos, and interviewing experts. Regardless of the level of WLE integration, basic cultural and structural changes need to be embraced and implemented from the beginning, including ensuring that at least some opportunities are available to all students (including those with disabilities and at all levels of academic performance); that the learning in the WLE is linked to classroom learning; and that some kind of credit, badging, or evidence of learning outcomes is involved. For an excellent example of badging, see the box on Del Lago Academy’s Competency X badging system in Report 12.

**What’s your starting point?**

Plans for incorporating WLE into a school’s learning model will also depend significantly on where you start and the conditions within which you operate. These are crucial elements of the design picture, and our forthcoming WLE resource will analyze — and perhaps provide a decision tool for — various things you should consider depending on your starting point.

For example, a school already operating its classroom learning within a competency-based framework — but perhaps lacking significant experience working with community partners — will follow a much different path into the WLE than a school that has no track record with competency-based education, but considerable experience with external partners for, say, senior internships. While the former school may need to develop expertise in initiating and managing partnerships and creating a support infrastructure for
students spending time outside the school walls, the latter will need to put much greater thought into how to assess and validate the learning outcomes from new WLE experiences.

Many schools in New Hampshire, for instance, have transitioned to performance-based assessment (through the PACE program) and already address work-study practices (WSPs, which are that state’s approach to Creative Know How and Habits of Success). New Hampshire also has a forward-looking Extended Learning Opportunities (ELO) policy, defining ELO as the “acquisition of knowledge and skills through instruction or study outside of the traditional classroom methodology, including, but not limited to, apprenticeships, community service, independent study, online courses, internships, performing groups and private instruction.... School districts do not have to adopt ELOs; however, those that offer ELOs are required to have a policy for granting credits for students who successfully demonstrate competencies as a result of their participation.” However, even some of the state’s districts that are furthest along with performance assessment and WSPs have yet to make significant inroads with experiential learning or increasing learner agency; thus, for these schools, incorporating ELOs/WLE learning would require development in agency and experiential learning areas.

An initial design step, then, would be to assess which (if any) of the following learning approaches are already incorporated into your school model and/or state or district conditions: personalized learning, competency-based education, performance-based assessment, experiential learning (including authentic PBL or related approaches), and learner agency. All of these approaches incorporate learning, assessment, and/or student support components that apply when building out WLE learning — though you may need to enhance the existing components to ensure that they work for the new learning environments and the challenges your students will be encountering.

**Broader systems issues**

Several other crucial systems issues must be addressed to successfully implement WLE learning design. Some of these are within the control of educators designing a model; others must be addressed at a larger ecosystem level. These will be explored in the forthcoming MyWays WLE resource; here we highlight two issues likely to require attention at the ecosystem level.

**Evidence, assessment, and crediting of learning outcomes**

Evidence, assessment, and credit involves a range of issues related to determining what students learn from authentic, complex experiences in the real world: How can we best collect evidence of learning outcomes? Who evaluates that evidence and how? How can learners best reflect on learning in iterative cycles that enable them to improve their skills? Beyond assessment as and for learning, how are such outcomes vetted for badging, larger credentials, and high school credit? Further, will the learning platforms let you store performance evidence so that learners themselves — as well as colleges and
employers — can access that evidence over time? Collecting and crediting learning evidence in the WLE is an emerging art, but various initiatives are attempting to make sense of what’s out there. In our forthcoming WLE resource, we will summarize progress in various badging movements, portable and stackable credentials, high schools providing credit for WLE learning, colleges and companies that assess candidates based on evidence of outcomes from experiential learning, and initiatives such as those in New Hampshire that give credit to prior learning accomplished inside or outside traditional classrooms. We will also look at the extent to which personalized learning and related platforms can facilitate how schools manage wider ecosystem learning and enhance the WLE experience for students. Project Foundry and SchoolHack’s LiFT, for instance, are designed with PBL and WLE learning in mind, while Big Picture Learning’s ImBlaze platform was designed to help run internship programs so that they connect to academics and carry as much learning value as possible. Summit Public School’s Summit Learning Platform and InnovateEDU’s Cortex are also targeted at the kind of personalized, competency-based learning found in the WLE.

New educator competencies and roles

If educators within the school walls have yet to move from imparting knowledge to guiding student learning, this mindshift will need to be embraced in wider ecosystem learning. Nurturing educator support for a new vision can be challenging; change management for incorporating WLE learning will need to address this as well. Models in which WLE is fully integrated have nuanced educator recruitment, professional learning and practice, and a well-developed culture that engrains the value of authentic learning in the real world. Such models also have adapted educator roles to support both academic and social-emotional learning in that context. Big Picture Learning, for instance, already employs specialists who identify leaving to learn opportunities and establish relationships with mentors and coaches. In Report 7, we highlight schools that incorporate more adults with backgrounds in social work, psychology, counseling, and related fields into their core teams. Some might find Powderhouse Studio’s inclusion of a project manager on each learner support team surprising. However, if WLE learning continues to increase, we could soon see new educator roles similar to those projected by KnowledgeWorks: community intelligence coordinator, social capital platform developer, learning journey mentor, and education surveyor. Further, competency trackers could “tag and map community-based learning opportunities for competencies addressed”; learning naturalists could design assessments “to capture evidence of learning in students’ diverse learning environments and contexts”; and micro-credentialing analysts could “provide research-based comparative quality assurance metrics.”

More on the Wider Learning Ecosystem zones

The opportunities for learning anytime and anywhere, through organized programs, crowd-sourced initiatives, civic organizations, community maker spaces, online communities of practice, and even paid task work that also tracks competencies developed are proliferating. So, to end this section, we return to the five zones of opportunity for robust WLE learning. For further examples of learning in each zone, an analysis of zone characteristics — including common learning experience design, key zone institutions, and zone-specific partnership and funding considerations — and leads to tools and resources to help educators engage in each zone, see the forthcoming MyWays WLE resource.
School-based extracurriculars

A high school student once said to us, “I have a different idea for flipped learning. Why can’t we flip the way we learn in our extracurriculars into the main parts of the school day?” Jal Mehta makes this very argument in an excellent blog that asserts the “periphery” of schools is often “more vital than the core.” He teases out a set of characteristics that differentiate a high school theater program from standard academic learning — factors such as external audience, apprenticeship learning from near-peers, and the development of mastery, identity, and creativity. Extracurriculars cover a range of activities; those of greatest value are as fully student run as possible, and involve a real-world experience or task. Robert Putnam summarizes the impressive range of “measurably favorable” outcomes for involvement in extracurriculars, even after controlling for family income and other variables: better academic performance and labor market outcomes, better work habits, higher aspirations, and college attendance. One study showed that those consistently involved in extracurriculars were 70% more likely to go to college.

- **Co-curriculars** are school-based activities that align closely with curricular academic subjects, such as science fairs, history fairs, and model United Nations. These co-curriculars can offer many of the “periphery” benefits discussed above, depending on the degree of learner self-direction involved and the authenticity of the activity. Some science and history fair projects, for example, can provide authentic experiences of what being a scientist or historian is actually like (rather than just “studying” science or history), particularly if students seek out professionals to mentor them in their research.

- **Extracurriculars** include theater, dance, and music productions; newspapers and literary magazines; and public service activities such as community action, environmental clubs, and Interact clubs. Such activities also offer opportunities for students to experience the benefits enumerated by Mehta above.

- **Business, science, and other career-oriented national extracurriculars** such as DECA, Virtual Enterprises (VE), Junior Achievement, and First Robotics, have clubs or chapters at a range of high schools and provide an additional outlet for Whole Learning in a real or virtual setting. In VE, for example, simulated businesses trade with 5,000 other VE firms in the US and globally using a Web-based simulated banking system.

College-based learning

While based in structured educational institutions, college-based learning offers high school students a vital opportunity to expand their horizons, not just by opening up a vastly expanded set of subject learning, but also by offering students chances to develop more independent study skills and other Habits of Success; interact with near-peers who can act as role-models for academic and social growth; gain access to additional adult mentors and brokers; and gain additional lines of sight to careers. Three of the most commonly used paths in this learning zone include dual enrollment, early college high schools, and individual access to credit and noncredit college offerings.

- Successful **dual enrollment** programs, in which high school students enroll in college courses for credit from both institutions, require co-design, co-delivery, and co-validation by the participating high school and college partners, but the results for high school engagement and postsecondary success are worth it. For more on these outcomes, see this Jobs for the Future report, and What Works Clearinghouse summary of research and outcomes.

- **Early college high schools** offer the opportunity to earn both a high school degree and an associate’s degree during the high school years. Examples here include the established Bard Early College network and the Middle College High School in Santa Ana, California, where the majority of seniors earn an associate’s degree before graduation; see also the early college design features of Jobs for the Future’s early college initiative.

- **Individual access to credit and noncredit bearing college courses** can also benefit learners. These learners might range from high schoolers looking for an academic challenge or to explore a more vocationally focused area, to a foodie sixth grader with dyslexia taking a noncredit, all-age community college cooking course, thereby building career awareness, playing to his strengths, and re-energizing his learning soul.
Career-related learning

The purpose of career-related learning is not to channel learners into specific career paths early (especially now that we can’t even predict what jobs — or, more likely, project-centered teams — will be available for our learners). Work is a vital part of adult life to which students today otherwise have very little access. Forming an awareness of broad career options helps motivate learning, while participation with adults in communities of practice enhances networks for social capital. There’s no better preparation for the “whitewater learning” that students will be doing in the future than to get out (in supported ways) into the work-based world while they can still integrate these experiences with school-based reflection and guidance. Career-related learning stretches from career awareness and exploration through career preparation and into training (for more, see Linked Learning’s Work-based Learning Continuum and related toolkit).

- **Career awareness and exploration** activities can and should start in the elementary years, bringing people in to talk about their work and getting students out to visit workplaces. Generation Schools Network (featured in Report 10) starts in sixth grade with exploratory “intensives.” The Spark Program has three progressive offerings to help middle school students explore themselves and potential careers.

- Internships offer career exploration and preparation. Linked Learning, The National Academy Foundation, and Big Picture Learning (see their internship platform, ImBlaze) have all been developing their internship practice for years. See also these Teaching Channel videos on Deeper Learning school internships.

- For learners who have identified career interests early, career preparation can take a number of forms. Apprenticeship opportunities for high school students are expanding. In addition, as we explore in Report 3, other training options including bootcamps, badges, and certificate programs. While some of these are at the postsecondary level or higher, others are accessible to high school students.

- High school learners who do paid work, even without explicit training components, have been shown to improve their academic and life outcomes, provided that their work hours don’t extend beyond 15–20 hours per week.56

Community-mediated learning

These experiences include participation in the arts and performing arts, world languages, digital media, science, sports and fitness, hobbies, civic engagement, and service opportunities. Getting Smart’s Place-based Education Initiative has curated some excellent practice and resources relating to this zone. Such activities often offer excellent opportunities for learners to exercise choice and develop Habits of Success and Creative Know How.

- **Individual community-based learning providers** include libraries, museums, parks and rec departments, science centers, community centers, youth centers, YMCAs, and other traditional out-of-school time (OST) providers, which have been joined by community-run maker spaces, robotics clubs, and urban farms.

- **Afterschool and other programs based on active youth development principles** offer rich opportunities for developing the broader competencies and student agency as the programs have been targeting these qualities for years. (The MyWays framework incorporates youth development principles and encourages educators to learn from experienced youth development practitioners.) For examples, see Preparing Youth to Thrive, a field guide based on the practices of eight exemplar OST sites, with key program features and indicators. Youth action experiences, which engage learners in social justice and civic education change, can be particularly valuable.

- **Emerging collective networks.** In response to the fragmented provision of learning opportunities, a number of place-based initiatives have evolved. Among others, LRNG aims to “harness the assets of a community and transform it into a network of seamless pathways of in-school, out-of-school, and online experiences” in over a dozen cities. Hive Learning Networks, in five US cities, “empowers educators to build connected learning experiences...” through involvement with libraries, museums, schools, and nonprofit startups, as well as with individuals such as educators, designers, community catalysts, and makers. Meaningful participation in a collective ecosystem could provide transformational leverage for incorporating WLE into school design.
Every day informal and formal learning

In addition to the WLE zones mentioned above, the prospects for learning in formal and informal ways extend as far as curiosity itself. This zone encompasses anytime and everywhere learning, directed at any subject or outcome, which learners might pursue through any media or personal connection, for purposes ranging from just-in-time “need to know” learning to being drawn to learn a skill simply because it brings them pleasure. We highlight segments such as the growing prospects for online learning and the often-overlooked informal learning with family and friends.

- **Online learning** incorporates a range of activities, including taking online courses independently or as arranged through one’s school; pursuing online learning for course credit, vocational certification, or just to learn something; taking a self-paced, unsupported course or one that offers a supported or even blended learning opportunity. Schools offering learners access to these options need to design their support infrastructure to ensure age-appropriate support for successful learning. Of course, as mentioned in Report 4, online learning can also include simply tapping the knowledge of others through YouTube or Quora archives.

- **Participation in online communities of practice** offers excellent opportunities for Whole Learning based on real-world feedback, in addition to the potential to build social capital and create early inroads into the work/learn landscape. The best known examples of this currently come from programming, such as StackOverflow, a programming social network where participants earn badges and accumulate reputation points for their contributions. However, as work in different fields moves online and becomes more distributed, opportunities will increase in other areas as well. Also, age is not a barrier in these communities. Jaiken was a New England seventh grader when he joined a Minecraft server during the game’s beta release and started asking good questions; for more than a year, the server administrator in Florida coached him in setting up and running his own server for friends at his middle school. He learned not only how to run a server, but also how to manage an online community and interact productively with a mentor.

- **Informal learning with family and friends**, often an overlooked set of activities, can indeed contribute greatly to the development of the broader, deeper MyWays competencies. The Global Family Research Project’s Finding Time Together: Families, Schools, and Communities Supporting Anywhere, Anytime Learning provides an excellent set of insights into this zone. Family responsibilities, such as looking after siblings or participating in a family business, often entail substantial learning — both of specific skills and of Habits of Success. And involvement in the interests of friends and neighbors can turn into learning activities that spark personal growth and even career interest.

- **Homeschooling and unschooling**. More formal (or in many cases, simply more intentional) than the types of learning in the previous bullet, homeschooling continues to increase significantly in the US. The homeschooling community and organizations that serve it are rich sources for educators looking for ways to pursue more personalized, real-world approaches to learning. Also, lines are blurring as homeschoolers use online courses, apps, museum courses, and other local resources that can also be accessed by school-based students as part of their own learning mix. Furthermore, in some places, the walls between homeschooling and traditional schools are becoming more porous; see, for example, DaVinci Schools’ Homeschool Hybrid Program (two days of PBL at school mixed with three days of family-facilitated learning off-site) and Homeschool Collaborative Program.

Incorporating these five zones of experience expands opportunities for Whole Learning in ways that are essential to prepare students for an age of accelerations. To deepen this work across the full range of competencies in both the school setting and the Wider Learning Ecosystem, we offer a set of eight neuroscience-based practices we call Levers for Capability and Agency.
LEARNING DESIGN CONSTRUCT 3: Levers for Capability and Agency

If teaching were the same as telling, we’d all be so smart we could hardly stand it.

—Mark Twain

This section discusses the eight levers that can activate capability and agency — the two necessary ingredients of any broader, deeper competency (see the graphic below). Briefly introduced in Report 5, these levers are grounded in brain science and learning science.

In Report 5, we noted that the acquisition of capability and agency is one of the crucial developmental tasks for today’s apprentice-adults (adolescents). We define capability as “knowledge and the understanding to use it in real-world situations” and agency as “a deep and durable self, acting to shape one’s development and environment.” In its influential report, Education for Life and Work, the National Research Council (NRC) underscores that, in the 21st century, competence means “an individual becomes capable of taking what was learned in one situation and applying it to new situations (i.e., transfer).” As we have demonstrated in Part A, transfer of learning to real-world situations is increasingly challenging for today’s adolescents, who confront societal conditions such as the 5-5-5 Realities involving...
employability, learning beyond high school, and social capital. The NRC concluded that many traditional forms of K-12 education produce very low levels of transfer.

Report 5 went on to describe agency as a form of acting and improvising upon our environment, which is a process that can be learned and mastered. Often, we act and improvise through the people in that environment — parents and siblings at home, friends and strangers in the neighborhood, or fellow students and teachers at school. Accordingly, agency can be badly blunted by adverse life experiences that weaken our trust in others and our sense of control and influence over our environment and circumstance. In addition, agency is situational — we may feel confident and self-empowered in one arena, and uncertain and powerless in another. Finally, a three-part process comprises agency: the ability 1) to retrieve relevant prior knowledge and experience; 2) to project alternative courses of action and their likely outcomes based on that retrieval; and 3) to elect the course of action that judgment deems best. These same basic steps apply in school, work, relationships, and independent living. As the authors of *Make It Stick: The Science of Successful Learning* say: “At the root of our effectiveness is our ability to grasp the world around us and to take the measure of our performance.” Further, as Halpern, Siegel, and Steinberg each stress, the adolescent brain is primed for this work, but young people cannot do it alone (Report 5).

The Levers for Capability and Agency offer next generation educators guidance on interactions and learning experiences that are likely to help apprentice-adults acquire capability and agency. To identify strategies that work, we examined the growing body of evidence in cognitive psychology and neuroscience. *Make It Stick* has been of particular value. A collaboration of two cognitive psychologists, Henry Roediger III and Mark McDaniel, and writer Peter Brown, the book explores the neuroscience of learning, memory, and mastery. At the heart of this new knowledge are discoveries about creating and strengthening neural pathways — the more connections made and retrievals practiced, the greater our learning, memory, and mastery. A brief clip from the BBC documentary, *The Human Body*, demonstrates this process ([3m video](#)).

**Levers for Capability**

The first set of levers foster capability — the ability to apply knowledge in new real-world situations. Roediger, McDaniel, and Brown equate capability to mastery:

> “Mastery in any field, from cooking to chess to brain surgery, is a gradual accretion of knowledge, conceptual understanding, judgment, and skill. These are the fruits of variety in the practice of new skills, and of striving, reflection, and mental rehearsal. Memorizing facts is like stocking a construction site with the supplies to put up a house. Building the house requires not only knowledge of countless different fittings and materials but conceptual understanding of aspects like the load-bearing properties of a header or roof truss system, or the principles of energy transfer and conservation that will keep the house warm but the roof deck cold so the owner doesn’t call six months later with ice dam problems. Mastery requires both the possession of ready knowledge and the conceptual understanding of how to use it.” [emphasis added]
**Durable Retrieval**

**The Concept:** “Recalling what you have learned causes your brain to reconsolidate the memory, which strengthens its connections to what you already know and makes it easier for you to recall in the future. In effect, retrieval — testing — interrupts forgetting…. Retrieval is most effective when it is spaced, interleaved, and varied.” (*Make It Stick*)

**Discussion:** Every time we retrieve information from our brain, neural pathways are strengthened. Every time we retrieve information in a new setting — perhaps a math concept as we are estimating the cost of groceries — that information becomes connected to neural pathways associated with supermarkets, personal budgeting, and mental math tricks. This repeated stimulation of neural pathways explains why cramming for an exam fails to produce durable learning — “practice that’s spaced out, interleaved with other learning, and varied produces better mastery, longer retention, and more versatility.”

Practice spaced out over time provides the brain the opportunity for consolidation, which is then retriggered by efforts to retrieve after some forgetting, further strengthening memory.

Interleaving practice with other activities — like learning multiple job tasks in a spiraling fashion rather than one at a time — might feel confusing, “but the research shows unequivocally that mastery and long-term retention are much better.” Practice across varied settings and requirements “helps us see more nuances” and fosters better transfer of learning to new situations. Durable retrieval is one of the many levers well integrated into the Whole Learning approach discussed above.


**Desirable Difficulties**

**The Concept:** As noted in *Make It Stick*, “It’s one thing to feel confident of your knowledge; it’s something else to demonstrate mastery…. When confidence is based on repeated performance, demonstrated through testing that simulates real-world conditions, you can lean into it.” Desirable difficulties are the short-term impediments that make for stronger, more durable learning and capability.

**Discussion:** According to *Make It Stick*, “Learning, remembering, and forgetting work together in interesting ways. Durable, robust learning requires that we do two things. First, as we recode and consolidate new material from short-term memory into long-term memory, we must anchor it there securely. Second, we must associate the material with a diverse set of cues that will make us adept at recalling the knowledge later. Having effective retrieval cues is an aspect of learning that often gets overlooked. The task is more than committing knowledge to memory. Being able to retrieve it when we need it is just as important.” Desirable difficulties, a term coined by psychologists Elizabeth and Robert Bjork, are the short-term impediments to learning that make the retrieval process work more effectively. For example, the fifth graders developing their CARES habits in Report 5 (Developmental Task 3) continually encountered short-term impediments throughout the school year. Making the brain work — through spacing, interleaving, variation, and escalating levels of difficulty — requires repeated but non-identical acts of retrieval from long-term memory that “can both strengthen the memory traces and at the same time make them modifiable again, enabling them, for example, to connect to more recent learning.” This reconsolidation process is a vital part of acquiring capability and mastery in real-world settings; through desirable difficulties, it is baked into Whole Learning
and related forms of performance/mastery learning and real-world application common in the Wider Learning Ecosystem.

Resources: Make It Stick, Chapter 4, pages 67–101.

Cognitive Apprenticeship

The Concept: Cognitive apprenticeship is learning from more experienced others in real-world (situated) settings, both formal and informal — through levels of peripheral participation from observation to active involvement.72 Knowledge is shared through modeling, conversing, and coaching.73 “A major advantage of learning by cognitive apprenticeship as opposed to traditional [decontextualized] classroom-based methods is the opportunity to see the subtle, tacit elements of expert practice that may not otherwise be explicated in a lecture or knowledge-dissemination format.”74 Further, in apprenticeship, “the processes of thinking are visible.”75

Discussion: Next generation educators can employ the cognitive apprenticeship lever to foster capability by locating students with real-world practitioners or more experienced near-peers. For tens of thousands of years, children and young people became competent in the ways of the adult world through the natural, universal process of cognitive apprenticeship — acquiring knowledge, physical skills, and cognitive abilities through their social proximity to adults and more knowledgeable others.76 When young people can observe, practice, and reflect on how adults and near-peers are working and interacting in authentic settings, they come to better understand the adult world, the relationship of knowledge, skills, and learning to that world, and the different ways they can best apply their abilities.77 As John Seely Brown and his colleagues emphasize, “The central issue in learning is becoming a practitioner, not learning about practice.”78 A century ago, young people had ample opportunities for cognitive apprenticeship — adolescent isolation from the adult world was not nearly as extreme as it is today. We need to dramatically reverse course: one of the most effective ways for young people to acquire the broader, deeper competencies they will need in the adult world is through the re-deployment of cognitive apprenticeship — removing the curtain between adolescence and the adult world, and offering the modeling, conversing, and coaching they require to learn and grow.

Resources: The Cognitive Apprenticeship Model in Educational Practice by Vanessa Dennen and Kerry Burner. Two-page summary of Situated Learning by the Faculty Development and Instructional Design Center at Northern Illinois University.

Authentic Success

The Concept: Successful experience in the adult world — particularly “deep inside some particular discipline, set of ideas, or social practice”79 — helps young people develop capability, grow in approaching and carrying out tasks, and map the linkages between learning, schooling, and vocation.80 Proper amounts of struggle and failure in response to desirable difficulties fosters a deeper understanding of the world, the value of skills and mastery, and a growth mindset; however, undesirable difficulties can overwhelm the beginner mind with negative consequences in the longer term.

Discussion: The previous lever, Cognitive Apprenticeship, focuses on the benefits of learning from others in real-world (situated) settings within school or the adult world. In contrast, Authentic Success focuses on the benefits of experiencing success in such settings — in a school theater or musical production, a youth action project in the community, or in the workplace. Success literally changes the brain far more than failure.81 The experiences that change lives are often successful ones, providing, according to adolescent psychologist Robert Halpern, “a self-narrative in relation to school that supports engagement, persistence, and risk taking and that gives school personal
meaning. They have to find a way to understand school as a resource, not a passport or a set of externally imposed obstacles.\textsuperscript{82} Success is the proof point that one’s efforts are worthwhile. Tasting authentic success may be a new and important experience for many less advantaged students, such as those learning bike mechanics at an alternative high school in Sacramento to transform donated bikes into special gifts and proud possessions. Accordingly, creating conditions for authentic success is a key tenet of positive youth development.\textsuperscript{83} An important part of learning to succeed is working through failures and exposing our “illusions of knowing.”\textsuperscript{84} The confidence to do this is a key to entrepreneurs’ success, Amir Bhidé finds. Rather than study an opportunity from afar, their strategy for success is to dive in and swim: to immerse one’s self in a new or uncertain situation; encounter surprises and setbacks; and figure out ways through them, much like students working toward mastery in a Whole Learning junior version described earlier in this report.


**Levers for agency**

A reader could argue that, in addition to building capability, Authentic Success is achieved when learners act on their environment, accomplish something meaningful, find success, and thereby experience positive reinforcement that fosters agency. True! Capability and agency are inexorably blended in any competence. Accordingly, while Authentic Success, as well as Durable Retrieval, Desirable Difficulties, and Cognitive Apprenticeship, clearly build capability, these same levers can also build agency when properly applied. The same is true in reverse. In reading the following discussion of the four levers for agency, it is helpful to consider how each might also build capability.

Earlier (and in Report 5), we discuss the fundamentals of agency: acting and improvising upon our environments, feeling different levels of agency in different environments, the importance of trust and a sense of control, and the retrieval-projection-action process at the heart of all agency. Agency also has a higher dimension: it is the cornerstone of human aspiration and potential. Here, John Taylor Gatto, author and former New York Teacher of the Year, raises our sights:

> Whatever an education is, it should make you a unique individual, not a conformist: it should furnish you with an original spirit with which to tackle the big challenges; it should allow you to find values which will be your road map through life; it should make you spiritually rich, a person who loves whatever you are doing, wherever you are, whomever you are with; it should teach you what is important, how to live and how to die.\textsuperscript{85}

Helping set the stage for the four agency levers that follow, youth activist Roberto Rivera emphasizes that young people “just need someone to journey with them, to help them find that spark, and to fan that spark into a flame that can not only ignite their education and academic learning, but might even illuminate and revolutionize this world.”\textsuperscript{86}
Scaffolded Self-Management

The Concept: Agency that is internal to broader, deeper competencies (“a deep and durable self, acting — through any given competency — to shape one’s development and environment”) is cultivated through external learning experiences that scaffold self-management thinking. Robust neural networks for self-management grow from the same learning activities described earlier: effortful retrieval through spaced, interleaved, and varied practice; desirable difficulties; and opportunities to disabuse illusions of knowing (all present, by the way, in Whole Learning).

Discussion: With next generation educators in mind, we highlight here the Ready by Design report on youth readiness. Self-management is similar to the 10 readiness abilities at the heart of the Ready by Design framework. These abilities are expressed as metacognitive (agentic) statements such as, “I can apply learning in the real world to meet life demands” and “I can feel and express emotion appropriately and as a way to connect to others.” Each of the statements can be applied not only to a young person’s overall readiness, but also to the agency and metacognition within individual competencies (such as the Math Core or Communication & Collaboration) as a young person uses the competencies to navigate the work/learn landscape. In addition, Ready by Design provides substantial guidance on scaffolding the development of these abilities through developmental environments, relationships, experiences, and the ways young people use space and time. The authors present a useful cross-disciplinary synthesis of youth readiness, identifying characteristics of best practice and describing common readiness traps to avoid. (For an example of scaffolding self-management, see the case of Terry Bolduc’s fifth graders in Report 5.)

Resources: Ready by Design: The Science (and Art) of Youth Readiness and Preparing Youth to Thrive: Promising Practices for Social & Emotional Learning, both from The Forum for Youth Investment. Foundations for Young Adult Success by Jenny Nagaoka, Camille Farrington, and others, from the UChicago Consortium on School Research.

Supported Self-Reflection

The Concept: “Children learn through developmental experiences that combine Action and Reflection, ideally within the context of trusting relationships with adults.”87 (Foundations for Young Adult Success) A productive form of retrieval practice, reflection helps create meaning and the capacity to change and adapt.88 Supported self-reflection means adults have created the time, safe space, responsive practices, and staff supports to make reflection effective in building agency in both learning and in navigating the work/learn landscape.89

Discussion: Foundations for Young Adult Success places action and reflection at the heart of their developmental framework. The report’s Action Reflection Cycle (see the graphic at right) is an excellent entry point to self-reflection and its linkage to agency, describing reflection experiences (describe, evaluate, connect, envision, and integrate). Although, historically, American schools were not designed to address self-reflection beyond the narrow boundaries of academics, the age of accelerations now makes it a priority. Fortunately, educators can call on self-reflection practices from youth development, cultural responsiveness,
critical consciousness, and trauma-informed care. One universal tool for promoting self-reflection is the Question Formulation Technique in *Make Just One Change: Teach Students to Ask Their Own Questions*.


---

### Immersion in Adult Settings

**The Concept:** “The most interesting and compelling role for vocationally oriented learning is personal. It fosters maturity and nurtures a sense of personal competence and of having a place in the world…. To grow up, young people… need what they cannot create or provide themselves: access to the ‘shared reservoir of accumulated ideas, skills and technologies that constitute the richness of culture and provide some scaffolding for maturing.’” (Robert Halpern)

**Discussion:** Just six to eight generations ago, children and adolescents were immersed in the work of the family farm or shop, frequently co-participating with adults throughout the community. Over time, as Robert Epstein documents in *Teen 2.0*, social norms and regulation have contributed to the adolescent isolation we see today. If young people are once again going to gain agency, maturity, and knowledge of the world, they need not only the opportunity to develop capability through Cognitive Apprenticeship (above) but also exposure and familiarity — and agency — within the sociocultural dimensions of the adult world gained through greater observation, engagement, and co-participation with adults in school, near school, and beyond school. A few examples are noted in the accompanying graphic. Halpern calls on all adult institutions to rise to this challenge, emphasizing that “it takes a whole society.” Immersion in adult settings is one key aspect and benefit of creating more explicit and integrated access to the Wider Learning Ecosystem discussed above.

**Resources:** *Youth, Education, and the Role of Society* by Robert Halpern, particularly pages 1–52. *Leaving to Learn* by Elliot Washor and Charles Mojkowski. *It Takes a Whole Society* by Robert Halpern.

---

### Maker Empowerment

**The Concept:** “I do not think there is any thrill that can go through the human heart like that felt by the inventor [seeing] some creation of the brain unfolding to success.” (Nikola Tesla) When young people apply their knowledge, skills, and aspirations to bring something new into the world, they begin to “understand themselves as designers of their worlds” and thus develop stronger agency. Making, tinkering, and inventing can be empowered in a wide array of maker spaces: physical labs and shops, extracurriculars (including theater, music, and tech clubs), community youth action projects, gardens and nature centers, digital environments, workplaces, and classrooms.
**Discussion:** Adolescent psychologist Reed Larson stresses that the very nature of agency must be different in an uncertain, disorderly world: with less precedent and causality upon which to gauge action, young people today need to be highly adaptable, agile, and improvisational. As TED owner Chris Anderson says: “We are all designers now. It’s time to get good at it.” Maker empowerment that exercises design thinking in increasingly authentic settings is one of our most powerful levers for cultivating maker/improviser agency. For an inspiring demonstration of maker-driven agency, watch Roberto Rivera’s TEDx talk (19m video). Agency is evident when young people taste maker/inventor success, as MIT professor Neil Gershenfeld, a pioneer in the maker movement, describes: “Once students mastered a new capability, such as waterjet cutting or microcontroller programming, they had a near-evangelical interest in showing others how to use it. As students needed new skills for their projects they would learn them from peers and then in turn pass them on.” Agency by Design’s research shows that “maker-centered activities are situated in flexible and often sprawling sociocultural networks” and that learning to both draw from and give back to those networks is a powerful benefit — one that lends itself to utilizing the assets of the Wider Learning Ecosystem described earlier. We conclude this discussion with a key maker concept known as Papert’s Principle, named for the father of the maker movement, MIT polymath Seymour Papert: “Some of the most crucial steps in mental growth are based not simply on acquiring new skills, but in acquiring new administrative ways to use what one already knows.”

**Resources:** *Maker-Centered Learning: Empowering Young People to Shape Their Worlds* from Agency by Design at Project Zero. *Invent to Learn: Making, Tinkering, and Engineering in the Classroom* by Sylvia Libow Martinez and Gary Stager. For related information, see Report 8, Creative Know How — for a Novel, Complex World.

These eight Levers for Capability and Agency work in harmony with Whole Learning and the Wider Learning Ecosystem. In a well-designed Whole Learning junior version, for example, many of the levers’ neural strengthening exercises are embedded in the Whole Learning design principles such as working on the hard parts, learning in a variety of settings, and uncovering the hidden rules. Similarly, acquiring and applying knowledge across the five experience zones of the Wider Learning Ecosystem creates ample opportunities to use the levers to deepen capability and agency.

Our concluding vignette, in which you will recognize many elements of Whole Learning and extensive engagement with the Wider Learning Ecosystem, provides an excellent example of the application of all eight of the Levers for Capability and Agency.
Using Whole Learning, the Wider Learning Ecosystem, and Levers for Capability and Agency, along with other next generation learning approaches, to develop competencies needed in an age of accelerations brings us to the final question in the four-part MyWays Through-line: HOW do we gauge students’ progress in developing these competencies? How can we measure our school’s success beyond proficiency in math and ELA to embrace whole child development? We turn to these questions in the series’ final report, *Assessment Design for Broader, Deeper Competencies*. 

---

**An Example of a Real-World Project Employing All Eight Levers**

The following vignette was provided by Aaron Vanderwerff, director of the Creativity Lab at the Lighthouse Community Charter School in Oakland, California. It appears in *Maker-Centered Learning: Empowering Young People to Share Their Worlds*, the book by the team at Agency by Design. Each of the levers can be found or inferred in the example.

> “Convert a gasoline truck to electric power—for real? We thought you were joking!”

And with that it was on—Roberto, Cesar, and Tomas would spend much of their extra time in the spring of their senior year working to convert a twenty-year-old truck from gasoline to electric power as the final project for their Making elective.10 Along the way they learned to weld, read circuit diagrams, and machine parts for the truck. But those weren’t the most important benefits of taking on this project.

Early on the young men needed to find money to pay for the project. So together, they applied for a grant through our local utility company and were funded. Then the guys scoured Craigslist for a truck that would be ideal for a conversion. They called innumerable strangers, dealt with the idiosyncrasies of used automobile sales, and eventually bought a vehicle and got it to the school parking lot. They borrowed an engine hoist to remove the engine, found a conversion kit, learned to collaborate with their mentors, and called electric vehicle (EV) conversion companies for technical information. If you’ve ever worked with high school students, you know how hard it can be to get them to make a call to a stranger, but these guys were on fire.

The pinnacle of their journey was when they drove from Oakland to Sebastopol—a small town culturally a world away. There they got help from an EV enthusiast to machine their own adapter plate, the part that would connect their new electric motor to the existing transmission. At that point, I knew the boys were onto something special.

Through this project Roberto, Cesar, and Tomas were empowered to do things they would not have dreamed of doing previously. Tomas was even talking about opening up his own conversion business after graduation.

The most amazing thing was the effect this empowerment had beyond their making elective class. Two of these young men were in danger of not graduating. Their writing wasn’t strong enough in Humanities and they weren’t attending office hours to get support from their teacher. But a few weeks after they started working on the truck, their Humanities teacher told me they had started attending office hours, and their writing was improving. After all, if they could convert a truck to electric power through persistence and effort, surely they could pass Humanities.

They graduated that spring.
A quick dive into broader, deeper learning design resources

Because the purpose of the MyWays Student Success Framework is to provide a rosetta stone for thinking about the broader, deeper, future-ready goal-line for today’s learners, we have focused on describing that goal-line in conceptual terms. We also believe deeply that school designers, educators, and individual learners need to invest in constructing and evolving their own goal-lines within the broader framework.

In doing this work, educators may find the following resources helpful:

<table>
<thead>
<tr>
<th>Starter Resources for Learning Design for Broader, Deeper Competencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>This list highlights some core resources from this report, to help facilitate deeper thinking on authentic learning. There are separate boxes below on tools for learning design.</td>
</tr>
</tbody>
</table>

### Resources on Personalized and Next Generation Learning (the broad view):

- Robert Halpern, *Youth, Education, and the Role of Society: Rethinking Learning in the High School Years*
- Education Reimagined, *A transformational vision for education in the US*
- LEAP Innovations, *LEAP Learning framework for personalized learning*
- Next Generation Learning Challenges, *About Next Gen Learning* video (2m)

### Resources on Whole Learning:

- David Perkins, *Making Learning Whole: Seven Principles of Teaching Can Transform Education*
- Jal Mehta, “Schools Already Have Good Learning, Just Not Where You Think,” Learning Deeply blog, *EdWeek*
- Thomas Markum, “How PBL Educates the Whole Child,” *Edudcation* blog

### Resources on Wider Learning Ecosystem:

- Elliot Washor and Charles Mojkowski, *Leaving to Learn: How out-of-school learning increases student engagement and reduces dropout rates*
- Education Reimagined, *A transformational vision for education in the US*
- The Aspen Institute, *Learner at the Center of a Networked World*
- Digital Promise’s *Education Innovation Clusters* work; *Hive Learning Network*; and the *Remake Learning Playbook* for building learning innovation ecosystems.
- Big Picture Learning, “Leaving to Learn” video (4m)

### Resources on Levers for Capability and Agency:

- Peter Brown, Henry L. Roediger III, and Mark A. McDaniel, *Make It Stick: The Science of Learning*
- Robert Halpern, *Youth, Education, and the Role of Society*
- Vanessa Dennen and Kerry Burner, *The Cognitive Apprenticeship Model in Educational Practice*
- Edward P. Clapp, Jessica Ross, Jennifer O. Ryan, and Shari Tishman, *Maker-Centered Learning: Empowering Young People to Shape Their Worlds*
MyWays Tools and the Mayan Worked Case Study

The MyWays Toolkit, available on the Tools page of the MyWays website, includes simple matrix tools to help you reflect and promote discussion on the MyWays concepts, and evaluate your existing experiential or project-based learning practices or design new ones.

The Toolkit also includes a worked case study that uses a selection of the MyWays evaluation tools to analyze a High Tech High middle school project on Mayan culture. The Mayan worked case study serves as:

- one example of the kind of Whole Learning and authentic learning design required to address the competencies needed for a world of acceleration
- a way of illustrating how you might use a few of the MyWays diagnostic/design tools with your educator and designer teams, and to build the will to transform among your fellow stakeholders

Three learning design tools from the MyWays Toolkit

We highlight here three of the MyWays learning-related tools. They are designed to help you use the seven principles of Whole Learning; the characteristics of junior versions; the four MyWays domains/20 MyWays competencies to address the third big question in the MyWays Through-line: HOW can our learning experience design help students develop the broader, deeper competencies?; and the Five Assessment Strategies to address the fourth big question in the MyWays Through-line: HOW can our learning experience design help students develop the broader, deeper competencies?

The first is the Whole Learning Analysis Tool. This tool helps you ask: How well do my projects reflect the principles of Whole Learning? The second is the Junior Version Characteristics Tool. This tool helps you ask: How well do my projects harness the benefits of junior versions? The third is the Competency Correlation Tool. This tool helps you ask: How well do my projects map to the MyWays competencies? These three tools are matrices to help you evaluate and improve assessment experiences. Simple, easy-to-follow instructions for using the tools are provided in the toolkit. You can also use the tool instructions to run a workshop, letting your teachers and educational designers team up to analyze the Mayan project prior to tackling one of your own projects.

The goal is to equip your learning design team with a reliable process for critiquing emerging authentic learning approaches — strengthening the extent to which you integrate student agency within your learning, moving the team toward more authentic and holistic tasks, while providing the relevant balance of challenge and supports for your students to make progress developing broader and deeper competencies. Even at a quick, conceptual level, these tools can flag key issues and “help change the conversation” within your team with respect to transforming learning design as a force for teachers to provide a more authentic experience for their students, as well as for learners to be able to reflect on their learning. You can also use the tool instructions to run a workshop, letting your teachers and educational designers team up to analyze the Mayan project prior to tackling one of your own projects.
Using the tools: High Tech High’s Mayan Community Project

The Mayan Community Project is an experiential learning project developed by Heather (Riley) Lovell, a seventh grade teacher at a High Tech High middle school. We chose the project because Lovell and High Tech High offer an abundance of materials on the High Tech High Project website that let us share with you many different aspects of the experience that are relevant to the MyWays competencies and authentic assessment. And of course because the project provides an inspiring example of Whole Learning in a thoughtfully-design junior version! In Report 12 on assessment design, we extend the Mayan project analysis, using two assessment-related tools to demonstrate how you can align your assessment design with the two key assessment shifts and Five Assessment Strategies that are introduced in that report.

Potential tool for reflecting on whole-person competency goals

We have received positive, early responses to the MyWays Whole-Student Competency Plot — an idea we borrowed from the Lumina Foundation’s Degree Qualification Profile. To enable educators to use the plot, we created two simple, publicly available tools in Excel that are easily customized and can be used to compare any two states, such as student A vs. B, school A vs. B, or, as in the example that follows, today vs. future. Two versions of the MyWays Whole-Student Competency Plot are available on the MyWays website, along with a more detailed explanation. Currently, the tool is conceptual, but some members of the NGLC network are interested in using learning progressions, rubrics, and scoring protocols to make it empirically driven. For guidance on emerging tools of this sort, see the next resource box.

This plot illustrates a shortcoming that plays out almost every day in schools using the traditional, narrow academic metrics for student success. Tia (a fictionalized composite of two real students in the Boston area) is a complex learner whose natural gifts and competencies in Habits of Success and Creative Know How are neither recognized nor developed. Using a visual tool with a broader and deeper set of competencies enables Tia and her advocates to visualize her strengths and set goals for her future success.
Guidance on Finding Tools for Authentic Learning Design and Implementation

For tools relating to the design of project-based learning experiences, please see the organizations and links in the box titled “A Whole Learning Movement: High-Quality PBL” at the end of the section on learning design construct 1, Whole Learning, in this report. For quality standards and other guidance tools related to Whole Learning opportunities in real-world learning such as internships, service-learning, and see the organizations and links in the relevant zones described in the section on learning design construct 2, Wider Learning Ecosystem. The resource box just above also introduces you to some simple MyWays matrix tools designed to help you evaluate the characteristics of Whole Learning and junior version characteristics within your learning experiences, and to assess how well these experiences map to MyWays domains or competencies.

This box provides guidance on finding learning tools that help identify and support your work with, reflection on, and tracking of the MyWays competency domains within project-based and performance-based learning. These resources particularly focus on links, databases, or compendia for tools such as learning progressions, rubrics, and skills maps. Note that most of these can also be used for formative and performance assessment and are included in a similar resource box at the end of Report 12, Assessment Design for Broader, Deeper Competencies.

We know from our beta piloting work with next generation educators that those interested in and inspired by the MyWays Student Success Framework are also thirsty for these kinds of practitioner tools, exemplars, and documentation. In some cases, practitioners may be tempted to latch onto tools and use them without the internal mindset-changing and learning-model-revising work required for successful implementation; we caution against this! We also realize, however, that many thoughtful developers and practitioners want and need to see more concrete exemplars and tools to better understand the broader, deeper goal-line; to help work through their own approach; and to help plan and implement their assessment activities — which is why we provide these links. Note that MyWays and Next Generation Learning Challenges do not endorse any specific tools for assessment or curriculum planning — and particularly urge practitioners to ensure that tools they use are compatible with authentic, holistic learning.

Tools

- **The Institute for the Future of Learning’s open source tool repository**
  As part of the Institute for the Future of Learning project (which produced the excellent report, *Assessing the Learning that Matters Most*), Julie Wilson created a database of learning progressions, rubrics, and tasks on the 4Cs and on self-assessment and social-emotional learning. The tools were provided by EL Education, New Tech Network, High Tech High, Mount Vernon, Two Rivers Public Charter School, Sanborn Regional School District in New Hampshire, Catalina Foothills, Science Research Academy, and KIPP Socratic Seminar — more than 75 documents in all. The tools are searchable by topic, school model, and grade level, and can be found on this beta website.

- **EdLeader21’s 4C’s Rubrics**
  This is a nationally vetted set of rubrics for the 4Cs from EdLeader21. The master set of 4Cs rubrics covers grades 3–4, 7–8, and 11–12 can be purchased from EdLeader21, but you can see adapted versions in links from this blog by Ken Kay, EdLeader21’s CEO, who noted that, “The rubrics are a great resource on their own, but you and your teachers can also adapt them to your needs. For example, some of our districts have modified the rubrics and associated learning targets to make them student-friendly.”

- **The Buck Institute rubrics for the 4Cs in a PBL context**
  These rubrics describe what 4Cs good practice looks like, specifically in the project-based learning (PBL) context, with different sequenced rubrics for K–2, 3–5, and 6–12. Critical Thinking and the “Process”
section of Creativity & Innovation are organized by the four phases of a typical project. The Presentation Rubric is used only in a project’s last phase, when students share their work with a public audience. Collaboration is relevant to all phases. See this blog for more on how to use these rubrics.

- **P21 21st Century Skills Maps**
  These [21st Century Skills Maps](#) address how to implement learning models that integrate the 4Cs into core academic content mastery. 4Cs skills maps are available for math, science, social studies, geography, English, languages, and arts; ICT skills maps are available for social studies, English, and math. Each skills map provides examples of the types of skills that are appropriate for 4th, 8th, and 12th grade levels.

- **The Center for Innovation in Education (CIE) and Educational Policy Improvement Center (EPIC)’s Essential Skills and Dispositions Developmental Frameworks**
  This [set of developmental frameworks](#) covers collaboration, communication, creativity, and self-direction in learning. The frameworks define five components inherent to each skill and describe performance for each component across a beginner to emerging expert progression, informed by research on the development of expertise. Unlike discipline-specific learning progressions and rubrics, the developmental progressions reflect components essential to the skill itself and describe growth dependent on many years of active exploration, experimentation, setbacks, and reflection.

- **New Tech Network’s learning outcomes, rubrics, and college-ready assessments**
  New Tech Network (NTN), working with Envision and the Stanford Center for Assessment, Learning, and Equity (SCALE), created [open-source learning outcomes and rubrics](#) related to: knowledge and thinking in different core subject areas; agency; collaboration; and oral and written communication. These tools are used in NTN’s curriculum-embedded performance assessments called College Readiness Assessments. The network also offers a three-part Student Literacy [video series](#) (10–15m each) that guides users through the delivery of workshops focused on the creation of high-quality tasks, looking at student work, and the use of the knowledge and thinking rubrics (including the difference between grading and scoring).

- **Two Rivers Public Charter School’s resources**
  Two Rivers Public Charter School, a high-performing [EL Education School](#), hosts its own excellent professional sharing site, Learn with Two Rivers. Its tasks and rubrics that address critical thinking, problem solving/“expert thinking,” collaboration, and communication are currently being curated in this separate [Deeper Learning Assessment folder](#). For a public share of excellent resources on working with Habits of Success (Valor’s Compass program) by this thoughtful MyWays Community of Practice member, see links to over a dozen resources in their “Working the Compass” Resource Guide, Summer 2017.
Endnotes for Report 11


3 Ibid. For more on the five elements, see also Education Reimagined. *Practitioner’s Lexicon: What is meant by key terminology*, 2017.

4 For more on the range of frameworks, see this series’ *Introduction and Overview*, where we discuss the main offerings from the fields of education, human/youth development, and work.


7 Ibid., p. 61.

8 Ibid.

9 Ibid., p. 215.


12 Ibid., p. 20. We determined, in beta-testing the use of Perkins’ principles over the past few years that some educators found the strong “game” analogy useful, while many others found it off-putting or felt that it distanced them from the educational parallels.


17 The campaign is also being aided by an advisory team — a diverse collection of 90 thinkers, leaders, and practitioners helping to shape the HQPBL Framework; the team includes Ron Berger (the Chief Academic Officer of *EL Education*), Tony Wagner (author of *Creating Innovators*), Yong Zhao (professor and celebrated author), and Chuck Cadle (the CEO of *Destination Imagination*).  


23 Ibid., p. 16.


30 Schwartz, “The Value of Internships.”


33 Claire Cain Miller, “Class Differences in Child-Rearing Are on the Rise,” *The New York Times*, December 17, 2015. Extracurricular activities epitomize the differences in child rearing in the Pew survey of a nationally representative sample of 1,807 parents. Of families earning more than $75,000 a year, 84% say their children have participated in organized sports over the past year, 64% have done volunteer work, and 62% have taken lessons in music, dance, or art; of families earning less than $30,000, 59% of children have done sports, 37% have volunteered, and 41% have taken arts classes.

35 Michele Cahill, in foreword to *Smart Cities*, p. 17, and in the EdWeek blog, “Leadership for Education Innovation.”

37 Education Reimagined’s *Practitioner’s Lexicon*, pp. 8–9; National Society for Experiential Education’s *Eight Principles of Good Practice for All Experiential Learning Activities*; and the Association for Experiential Education’s (12) *Principles of Experiential Education Practice*.


40 See, for example, the partnerships described in Jobs for the Future’s *Co-Design, Co-Delivery, and Co-Validation: Creating High School and College Partnerships to Increase Post-Secondary Success*, 2015.

41 See, for example, JMG, a nonprofit that partners with schools in Maine to offer career-related services, including shadow programs, mentorships, and internships.

42 For partnerships with companies (including speakers coming into schools and teacher externships), internships, and shadow programs, see Jessica Julisun’s American Youth Policy blog, “Keeping It Real: Building Bridges Between Employers and Schools.” Vander Ark and Ryerse’s *Smart Cities* provides a list of 10 partnership strategies to boost student employability (pp. 151–153), while KnowledgeWorks offers six lessons from the most successful partnerships in their network, along with six ways to maximize your partnerships.

43 See more about collective impact in Report 4 of this series, which summarizes John Kania and Mark Kramer’s five key elements of successful collective impact: common agenda, shared measurement systems, mutually reinforcing activities, continuous communications, and a backbone organization. In Vander Ark and Ryerse’s *Smart Cities*, the authors dedicate a chapter to chronicling how schools and education organizations are using collective impact to partner with other organizations to improve both academic and employment outcomes for students.

44 Remake Learning in Pittsburgh.

45 Chris Sturgis, “Pushing the Envelope with Student Centered Learning at VLACS.” CompetencyWorks, April 14, 2015.
46 For more on VLACS, see its website, as well as two CompetencyWorks blogs: Chris Sturgis, “Pushing the Envelope,” April 14, 2015, and Sarah Luchs, “Competency Moves Beyond Courses,” September 16, 2013.


48 “Internships drive all learning, which involves students being offsite two days a week, having a wide range of learning experiences across the City. Offsite is almost more important than onsite activity. Assessment is holistic and industry/third sector/community partners co-construct the assessment rubrics, so their standards and expectations become part of the school operating system and culture. The process for how students acquire internships is brilliant in scaffolding and building their relationships with the wider community, and internships are seen as very much an academic experience, reframing the academic/vocational value divide which is very powerful. Relationships are horizontal, with learning being facilitated by a wide variety of adults and mentors.” Rosie Clayton, “Personalization and Real-World Learning at Big Picture Schools,” blog, Getting Smart, October 28, 2016.

49 Quoted by Larry Ferlazzo in “Response: Leveraging Field Trips to ‘Deepen learning.‘” Classroom Q&A blog, EdWeek, December 12, 2016.


51 In addition to the forthcoming WLE resource, see more on crediting work outside the classroom, badging, assessment of prior learning, stackable credentials, broader transcripts, and other related topics in other reports in the current MyWays Student Success Series, especially: Report 3, within descriptions of work/learn landscape components and issues; Report 10, in links to career pathways and career development; and in Report 12, in sections on the fourth of the Five Assessment Strategies: Badging & micro-credentials. For parallel efforts in the European Union, see Recognition of youth work and of non-formal and informal learning within youth work Current European developments, Salto-Youth Training and Cooperation Resource Centre, April 2016.

52 Washor and Mojkowski, Leaving to Learn, p. 110.


54 Extracurriculars, Mehta argues, have “an entirely different grammar,” as junior versions of recognized and valued adult activities from which they inherit “thick infrastructures” of meaning and expectation; see Jal Mehta, “Schools Already Have Good Learning, Just Not Where You Think,” Learning Deeply blog, EdWeek, February 8, 2017.


56 “A summer job makes a difference in classroom learning, Stanford scholar says,” Stanford News, September 1, 2015; Worrying declines in teen and young adult employment, Brookings report, December 16, 2015, quoting research from the National Research Council, academic, and government studies, and Robert Halpern.


62 Brown, Roediger, and McDaniel, Make it Stick, p. 18. For related information, see the discussion of “high-leverage concepts” and application of knowledge in Report 9, Content Knowledge — for the Life Students Will Lead.

63 Ibid., pages 12 and 20.

64 Ibid., p. 47.

65 Ibid., p. 49.

66 Ibid., p. 50.

67 Ibid., p. 56.

68 Ibid., p. 72.

69 Ibid., p. 75.
The terms cognitive apprenticeship, situated learning, and legitimate peripheral participation all derive from Lave, *Situated Learning*.

Dennen and Burner (see next endnote) refer to modeling, coaching, reflection, articulation, and exploration. We have simplified the list to modeling, conversing, and coaching. Any of these three actions may incorporate forms of scaffolding (temporary supports).


In Lev Vygotsky’s concept of the zone of proximal development, “more knowledgeable others” are those whose presence enable a higher level of development; see Lev Vygotsky, *Mind in Society: The Development of Higher Psychological Processes*, Harvard University Press, 1978, p. 86.


Jenny Nagaoka and others, *Foundations of Young Adult Success*, UChicago Consortium on School Research, 2015, unnumbered page following Contents and page 39.


Forum for Youth Development, Preparing Youth to Thrive, 2016, p. 18.


Martinez and Stager, *Invent to Learn*, p. 83.

Ibid., p. 25.


About this report

Report 12, *Assessment Design for Broader, Deeper Competencies*, presents the evolution toward greater authenticity and multiple measures, and recommends the use of Five Assessment Strategies: *Formative assessment, Performance assessment, Multiple measures, Badges & micro-credentials, and Quality reviews*. The report also surveys the emerging state of assessment within each of the MyWays domains, as well as offering resources to support initial moves toward implementation.

Report 12 is the second of two reports in Part C of the *MyWays Student Success Series*. Part C, “*Redesigning the Learning Experience for the MyWays Competencies*,” explores how to bring the broader and deeper competencies of the MyWays Student Success Framework into educational practice, focusing on key constructs for learning design and assessment design.

The *MyWays Student Success Series* examines the through-line of four essential questions for next generation learning and provides research and practice-based support to help school designers and educators to answer these questions. The series consists of 12 reports organized into three parts, plus a Visual Summary and Introduction and Overview.

The primary researchers and authors of the *MyWays Student Success Series* are Dave Lash, Principal at Dave Lash & Company, and Grace Belfiore, D.Phil., Principal Consultant at Belfiore Education Consulting.

MyWays is a project of Next Generation Learning Challenges, an initiative of the non-profit EDUCAUSE. MyWays is supported through a grant from the William and Flora Hewlett Foundation with additional support from the Bill & Melinda Gates Foundation, the Barr Foundation, and the Oak Foundation.
REPORT 12

Assessment Design for Broader, Deeper Competencies

“[T]he world has already shifted. A broader, richer range of capabilities is being demanded of our young people, and there are innovations in learning, teaching and organization that begin to support them. But a focused, shared effort is needed to ensure that, collectively, we measure what we value across our broader expectations and make sure that our education systems reflect those measures to the greatest extent that learning science and evidence make possible. [emphasis added]”

—Global Education Leaders’ Partnership

Introduction

This ability to “measure what we value” in a world that has shifted is a mission-critical challenge to next generation educators. There is no finished blueprint for next generation assessment, no glossy catalog of proven assessment approaches and tools, and no formula for replacing low-cost, narrow accountability testing with thoughtful investments in gauging the progress of the whole learner. On the other hand, there are pockets of growing research and maturing practice in measuring learning and competency in some skill areas and in increasingly authentic settings. The challenge in designing assessment for the whole learner is creating new combinations comprised of established assessment tools, processes for feedback, and methods for reflection from within and outside the education sector, together with new tools and processes for collecting evidence where gaps exist. As Andrew Hargadon notes in How Breakthroughs Happen, this recombinant process is the tried and true nature of most innovation.

Given the nascent nature of the field, measurement, or assessment, is the subject of the fourth big question at the heart of the MyWays Project. How do we, as next generation educators and students alike, gauge student progress in developing the broader and deeper competencies in the MyWays Student Success Framework? And how do we measure our performance in fostering this development as teachers, schools, and communities?

The MyWays Through-line

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><strong>WHY the urgency to change?</strong> What are the real-world conditions that our students will need to address?</td>
</tr>
<tr>
<td>2</td>
<td><strong>WHAT does success look like</strong> for students in a world of accelerating change? What competencies promote a broader, deeper definition of success?</td>
</tr>
<tr>
<td>3</td>
<td><strong>HOW can our learning experience design</strong> help students develop the broader, deeper competencies?</td>
</tr>
<tr>
<td>4</td>
<td><strong>HOW do we gauge student progress</strong> in developing these competencies? How can we measure our school’s success beyond proficiency in math and ELA to embrace whole child development?</td>
</tr>
</tbody>
</table>

When dealing with the How of next generation learning, Next Generation Learning Challenges and the MyWays team feel that it is important for educators and school designers to step back and re-visit the through-line; designing their Hows not only from deep knowledge of their students, but also with intentional reference to Why the urgency to change and What kind of competencies students need in order to develop to those compelling whys. This helps to ensure that their work is not built on a collection of
the “latest trends” or even isolated “good ideas” — though there are certainly some excellent individual learning and assessment ideas that can be integrated into this intentional design. But one critical element of the MyWays Student Success Framework is that success in learning, work, and life in our changing world is what drives each stage of the process. We therefore urge you strongly to read the reports in Parts A and B of this series. (Or follow the tips for a quick drive through the reports, as noted in the box to the right.) In the meantime, here’s a quick summary of what’s behind our response to the last through-line question:

Given the integration of these last two steps of the through-line, we emphasize that, although we have presented learning design and assessment design in separate reports, they need to be planned and undertaken together. Accordingly, this report builds on the three learning design principles described in Report 11: Whole Learning (seven principles of holistic, authentic learning, and their use in junior versions of adult activities); a Wider Learning Ecosystem (spaces beyond the school walls that enable a coordinated portfolio of diverse, real-world learning experiences); and Levers for Capability and Agency (eight targeted practices based on learning and developmental science).

This report overviews assessment for broader, deeper competencies by presenting the following:

- A brief snapshot of the evolution taking place in assessment
- Two key paradigm shifts needed to assess broader and deeper competencies
- Five recommended assessment strategies we believe are essential to success, including for each strategy a one-page primer and a practice example from the Assessment for Learning Project
- A look at the trajectory of the field of assessment for broader, deeper competencies, including cautions, potential, and the ways those in the field are working together

Tips for a quick drive through the series, for readers of Report 12

- Read the Visual Summary and the Introduction and Overview, and skim Reports 1, 6, and 11.
- Explore the Key Takeaways at the end of Reports 2–5 and the Competency Definitions and Key Principles in Reports 7–10.
- Visit the MyWays website for top-line concepts.

Using the MyWays Through-line to inform how we gauge student progress

1. In response to Question 1 (WHY the urgency to change?), Part A analyzes the nature of the rapidly changing, more variable, more complex world.
2. The nature and speed of this change shapes the response to Question 2 (WHAT success looks like), which is Part B’s exploration of the four domains of broader, deeper competencies needed to address this change: Habits of Success, Creative Knowing, Content Knowledge, and Wayfinding Abilities.
3. In turn, the range and nature of these broader, deeper competencies set the requirements for the response to Question 3 (HOW can our design for learning support these competencies?), which is a learning design that is more authentic, holistic, and focused on student agency.
4. In response to Question 4 (HOW do we gauge student progress in developing these competencies?), this report suggests that the nature of the learning design requires a system of assessments that are also authentic, student-driven, and holistic, and that these need to be integrated with and extend that learning.
• A scan of the state of assessment across the four MyWays domains
• A quick resource dive for next gen assessment, highlighting
  o Starter resources
  o Three simple MyWays evaluation tools and a case study for how to use them
  o A guide to sources for deeper assessment implementation tools

Building capacity within your faculty and staff to apply these strategies in integrated, mutually reinforcing ways will lead, over time, to systems of assessment that are more effective across the broader competency range. This report is intended to support you in evaluating your current assessment practices and identifying areas for development.

Assessment as a means of knowing the whole learner

What would it look like to, as the Global Education Leader’s Partnership puts it, “measure what we value,” in the most meaningful way possible for broader, deeper competencies? A growing number of educators have been thinking deeply about this end-goal, and indeed rethinking assessment for whole-person outcomes.³ For example, Michael Fullan highlights that next generation assessment would

• support rapid feedback cycles on learning progress;
• include a wider variety of participants in the assessment process, such as peers and outside experts;
• provide more complex assessment experiences, including collaborative problem solving, embedded performance assessment, game-based assessments, and online capture of process skills; and
• assess more complex learning products, such as student work artifacts.⁴

Other educators highlight a range of related priorities, such as integrating assessment with learning and teaching; using a wider variety of measures; emphasizing process as well as product; and paying attention to the context and transfer of learning. Youth development professionals emphasize the inclusion of more descriptive and longitudinal analysis and suggest that, “in recognition that the purpose of schooling is to prepare youth for tasks, problems, and opportunities outside of it, some assessment would focus on emergent expressions of lifelong capacities — cognitive, social, practical, civic, identity related.”⁵

We particularly like Andrew Miller’s vision of assessment as a “force for knowing our students”:
Truly, assessment can be a powerful force for knowing our students... We simply have to move past the baggage that comes with the term assessment, and understand that it can mean a lot of things. We can assess for content and skills, yes, but we can also assess for passions, interests, success skills, and the like for the purposes of the right instruction at the right time.

We will explore these and related aspirations in more detail in the remainder of this report. First, however, it is important to note that the state of assessment today across the broader competency range is fragmented, uneven, and fails to achieve many of the desirable attributes noted above. As we describe in more detail later, assessment varies dramatically across the MyWays domains (see the graphic below). Some of the shortcomings in current assessment practices relate to the narrow range of what is measured, but much of the challenge arises from the nature of the assessments commonly carried out, even for traditional competencies, due to a preoccupation with accountability.

**Note:** In looking at assessment design for broader competencies, we focus in this report on assessment for learning and for progress to competency, rather than for accountability. While some of the forms of assessment for Content Knowledge and Creative Know How show potential for both accountability and learning (as in New Hampshire’s U.S. Department of Education waiver to include performance assessment in their accountability system), the Next Generation Learning Challenges MyWays team is convinced that the assessment of Habits of Success and Wayfinding Abilities is still too emergent to use in accountability measures today (and, indeed, some measures of these competencies may never be appropriate for that purpose). State-driven accountability is too blunt an instrument to lead — right now, anyway — to the thoughtful, nuanced practice that competency development within these domains requires.

We would also like to emphasize that this report is intended to introduce and summarize just a selection of the strategies and issues related to assessment — those particularly relevant to the expanded success competencies. It does not provide a comprehensive view of the exploding assessment landscape, nor do the examples cited represent the full range of what is out there or currently being piloted. (For more on this fast-moving, wide-ranging, and sometimes controversial field, see the MyWays website and the Assessment for Learning Project website.) That said, we were struck by how, out of all the changes in assessment, two major paradigm shifts are emerging as vital, particularly in relation to the development of broader and deeper competencies.
Two key assessment shifts: greater authenticity and an integration of multiple measures

In the *Introduction and Overview of the MyWays Student Success Series* and throughout Part A, “Adolescence in an Age of Accelerations,” we emphasize that operating effectively in the real world is essential to success in learning, work, and life. Accordingly, we define *competence* in any pursuit as the union of *capability* and *agency*, where capability is “knowledge and the understanding to use it in real-world situations” and agency is “a deep and durable self, acting to shape one’s development and environment.” In Report 11, we explore eight Levers for Capability and Agency.

Measuring competencies comprising a student’s capability and agency will require new approaches to assessment. Not only must we begin to assess hard-to-measure competencies such as creativity, social skills, and wayfinding abilities, we must also gauge how well students “own” these competencies and apply them in real-world settings. Comprehensive assessment systems that can address this challenge are some ways in the future. The crucial first step for next generation educators, we believe, is to adopt two paradigm shifts in assessment practice:

**Two key paradigm shifts for next generation assessment**

**The Shift to Greater Authenticity**
Expanded arenas require students to develop agency and grapple with process and social context, so assessment needs to be integrated with authentic, holistic learning experiences that provide these opportunities for growth and measurement.

**The Shift to Multiple and Varied Measures**
Qualitatively different, multi-dimensional success competencies and personalized-pathways pedagogy call for a more varied, more developmentally-nuanced, and more innovative set of assessment measures.

**ASSESSMENT SHIFT 1: The shift to greater authenticity.**

The first shift involves moving from poor proxies — for example, measuring a few narrow competencies (such as math and English) in tightly bounded ways (such as through multiple choice questions) — to assessments designed to include more rounded student performance in the outside world. Just as junior
versions of Whole Learning experiences (See more about these in Report 11.) create learning environments that are developmentally appropriate real-world approximations, assessments designed for those Whole Learning environments should involve developmentally appropriate tasks that approximate students’ competence in the real world. For example, as we discuss later, well-designed performance assessments are an established tool for assessing how well students deepen and apply knowledge and skills within project-based learning experiences.

Moving to greater authenticity begins by recognizing just how far standardized student assessments — our most prominent assessment method — diverge from the tasks students will encounter in the outside world. Learning and assessment are inauthentic when students’ knowledge of a subject is measured by how they address well-defined problems, working alone and without access to outside information or tools (see the chart below). Furthermore, many of the MyWays competencies defy simplification and compartmentalization into learning and assessment frameworks such as the chart’s “Standardized Student Assessment” column. Instead, most competencies in Creative Know How, Habits of Success, and Wayfinding Abilities are closely aligned with the situated learning characteristics in the “Tasks in the Outside World” column (see Report 11 for more on situated learning).

### Comparison of standardized assessments vs. real-world performance

<table>
<thead>
<tr>
<th></th>
<th>Standardized Student Assessments</th>
<th>Tasks in the Outside World</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge is:</td>
<td>Measured within a subject</td>
<td>Applied across disciplines, along with other skills, to solve real world problems, create products, and generate new knowledge.</td>
</tr>
<tr>
<td>Asked to address:</td>
<td>Facts and application of simple procedures to well-defined problems</td>
<td>Complex, disorderly problems in real-world contexts.</td>
</tr>
<tr>
<td>Work is done:</td>
<td>Individually</td>
<td>Individually and in groups of others with complementary skills to accomplish a shared goal.</td>
</tr>
<tr>
<td>Resources available:</td>
<td>Without access to outside information, and use only paper and pencil</td>
<td>The challenge is to evaluate information from a wide range of tools and resources to find what’s relevant to analyze problems and create solutions</td>
</tr>
</tbody>
</table>

Adapted for the Stupski Foundation from *Transforming Education: Teaching and Assessing 21st Skills (Cisco, Intel, Microsoft)*, 2010

In addition, learning science underscores dramatically how poorly learning in inauthentic settings, even for Content Knowledge and Creative Know How, transfers to real-world settings. For more on these findings, we point readers to the National Research Council’s *Education for Life and Work* (2012) and *Make It Stick* (2014) by Peter Brown, Henry Roediger, and Mark McDaniel. If learning is more effective and durable in more authentic settings, then our assessment methods must become effective at providing feedback and guidance in those settings as well.

The MyWay Field of Learning graphic below offers a useful visual device for envisioning learning activities in terms of thinking skills and the real-world abilities they engender. The left axis of the
“ballfield” represents increasing levels of Bloom’s thinking skills. The right axis represents increasing levels of real-world abilities across a range of settings of increasing authenticity. This device was introduced in Report 11 to illustrate the difference in authenticity between traditional learning modes and learning design for broader, deeper competencies. For example, High Tech High’s Mayan Community Project (which we feature as an example of Whole Learning through project-based learning in Report 11 and an example of authentic assessment later in this report) is at the high end of the thinking skills axis while spanning both simulated and bounded authentic settings.

Now that we have reviewed the basic diagram, let’s look at two versions illustrating traditional assessments versus examples of broader, deeper assessments that are higher on the right (authenticity) axis. The graphic below maps the common student experience in traditionally-designed public schools. Traditional assessments, including most classroom and state testing, focus on student performance on inauthentic measures, such as multiple choice questions. Better classroom and state tests, including PARCC, Smarter Balanced, and Advanced Placement (AP), include essays and other tasks that let students construct responses at a higher order of thinking, but they do not necessarily incorporate more complex, authentic contexts or settings.
Conversely, the graphic below plots several examples of assessments that are aligned with Whole Learning principles and increasingly authentic learning contexts, including rich simulation, extended projects, and immersion in the real-world settings of the Wider Learning Ecosystem; these contexts increase the development of student agency, capability, and adaptability.
For example, situated about one-third of the way out the authenticity axis is the Council for Aid in Education’s College and Work Readiness Assessment (CWRA), an “on demand” 90-minute task that offers a real-world scenario (such as how a city might deal with pollution from a now-defunct factory) and gives learners access to a library of online documents from which to create their responses. Compared with many traditional, on-demand assessments, the CWRA succeeds in simulating some elements of real-world tasks, such as evaluating and analyzing information, and problem solving.

Significantly further out the authenticity axis, the projects pursued by students at High Tech High involve work on complex challenges drawn from the real world, but structured and bounded both for practical reasons and to maximize learning conditions (to target the application of certain skills, for example, or offer time for feedback and self-reflection). Service learning and extended internships (like those offered by Big Picture Learning) move a step further toward complex authenticity because students are actually working in the messiness of the real world to deliver real products for companies or communities; furthermore, clients use and respond to their work, providing authentic feedback.

We offer further analysis of these models and many more in the section below on the Five Assessment Strategies. We also have a set of Field of Learning slides available, including an empty grid for your use.

**ASSESSMENT SHIFT 2: The shift to multiple and varied measures.**

The second assessment shift involves moving from single, narrow assessments to multiple forms of measures that are more varied, more developmentally nuanced, and better integrated. Although basic mastery of multiplication tables can be confirmed by a simple quiz or test, assessing competencies like creativity, social skills, and wayfinding abilities — the examples we used earlier — require a multifaceted approach.

Because multiple forms of measurement for any given competency are not the norm in traditional school models, we turn to state requirements for new drivers as a concrete and familiar example of such a system. At first blush, one might cite the road test as the qualifier for getting one’s license. However, over the past century, states have evolved systems of multiple, mandatory requirements to ensure the safety of drivers, passengers, and the public. In Massachusetts, for example, these requirements include the following:

- A written test of road rules (necessary for a learner’s permit)
- 30 hours of classroom instruction, with a test at the end
- Computer simulations (at some driving schools)
- 6 hours of official driving observation of another driver
- 12 hours of official driving practice
- 40 hours of additional practice, usually with parents
- A two-hour parent education class
- The road test
In addition, Massachusetts and many other states have instituted graduated driver licensing that begins with a learner’s permit, then graduates to various restricted, provisional, or probationary licenses in low-risk environments (such as driving with an adult, daytime driving, or driving without other adolescents).

In short, the Massachusetts “driving test” is actually a series of assessment-embedded learning experiences with multiple forms of measurement, addressing Content Knowledge and its application, Creative Know How, Habits of Success, and indeed Wayfinding Abilities, all through authentic performance.

The table below illustrates the multiple assessments involved with these Massachusetts requirements.

**Assessment elements for MA driver’s license**

<table>
<thead>
<tr>
<th>MA requirements</th>
<th>Assessment involved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Written test of road rules — to get permit</td>
<td>Multiple choice, fact-based; summative gateway to learner’s permit</td>
</tr>
<tr>
<td>30 hours of classroom instruction, with test at end</td>
<td>Formative feedback; scenarios for understanding of skills, consequences; summative knowledge test</td>
</tr>
<tr>
<td>Computer simulations</td>
<td>Incorporating application of knowledge and skills</td>
</tr>
<tr>
<td>6 hours of official driving observation</td>
<td>Introduction to the authentic learning environment; group/peer learning</td>
</tr>
<tr>
<td>12 hours of official driving practice</td>
<td>Practice loops in authentic environment with instant instructor feedback</td>
</tr>
<tr>
<td>40 hours additional practice, usually with parents</td>
<td>Practice loops in varying circumstances (different adult, different car), confirming transfer</td>
</tr>
<tr>
<td>2-hour parent education class</td>
<td>No assessment. Requirement is “programmatic”/seat time</td>
</tr>
<tr>
<td>The road test</td>
<td>Performance-based assessment in complex, authentic environment</td>
</tr>
</tbody>
</table>

(See also, in the *Introduction and Overview* of this series, our interpretation of learning to drive as an analogy for how the four MyWays domains all work together in the real world.)
Note the rich variety of assessments in the right column. The road test itself is actually just one component in a system of multiple, varied assessments embedded in a set of learning experiences. A system of this kind is an excellent model for assessing important life skills. The thoughtful creation of such assessment systems should be interwoven with the elements most vital to Whole Learning, student agency, and human development for life and work. The Latin root of “assessment” translates to “sitting next to” and “getting to know.” Accordingly, high-quality systems of multiple measures should allow students to observe mastery firsthand and receive feedback and coaching from those who know them, as well as empowering them to navigate their own learning.

The concept of multiple, varied measurement is essential in addressing broader and deeper competencies for several reasons. The driving test illustrates the highest level reason: to deal with broader, deeper competencies in a way that also furthers the development of meta-cognition and agency, learning and assessment must be multi-faceted. Summit Public Schools is one model that takes this richer view; for more on its model, see this case study on Summit’s approach to varied assessments and the Multiple measures box below. In addition, for some sets of competencies such as Habits of Success, individual measures have their own susceptibilities to bias. Thus, using two or more measurement methods and triangulating the results improves assessment. The Mission Skills Assessment, highly reviewed by RAND researchers, measures six of the Habits of Success and Creative Know How competencies by triangulating student self-reports, teacher assessments, and situational judgment (in hypothetical scenarios) or other student-completed performance measures. For more on this, see the section on Multiple measures below.

We turn our attention next to the set of Five Assessment Strategies that next generation educators can employ to address the shifts to both greater authenticity and multiple and varied measures.

The Latin root of “assessment” translates to “sitting next to” and “getting to know.” Accordingly, high-quality systems of multiple measures should allow students to observe mastery firsthand and receive feedback and coaching from those who know them, as well as empowering them to navigate their own learning.

Five Assessment Strategies that align with the two shifts

As with the assessment of driving and other important life skills, the next generation of student learning assessments will need to integrate learning and measurement, and use a variety of strategies in order to better develop and gauge progress on the different kinds of competencies involved. While the whole concept of assessment is complex, and assessment experts work in a range of specialized fields, educators thinking about next generation learning design can start by focusing on the following five key strategies:
Representing these strategies as oddly shaped puzzle pieces is intentional — as is the fact that the pieces don’t always fit together seamlessly. Some of these strategies are much more developed than others, some include innovative measures around which there is little agreement, and others currently feature more strongly outside the formal education sector than within it. All of this makes sense given that Whole Learning designs are focusing more on complex learning in the Wider Learning Ecosystem, as well as incorporating a broader range of agency-related competencies. At the same time, the strategies can also overlap. Performance assessment can be used for formative purposes, badges can be a form of performance assessment, and multiple measures can incorporate any combination of the other strategies.

Assessment is a fast-moving field and the pace of change — as well as the introduction of new solutions — is likely to accelerate. As we see it, the organizational question today for next generation educators is: 

*What investments in assessment capacity-building will foster shifts to greater authenticity and multiple and varied measures, and facilitate the incorporation and integration of promising new assessment tools and practices from across the next generation learning space?* We address this capacity question later, because it is important first to understand the scope of the shifts and the strategies involved. The five strategies we are recommending combine two established imperatives for effective assessment — *Formative assessment* and *Performance assessment* — as well as three other, emerging strategies. We provide one-page primers and a practice example on each; but first, we offer additional comments on the role of each of the five strategies.
Formative assessment
Frequent iterations of measurement; verbal, written, and peer feedback; and, perhaps most importantly, reflection — aligned and integrated with learning design — have proven to be some of the most powerful strategies in enhancing achievement. Formative assessment is a vital tool for the learner as well as teacher; done right, it encourages the ownership of one’s learning. Accordingly, a crucial area of innovation for next generation educators is tying formative (as well as performance) assessment to learning progressions and rubrics for hard-to-recognize, hard-to-measure Creative Know How, Habits of Success, and Wayfinding Abilities competencies such as creativity, social skills, and finding needed resources.

Performance assessment
Although they are not commonly found in traditional school models, Performance assessments have been used for decades. Here, we focus on authentic performance assessments through which students demonstrate the broader range of knowledge and skills by performing real-world tasks that require those skills. Curriculum-embedded performance assessments, within quality project-based or Wider Learning Ecosystem experiences, provide the greatest opportunity for assessing broader and deeper competencies.

Multiple measures
Like our driver’s license example, any complex competency requires more than one assessment type. This is certainly true of hard-to-measure Creative Know How, Habits of Success, or Wayfinding Abilities competencies like entrepreneurship, self-direction, and navigating personal journeys. In addition, multiple measures will likely be needed to gauge both the capability and agency aspects of any competency. Multiple measures should include formative and performance assessments; they might also usefully include diagnostics, pre- and post-tests, adaptive testing, and summative tests for the purposes of end-of-topic, end-of-course, and progression-to-next-level evaluations. For specific measure types, see the Multiple measures row in the chart on p. 25, as well as the Multiple measures primer and practice box. In today’s world, most educators will also need to include tests for the purposes of accountability. Accordingly, next generation educators need the ability to identify, administer, evaluate, and integrate multiple and varied assessment elements, tailoring the mix with both the learner and the competency’s purpose and nature in mind.

Badges and micro-credentials
Any system of assessment should make learning visible, transparent, and portable. Badges and micro-credentials help accomplish these goals for the aspiring learner, for teachers and student advocates, and (as screening/signaling devices) for subsequent academic institutions and employers. Badge systems range from those requiring micro-performance assessments to those verifying participation in a quality experience likely to promote competencies. (For Wayfinding Abilities, for example, a badge related to exploring college options would require not just “visiting three colleges,” but “creating a list of four characteristics most important to my college experience, visiting three colleges, and providing reflections on how each matched up to [or altered] the four characteristics I chose to look for in a college.”) Two new job options for next generation educators include roles for those with the ability to design meaningful
internal (home-grown) badges, and those with the expertise and Wider Learning Ecosystem connections to vet and manage external (regional or standards-based) badges and stackable credentials, including those for out-of-school experiences.

Quality reviews
For some competencies, there is little consensus on valid, reliable, context-sensitive measures of student outcomes. For these hard-to-measure competencies, educators can still evaluate the learning experience itself to ensure quality and maximize the potential for student development. A quality review involves evaluating qualitative and quantitative data on the experience design and implementation against defined learning objectives and a logic model of how those objectives can best be met. In many cases, Quality reviews can be informed by excellent, established quality standards based on longstanding real-world practice such as those for internships (Big Picture Learning) and career exploration (Linked Learning) — see details and links in the Quality reviews primer. Reviews can focus on user experience and learning design, the school climate and culture likely to support competency development, and educator expertise in human development and brain science. While essential for hard-to-measure competencies, Quality reviews can also complement assessment of any student competency and foster program improvement.

Going deeper with the Five Assessment Strategies
These five strategies apply across all four MyWays domains and the 20 individual competencies, as next generation educators develop combinations and configurations that best support the development of broader and deeper competencies, individually and collectively.

While all five strategies are important to next generation assessment today, the first two strategies are at the core and are interconnected: expanded use of curriculum-embedded performance assessment that also includes strong formative assessment elements is central to the kind of learning and assessment needed to prepare students for the world after high school graduation. This foundation of performance and formative assessment makes possible more authentic assessment of deep and durable learning in Content Knowledge and Creative Know How, as well as offering opportunities for learners to develop and gauge progress in Habits of Success and Wayfinding Abilities in ways that might be lacking in more transmission-based learning and traditional assessment.

The following section provides a two-page spread for each of the five strategies. The one-page primers are not intended to be comprehensive nor do they provide in-depth analysis of each strategy’s technical merits. Rather, their purpose is to get design teams thinking and discussing the level of variety, nuance, and integration needed to develop assessments for broader and deeper competencies. The facing practice boxes provide a glimpse into the efforts of just some of the Assessment for Learning Project’s members to develop and reflect on new assessment approaches and tools. (See p. 27 for more about ALP.)

Note: after the Five Assessment Strategy primer and practice box pages, we provide a chart summarizing key points from this section on one page. This summary is intended to promote discussion rather than capture all possible characteristics and examples of the various strategies.
Formative Assessment

The foundational role of formative assessment in effective learning design

“Formative assessment is both good teaching and good learning, because it empowers students to self-assess and guide their own learning.”

—McREL, Re-Balancing Assessment

Why it’s important:
Formative assessment is a process involving actions undertaken by teachers and students within a learning activity to gauge progress, provide feedback, and adjust further learning. Frequent iterations of measurement, feedback, and reflection — aligned and integrated with learning design — have been shown to be one of the most powerful strategies in enhancing achievement, especially for lower-performing students (See Hattie). In addition to engendering deeper, more durable learning of knowledge and skills, formative assessment is a vital tool for the learner as well as the teacher; done right, it encourages the ownership of one’s learning. Accordingly, a crucial innovation area for next generation educators is tying formative assessment to learning progressions and rubrics for hard-to-recognize, hard-to-measure competencies such as creativity, social skills, and wayfinding.

The graphic to the right underscores the multiplier effects of formative assessment.

Examples of this type of measurement:

- Teacher-initiated formative feedback, including: gathering rich evidence of student progress toward transparent learning goals through a variety of means (observation, checks for understanding, questions, student response systems); providing feedback that is rapid, descriptive, and focused at the task, process and self-regulation levels; and using feedback to adjust learning and instructional activities.

- Student self-assessment and self-reflection, where students are deeply involved in gauging their own progress toward learning goals, and reflecting on their own learning processes. Includes student-run conferences.

- Peer-assessment, including gallery walks, feature critiques, pair-and-shares using rubrics, or even group discussions where students give each other feedback on ideas that are then further developed.

- Digital forms of formative feedback and adaptation of instruction through adaptive software and adaptive learning games or simulations that are set up to respond to performance as it happens.

Through the MyWays lens:

- The focus on process as well as product provides the opportunity for the development and assessment of capability and agency, which comprise competence. See more concrete examples in the Levers section of Report 11.

- Self-assessment and self-reflection are particularly important for the new goal-line of activating agency across all four competency domains. As Rick Stiggins says, “If you want to appear accountable, test your students. If you want to improve schools, teach teachers to assess their students. If you want to maximize learning, teach students to assess themselves.”

- For inspiration on the educator role, try turning to teachers and coaches of novice-to-expert, practice-based subjects like music, drama, and sports; youth developers who work with youth on self-reflection; and special educators who work with strategy-based (read: process-based) instruction.

A few resources as food for thought:

- Ron Berger et al., Leaders of Their Own Learning: Transforming Schools Through Student-Engaged Assessment and website.

- McREL/Measured Progress. Re-Balancing Assessment: Placing formative and Performance Assessment at the Heart of Learning and Accountability.

For more resources, see the MyWays website.
FORMATIVE ASSESSMENT

Developing Deep Educator Expertise in Formative Assessment

Assessment is often thought of as an event or an instrument, rather than a process. As a result, many define formative assessment by when it occurs, instead of how it occurs. A small quiz given at the end of class — an exit ticket — can show whether students understood what was taught, but it does not shed much light on the more important question: how will students learn the concepts that come next? This is the job of formative assessment, and it requires teachers to engage deeply with the material to be learned and the students who are grappling with it. Quality formative assessment, then, is less about the tool and more about the educator expertise in understanding how students progress. So how do educators develop this expertise and incorporate formative assessment into their instructional practice? Here are a few examples:

**Learning progressions.** In order to give good feedback, teachers need to know how students develop increasingly complex understanding of the material they’re learning, at a very incremental level. One very powerful way to accomplish this is for teachers to dig deeply into student work, deconstructing what it shows about how different students are making sense of the material. The [Colorado Education Initiative](https://www.colorado.gov/pacific/educationinitiative) is helping a multi-district collaborative of teachers map out these developmental progressions, working side by side with researchers from the University of Colorado Boulder [Center for Assessment Design, Research, and Evaluation](https://www.colorado.edu/cadre)’s [Learning Progressions Project](https://www.colorado.edu/cadre/learningprogressions). Teachers then use the learning progressions in their classrooms, testing whether the documents actually capture the developmental progression for the students in their class, revising as needed, and discovering what is generalizable and what is unique to each student. This is a rigorous *process of shared inquiry* into student learning. It creates not only a tool, but a deep *expertise in how the understanding of complex concepts emerges* in developing minds. For an excellent overview to this project and other uses of learning progressions, see this [EdWeek](https://www.edweek.org) article.

**Quality feedback (or, feed-forward).** Formative assessment has the greatest impact when there is a culture of feedback among young people as well as adults in classrooms and schools. [Henry County Schools](https://www.henrycountyschools.org) in Georgia is building this culture by inviting students to give “feedback on feedback.” Henry County is training teachers in formative assessment using a [Feedback Loop protocol](https://www.cadre.org). As part of the process, after students receive feedback from teachers they are prompted to give reciprocal feedback on how helpful the teacher’s feedback was. The system is designed to provide real-time information to improve the quality of feedback, while at the same time deepening the culture of learning.

**Self-assessment and peer feedback.** Formative assessment works when it prompts students to better understand criteria for success, and to think deeply about their own learning as it relates to these criteria. Self-assessment and peer feedback are powerful tools to accomplish this. Through the [Student Agency in Assessment & Learning](https://www.wested.org) project at [WestEd](https://www.wested.org), teachers are engaging in these processes themselves and with students to identify ways they can improve opportunities for students to self-assess and give feedback to peers. Teachers take video of students learning in their classrooms, and then they reflect on the student experience using “continua” that describe criteria for high-quality self assessment and peer feedback. After they’ve reflected on their own classroom, they share the video with peers for feedback. Together, the teachers generate strategies for how to integrate these practices more deeply into their classrooms.
Performance Assessment

**The centrality of performance assessment in measuring capability and agency**

“Ultimately, the promise of CEPA [Curriculum-Embedded Performance Assessments] is that they provide a more motivating, robust, and balanced way to measure student learning.”

—McREL, *Re-Balancing Assessment*

**Why it’s important:**
Performance assessment (PA) is the process by which the learner demonstrates knowledge and skills by doing real-world tasks that require those skills. It is associated with features such as real-world scenarios; authentic, complex process; higher-order thinking; authentic performance; and transparent evaluation criteria. Although they are not commonly used in traditional school models, PAs have been in use for decades. Curriculum-embedded performance assessments (CEPA), within project-based or other experiential learning, provide the greatest opportunity for assessing broader and deeper competencies.

The graphic below underscores the multiplier effects of PA.

---

**Examples of this type of measurement:**

- Assessment of real-world tasks or junior versions of them using assessment rubrics — both extended, curriculum-embedded models (CEPA) and bounded PAs from task banks. (See Report 11 on junior versions.)
- Public performances and public exhibitions of the outcomes of project work.
- Portfolios, student logs, and journals that document the learning process, reflections, and revision of work.
- CEPA is incorporated into some deeper learning, project-, work-, and service-based learning, and competency-based learning models, such as EL Education, Envision, High Tech High, New Tech Network, Sanborn (NH), and Summit Public Schools.

**Through the MyWays lens:**

- CEPA has much in common with the Whole Learning design presented in Report 11 (applied, holistic, authentic, complex, and connected to the adult world). The use of PA, like that of holistic learning, is central because it engages the full range of broader, deeper competencies and provides rich opportunities for developing student agency and capability. CEPA follows all seven Whole Learning principles, and is highly aligned with the eight Levers for Capability and Agency described in Report 11.
- Like Whole Learning, PA carries within it a paradox — that it should be experienced by learners as holistic and integrated, yet must be carefully designed to assess specific learning outcomes at the right “grain size” to effectively evaluate them. Therefore, educators need effective tools for designing high-quality PA (clear learning targets; standards for content, skills, and habits; process protocols; product rubrics; learning progressions; and conceptual maps) and coaching on how to use them without allowing the student learning and assessment experience to be disjointed and molecularized.

**A few resources as food for thought:**

- The Buck Institute for Education’s Resource List: Assessment in PBL.
- Chris Sturgis, *Learning Progressions: Are Student-Centered State Standards Possible*, offers a useful discussion of and links for progressions, in addition to examining the accountability issue.
- For tools related to PA, such as learning progressions, rubrics, developmental frameworks, and rich task resource banks, see the “Implementation Tools” box at the end of this report. These tools are more plentiful for Content Knowledge and Creative Know How, but we also link to emerging work in the other two domains.

**For more resources, see the MyWays website.**
PERFORMANCE ASSESSMENT

Measuring Creative Know How with Performance Assessment

Deeply committed to a broader definition of student success, the educators at Two Rivers Public Charter School in Washington, D.C., are finding ways to measure not only core content and basic skills, but also three additional dimensions of student success: critical thinking and problem solving, collaboration and communication, and character. Performance assessment is a natural fit with their project-based and problem-based curriculum. And it provides the opportunity for authentic assessment that engages a broad range of these success dimensions.

To assess Two Rivers’ critical thinking and problem solving dimension — aligned with the MyWays domain of Creative Know How — the school designed a series of performance tasks, rubrics, and instructional supports. The performance assessments measure students’ ability to transfer these skills to new situations through content-neutral tasks. For a great description of the work behind developing the performance tasks, in collaboration with the Stanford Center for Assessment, Learning, and Equity (SCALE), see this EdSurge MyWays series article. Descriptions of the competencies within the critical thinking and problem solving dimension — schema development, decision making, effective reasoning, problem solving, and creativity and innovation — as well as the rubrics and tasks tailored for pre-kindergarten through eighth grade, are available in the organization’s Deeper Learning Assessment folder.

What’s the impact?

According to the director of curriculum and instruction at Two Rivers, Jeff Heyck-Williams, “Implementing performance assessments of critical thinking and problem solving has galvanized teachers to be more intentional about their explicit teaching of these skills.” Specifically, he continues, “Teachers have begun to implement thinking routines that cross disciplines and are intended to become habits of mind that students can apply widely in various situations.” One example is how students are developing a thinking routine for problem solving in any subject and for any project, which allows them to transfer the skill in flexible ways: First, identify what they know about the problem, what they need to find out, and what ideas they have for approaching the problem. Next, monitor their problem solving process to determine if they are on a fruitful path. Last, evaluate not only their solution but the process that they took to arrive at a solution.

Understanding student performance over time

Assessing performance against pre-defined tasks isn’t a panacea, however. When it comes to collaboration and communication, and character skills, Two Rivers is moving down a somewhat different path. They are currently, for instance, using student self-assessment and teacher assessment against rubrics to understand how student performance over time in a class reflects the school’s Scholarly Habits (I work hard; I am responsible and independent; I care for my community; I am a team player). While not involving pre-defined, content-free tasks, this is similar to the more longitudinal and embedded performance assessment practiced by Summit Public Schools and Envision Education, and employed in the Sanborn CARES approach described in the box at the start of Report 7. The school team is still grappling with the best way to capture data related to these success dimensions, but Heyck-Williams sees the next steps for this work involving consulting social-emotional learning (SEL) frameworks to refine the Scholarly Habits definitions, and engaging their staff, students, and families in creating concrete “look-fors” in student performance.
Multiple Measures

The importance of multiple measures within next generation learning environments

“Whenever possible, we recommend using a plurality of measurement approaches. While time and money are never as ample as would be ideal, a multi-method approach to measurement can dramatically increase reliability and validity.”

—Duckworth and Yeager, Measurement Matters

Why it’s important:
There are many important reasons to use multiple, diverse measures: to cover a broader range of very different competencies; to address the student agency element of competency, which requires more nuance and context; and, as noted above, to enable triangulation of results, which is good practice in any event, but particularly important while some types of measures are still in development. And, of course, different types may be suitable for diagnosis, for demonstrating mastery, and for other summative and accountability purposes. Accordingly, next generation educators need the ability to identify, administer, evaluate, and integrate multiple assessment elements.

Examples of this type of measurement:

- For Content Knowledge and Creative Know How, while formative and performance assessment are central, models designed around these domains also use traditional selected response and essays, as well as adaptive software and simulations, to develop and gauge progress on knowledge and skills.

- For Habits of Success and Wayfinding — as well as agency in general — the field has yet to converge on common valid, appropriate measures for guiding learning and development in these areas. Educators might measure student perseverance, for instance, using 1) performance assessment employing a rubric in a PBL approach similar to EL Education’s; 2) Newton’s Playground, a computer simulation that stealthily measures learning of physics concepts, as well as student perseverance indicated by trying alternative strategies when obstacles occur; or 3) The Partnership in Education and Resilience (PEAR) Institute’s Holistic

Possible assessments in a multiple measures strategy

- Student Assessment, other self-reports, or teacher observations).

Through the MyWays lens (mostly focused on Habits of Success, Wayfinding Abilities, and agency):

- On the measurement of agency traits, as Angela Duckworth (known for her work on grit) recently warned, we are not “there” yet. Such measures, usually based on self-reports, are susceptible to issues of reliability, validity, fakeability, and context-dependency. More embedded forms, such as performance assessment, also need careful consideration.

- At the same time, researchers and innovators are working on improving and targeting such measures, drawing on international practice to improve performance assessment, such as through social moderation, and developing forced choice pairwise preference, and other more sophisticated forms of self-reports. Major SEL/agency/character players are also developing what they hope will be new, improved measures. See this report’s “Moving forward” section.

- Other innovative approaches also show promise — including situational judgment assessments, computer simulations, learning games, and MUVES (multi-user virtual environments); the use of adaptive learning software for basic skills; evidence-centered concept maps for assessing higher-order thinking; and real-time mining of learning-related, online behavior data.

- There is also room for this field to borrow more from other fields, including early education, youth development, developmental psych, workplace HR, and special education (especially relating to executive functioning, ADHD, and spectrum disorders).

A few resources as food for thought:

- Valor Collegiate Academies, a leader in Habits development, has an excellent Resource Guide providing public access to a wealth of documents relating to its well-regarded Compass model for student development.

- Reviews of agency and Habits measures by educators and youth developers include Evolving Assessments for a 21st Century Education; CCR; Measuring 21st Century Competencies, Asia Society and RAND; and From Soft Skills to Hard Data, Forum for Youth Investment.

- Coming in winter 2018: CASEL/Measuring SEL’s Assessment Guide for Educators, an online tool for selecting and using currently available SEL measures.

- To keep on top of emerging agency-related measures, sign up for Transforming Education’s MESH newsletter, or join the Measuring SEL’s Collaborators’ Network.

For more resources, see the MyWays website.
Summit Public Schools, a charter management organization with 13 schools in California and Washington, is a thought- and practice-leader in the next generation learning space, supporting over 330 schools across 40 states through the Summit Learning Program. Summit is taking a multiple measures approach to assessing their four elements of college readiness: Cognitive Skills, Content Knowledge, Habits of Success, and Sense of Purpose. Their use of multiple, varied measures spans not only across these four elements, but also within them.

Cognitive Skills are measured using a Cognitive Skills Rubric, developed in partnership with the Stanford Center for Assessment, Learning, and Equity (SCALE). The rubric enables teachers to assess student proficiency of the 36 skills within every subject in every grade level. Cognitive Skills are learned primarily through projects and the rubric is most often used in connection with performance assessment of projects.

Content Knowledge is measured through a set of assessments embedded within the Summit Learning Platform, an online tool to personalize learning through goal-tracking, playlists of self-paced content, and deeper learning projects. Both diagnostic and culminating assessments are available on-demand, and students must correctly answer 8 of 10 questions on the content assessment to pass.

The organization does not yet have a system-wide, defined approach for assessing Habits of Success. As Chief Academic Officer Adam Carter wrote in 2015, Habits of Success “are the invisible thread that ties together the fabric of relationships and organizations — they are bound intimately with motivation and achievement. They count, but we don’t yet count them. We should.” Summit has been moving forward methodically in this area (in a design thinking, test-and-see way, not a research-extensively-before-doing-anything way) because the research community has not yet coalesced around how these habits are best developed and measured. Carter noted that he believes “a portfolio approach to assessing these Habits of Success is possible, and we have laid much of the groundwork to collect such assessment information.”

Summit continues to pursue this portfolio or Multiple measures approach because it respects the inherent complexity and nuance of Habits of Success. The organization has piloted various ways to measure habits including Emotional Intelligence, Self-Directed Learning Behaviors, Learning Strategies, Academic Mindsets, and School and Classroom Culture. Summit relies on both quantitative and qualitative information, piloting a mix of surveys (self-report and adult-observation), back-end data analysis of online behavior metrics, tracking of goal-setting and achievement measures, badges, and “pop-up” questions in the learning platform.

Through the pilots, the Summit team has also concluded that schools need more of an “actionable, in-the-moment” approach to assessment. The data are fed into 1:1 mentoring between students and educators and weekly dashboards within the Summit Learning Platform to enable “understanding through conversation” with students, as well as rapid-cycle interventions. A second approach involves culminating, high-stakes, summative, but also future-facing assessment: Summit is exploring the possibility of a capstone graduation requirement like a portfolio oral defense. Portfolios are, by their nature, composed of multiple measures of proficiency, and they would add a cumulative element to Summit’s multiple measures of Habits of Success.
Badges and Micro-credentials
The benefits of integrating badges and micro-credentials for personalized learning

“We think Badges Will Be Big. They provide an efficient way for employer groups to signal requirements for job clusters and a way for learners to accumulate and share a growing portfolio of skills.”

—Tom Vander Ark, Vander Ark on Innovation

Why it’s important:
Students pursuing Whole Learning for the full range of success competencies spend more of their time learning outside of school in the Wider Learning Ecosystem (WLE). Badges are an assessment and credentialing mechanism that can help make the results of this learning visible, transparent, and portable. (For example, clicking on a digital badge can link not only to criteria for earning it, but also to evidence from a completed project and comments from collaborators or evaluators.) Some educators are looking to create badging systems appropriate for assessing and encouraging Habits of Success and agency within school settings. External badging and other more structured forms of work-related micro-credentials are also increasing as ways to capture new aspects of personalized learning pathways and informal learning.

Examples of this type of measurement:

- The open badging movement was pioneered by the MacArthur Foundation, Mozilla Open Badges, the Badge Alliance (now IMS Global), and HASTAC.
- Out-of-school-time programs have been early adopters of badging. Chicago City of LRNG awards badges for quests and experiments that roll up into city-level STEAM badges. Providence After School Alliance’s badged learning experiences, from science internships to business pitches to Social Venture Partners of RI, are accepted for credit by the school system, and recognized by several state higher education institutions. For more on a variety of community learning networks, including Hive, Education Innovation Clusters, and Remake Learning, see the WLE section of Report 11.
- Micro-credentials, also known as stackable credentials, include educational credit, non-credit, and industry certifications. The Work Readiness Credential, for example, is available in 23 states. The National Academy Foundation’s NAFTrack certification includes performance assessment resulting in artifacts, which can be added to portfolios, and workplace observations, leading to NAFTrack Certified Hiring benefits. Jobs for America’s Graduates supports 88 competency-based modules ranging from workplace competencies to character development.
- The Credential Engine, a non-profit alliance led by Lumina, George Washington University, and the Business Roundtable, is now creating a credential registry that will enable job seekers, students, workers, and employers to search for and compare thousands of credential programs through the Workit search app, to be launched in winter 2017. Other efforts to strengthen credentialing systems and provide individuals with ways to navigate competency-based micro learning include offerings like Workcred, Degreed and Pluralsite. See Michael Horn’s take in this Forbes article.

Through the MyWays lens:
- The badging ecosystem is still evolving; some groups are working to align performance learning standards to those used in schools, while others argue that informal learning should remain interest-driven and student-directed. “Too quick a move towards badges runs the risk of destroying the complex but fragile ecosystem within which participatory learning thrives,” claims USC’s Henry Jenkins in this EdWeek article.
- Several next generation schools have explored badging to recognize work in Habits of Success or Wayfinding. Summit has piloted badges for note-taking and metacognition skills, as well as expeditions that reflect students’ passions, like coding or gardening. Valor awards badges for its Compass character activities within an ongoing, mentored program of progressively advancing practice and reflection. Also see Del Lago’s Competency X on the next page, and more examples in the EdWeek article just below.

A few resources as food for thought:
- Students Earn Digital Credentials for Adding New Skills, Edweek article by Michelle Davis
- Expanding Education and Workforce Opportunities through Digital Badges, Alliance for Excellent Education.
- Understanding CTE and Stackable Credentials, Transitions Academy.

For more resources, see the MyWays website.
Badging Scholars in Science and Engineering Practice

“Digital badges fill in gaps for how we describe what scholars know and can do in the real world. Traditionally, most scholars only have a transcript of coursework to represent what they can do. Digital badges unbundle the competencies within both courses and workforce experiences to help fill in the gaps of larger credentials (e.g., degrees and certifications). This allows them to be more precise about what a learner is capable of accomplishing.”

— Alec Barron, Del Lago Academy

**Del Lago Academy - Campus of Applied Science** (DLA) is a district high school in Escondido, CA, created to “engage scholars in real-world learning in order to prepare them better for success in college and career.” DLA was designed around the *Next Generation Science Standards (NGSS) for Science & Engineering*, with interdisciplinary projects and biotech industry internships at the center of the academic program. As the DLA team reflected on how to support students to transfer knowledge and engage in scientific inquiry, they realized that there was a bigger question to answer: How do people actually learn to become practicing scientists?

To answer this question, DLA held a summer institute in 2016 with students, teachers, and professional scientists. The institute began by posing this question to partners: When students come into your professional context, what skills, knowledge, and dispositions do you want them to have in order to be successful with the tasks you’d assign a new employee or intern? The result was DLA’s **Badge Progression**, which identifies applied skills in in three categories: Experimenting, Analyzing, and Communicating.

DLA’s **Competency X** website now provides a hub for this system, which also houses digital portfolios through which students track and reflect on evidence of their competency. Some foundational badges are required for all students; others can be pursued based on a student’s individual interests and goals. Badge requirements are co-created and validated by industry and college partners, and badges are earned when scholars meet specific criteria for these practices in their digital portfolio. Badges cover a range of attributes, from technical skills (e.g., measuring small volumes) to Habits of Success (e.g., reflective thinking), and everything in between. For examples, see **Skeptic Level 1** and **Elevator Pitch** badges.

Students collect evidence during school labs and internships. Using their 1:1 iPads and a free blogging platform, students capture photo and video evidence of their lab work and write short blog posts describing this evidence. When a student feels she has collected the evidence of learning to earn the badge, she submits it for review by a teacher, who either grants the badge or provides feedback on how the evidence of learning needs to be improved. The **digital badges** are used by scholars as evidence of their competency with the knowledge and skills required to be a scientist for further internships and college applications. DLA highlights the **benefits of a digital platform** in linking to evidence of performance, allowing learners to reflect on their progress and solicit feedback from a community of practice, and enabling prospective employers to assess the credibility of the credential and see individual skill development. Find out more in this Competency X **overview video** (9m) and at the Competency X **blog**.
Quality Reviews
The added value of evaluating programs as well as students

“Shifting the focus of measurement away from only examining outcomes, towards the broader environmental aspects of learning conditions, could prove to be a powerful outcome.”

—Michael Fullan, Towards a New End: New Pedagogies for Deep Learning

Why it’s important:
A quality review of learning experiences is a systematic process of gathering and analyzing data (qualitative and quantitative) to inform learning and action. Importantly, it helps uncover insights related to context, the “how” and “why,” what works when, and what factors help or hinder. When unable to assess hard-to-measure competency outcomes directly or when lacking confidence in the reliability of assessments, it is particularly important to conduct a rigorous evaluation of program design and implementation, holding it up against learning objectives and a logic model of how those objectives would be met. Assessment can take many forms, and at times, a quality review of learning experiences is the only available way to foster student growth and program improvement.

Examples of this type of measurement:

- Evaluation of learner experience, looking at how and why, and what seems to work when and in what context. What opportunities and depth does the experience offer from the learner perspective?

- Evaluation of inputs and activities using quality standards such as those created for internships (see Big Picture Learning’s ImBlaze and Learning Through Internships Toolkit); career exploration (see Linked Learning’s report on the criteria for designing and assessing the quality of a career exploration experience); or service learning (see National Youth Leadership Council’s standards).

- Evaluation of school climate and culture, especially in relation to support for agency, Habits of Success, and Wayfinding Abilities, using established and newly-developed school surveys, reflections, and so on.

- Evaluation of educator understanding and use of holistic learning, next generation assessment, and the fundamentals that stand behind them — that is, brain and learning science, human development, growth mindset, and new educator roles in student-directed learning.

- The Scottish system of “experiences and outcomes” incorporates quality review of learning experiences at a national level, recognizing “the importance of the quality and nature of the learning experience in developing attributes and capabilities and in achieving active engagement, motivation and depth of learning.”

Through the MyWays lens:
- Work-based learning for all students is a critical element for broader student competency. Educators looking to evaluate internship designs will find excellent recent “gold” standards for high-quality internships from the National Academy Foundation, and tools for design, compliance, and quality assurance embedded in ImBlaze, Big Picture’s new internship management platform. ConnectEd’s Guide for the Linked Learning Pathway Quality Review Process also provides useful insight into the importance of quality processes.

- As new approaches to learning continue to develop, we will continue to look for ways to tell if and how they are working. For questions and suggestions — though no hard answers — see, for example, How Should We Measure the Impact of Makerspaces?

- Even for competencies with reliable outcome measures, as Srikanth Gopal of FSG noted, quoting a colleague, “You can’t fattcn a pig by weighing it.” Nuanced quality review can get at the situational and contextual factors that underlie the broader competencies and student progress on developing them.

- For inspiration, Fullan also suggests looking at working practices in knowledge-based organizations. Finland’s view of “teachers as action researchers,” as noted by NGLC’s Andy Calkins, is also relevant here.

A few resources as food for thought:


For more resources, see the MyWays website.
QUALITY REVIEWS

Quality Review at the Learning Environment and Community Level

What are the characteristics of a successful student of the Hawai‘i public schools? Like many districts and states, Hawai‘i has adopted a framework to answer the question, called BREATH, or in Hawai‘ian, HĀ. BREATH is an acronym for: Belonging, Responsibility, Excellence, Aloha, Total well-being, and Hawai‘i.

This framework differs from many we have seen not only in its language and explicit responsiveness to Hawaiian history and culture, but also in how it conceives of these measures. HĀ is a vision not only for individual student readiness, but also for community readiness. As the Board-adopted policy states, the framework “reflects the Department of Education’s core values and beliefs in action throughout the public educational system of Hawai‘i.”

Values like belonging, responsibility and aloha (welcoming) are not only individual, but reciprocal — they are expressed at the community level as well. For this reason, assessing these outcomes only at the student level would be incomplete. As an educator explains in this helpful video (6m), “People ask, what is HĀ. The first things that I think of are systems outcomes.” In addition, as the HĀ policy states, “All six outcomes are interdependent and should not be used separately.”

The framework was developed through inclusive community dialogue, and as the Hawai‘i public schools develop their approach to assessing it, they are beginning with assessments of the learning environment rather than students.

The process invites members of the community — both within and beyond the walls of the school — to reflect on the ways that the HĀ values are expressed in the learning environment. Using this process across several communities within Hawai‘i, HIDOE is developing a common understanding of what are the elements of a HĀ learning environment. As more communities begin to adopt HĀ (as of this writing it is a voluntary pilot), they will draw on this common understanding to assess their own learning environments — a powerful form of quality review.
### Five Assessment Strategies for broader and deeper competencies

<table>
<thead>
<tr>
<th>Points and principles</th>
<th>Illustrative examples</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Formative assessments</strong>&lt;br&gt;To provide the essential foundations for effective learning and personal development</td>
<td>• Focus on process over product&lt;br&gt;• Rapid, ongoing feedback loops&lt;br&gt;• Adapting subsequent instruction or experience&lt;br&gt;• Requires clear, transparent learning goals, progressions&lt;br&gt;• Action and improvement cycle motivates growth mindset&lt;br&gt;• Teacher checks for understanding: traditional quizzes, exit tickets, and student response systems, with follow-up.&lt;br&gt;• Self-assessment/reflection: students gauge their own progress and reflect on their learning process; includes student-led conferences.&lt;br&gt;• Peer assessment: gallery walks, feature critiques, pair-and-shares, and group discussions.&lt;br&gt;• Revision, iteration, re-dos to mastery, improved quality.&lt;br&gt;• Digital adaptive software or simulation with feedback loops; digital collection of behavioral data.</td>
</tr>
<tr>
<td><strong>Performance assessments</strong>&lt;br&gt;To provide the rich context for development and measurement of agency and capability</td>
<td>• Engages student agency&lt;br&gt;• Less “proxy”; closer to complex adult world&lt;br&gt;• Longer-term performance assessments embedded in PBL and competency-based curriculum offers the most opportunities to address broader competencies&lt;br&gt;• Still establishing best “grain size” for learning and assessment&lt;br&gt;• Assessment of real-world tasks or junior versions thereof, using assessment rubrics and learning progressions.&lt;br&gt;• Public performances, especially if assessed in part by members of professional communities of practice.&lt;br&gt;• Public exhibitions of project work, including learner explanation, demonstrations, and response to queries.&lt;br&gt;• Student logs and journals that document process, reflection, and revision.</td>
</tr>
<tr>
<td><strong>Multiple measures</strong>&lt;br&gt;To address the whole learner and the breadth of competencies within next generation learning environments</td>
<td>• Multiple measures create rounded learner profile&lt;br&gt;• Coverage across diagnostic, formative, and summative&lt;br&gt;• Different types of measures are needed for different types of competencies and aspects of competency such as agency&lt;br&gt;• On Habits of Success and Wayfinding, as well as agency generally, tools are not yet “there”; multiple measures create checks&lt;br&gt;• Performance and formative assessments (above) are vital for authenticity, complexity, and integration, and need to be augmented with badging and quality reviews (below).&lt;br&gt;• Also useful as multiple measures: extended written response, situational judgment (hypothetical scenarios), direct observation, behavioral data (or “bio-data”), improved self-reports, forced choice, self-reflections, teacher reports, and so on.&lt;br&gt;• Includes required accountability testing, pre- and post-tests, and non-performance summative assessment.&lt;br&gt;• “Assessment” may not even look like traditional assessment, from stealth assessment in computer gaming to informal teacher assessment of student interests and real-world capacities.</td>
</tr>
<tr>
<td><strong>Badges and micro-credentials</strong>&lt;br&gt;To integrate “anywhere, anytime learning” within personalized learning approaches</td>
<td>• Badges can recognize participation, skill, and achievement&lt;br&gt;• Flexible assessment for learning outside school, especially in the community (PASA, Cities of LRNG), at work (internships), and in agency and Habits of Success areas&lt;br&gt;• Requirements: modular, visible, transparent, and portable&lt;br&gt;• All badge types are useful, but badges based on demonstrated and verified skills (micro performance assessment) hold the most promise for broader competencies.&lt;br&gt;• Examples of badging systems: Microsoft, Chicago City of LRNG, Summit Public Schools, and Del Lago Academy’s Competency X.&lt;br&gt;• Other micro-credentials: Career readiness certificates (JAG’s competency modules to ACT WorkKeys); also industry, educational, and non-credit certificates that can be “stacked” to lead to degrees (see NAFTrack).</td>
</tr>
<tr>
<td><strong>Quality reviews</strong>&lt;br&gt;To ensure the quality of the learner experience when outcomes can’t be measured (and even when they can)</td>
<td>• In Habits of Success and Wayfinding as well as agency overall, student outcome tools are still emerging. Indeed, schools are only now adding coverage; evaluation of inputs, experiences, and outputs is likely to increase quality and effectiveness even if student outcomes cannot be measured precisely&lt;br&gt;• Evaluating learner experience, looking at how and why, what seems to work when, and in what context.&lt;br&gt;• Evaluating inputs and activities by using quality standards documents for internships (BP), career exploration (LL), service learning (NYLC), and so on.&lt;br&gt;• Evaluating the school climate and culture to support agency and Habits of Success (established and new survey tools).&lt;br&gt;• Evaluating educator understanding and use of holistic learning and next gen assessment.</td>
</tr>
</tbody>
</table>
Moving forward: cautions, potential, and ways to work together

The primers just presented on the Five Assessment Strategies provide samples of what’s going on in the field, the practice boxes provide a window into some prototyping of new approaches, and the resource boxes at the end of this report offer links to resources that review specific types of assessment for strengths, limitations, and suitability for particular purposes. But, as even the primers make clear, the field of next generation assessment is still emerging. Careful thought is warranted about the use of various assessment measures, especially for agency and Habits of Success; nevertheless, given the demonstrated importance of these broader competencies, it seems equally important to avoid “analysis paralysis” and to forge ahead in testing out new tools and measures in next generation learning and assessment (though not accountability) models. As Angela Duckworth and David Yeager urge at the end of Measurement Matters, their paper on assessing “personal qualities”:

Given the advantages, limitations, and medium-term potential of such measures, our hope is that the broader educational community proceeds forward with both alacrity and caution, and with equal parts optimism and humility.9

Cautions

Among other warnings, Duckworth and Yeager’s influential article provides a useful set of cautions from people involved in researching and developing measures for the trait of grit. They point out that many of the existing Habits of Success and agency measures were created for research purposes, not as evaluation tools or tools to measure student outcomes. They review three of the most common types of measures: self-reports, teacher-reports, and performance assessments, describing their strengths (all can be “remarkably predictive” under the right conditions) and their limitations. With regard to limitations, for example, self- and teacher-reports are subject to misinterpretation by the participants, reference bias (with different groups of people having different standards or reference points when they rate themselves), faking, and social desirability bias (answering in a way that others will view favorably). While performance assessments avoid some of these concerns, they can be misinterpreted by researchers and be vulnerable to task impurity and extraneous situational influences. The authors suggest that educators “seek out the most valid measure for their intended purpose(s),” adding that “[w]henever possible, we recommend using a plurality of measurement approaches. While time and money are never as ample as would be ideal, a multi-method approach to measurement can dramatically increase reliability and validity.”10

Promising developments

Duckworth and Yeager, as well as numerous other practice researchers, also underline the potential for improving existing assessments, as well as for innovations that produce new types of assessment. Potential improvements to existing assessment types include: enhancing self-reports (such as by using anchoring vignettes to decrease reference bias by helping users calibrate responses; sampling random subsets to decrease assessment impact on individual students, and using quasi-ipsative pairwise-preference options to improve forced choice measures); mining behavioral or bio data (analyzing online learning behaviors and
communications in real time, and applying factor analysis to data such as attendance, GPA, and suspensions); and improving performance assessment (using more sophisticated tools and processes such as learning progressions, social moderation of assessment, and the embedding of performance tasks online as a way of facilitating information collection and performance reporting). For more on addressing the limitations for performance assessment, see the ETS paper, *Psychometric Consideration for Performance Assessment with Implications for Policy and Practice*.

**Ways the field is working together**

Educators, researchers, psychometricians, and others are collaborating in a variety of ways to develop new measures and assessment approaches to improve educator practice and help students progress over time in developing agency and capability.

One notable approach here is the creation of communities of learning and practice. The **Student Agency Improvement Community**, (SAIC), for example, led by Anthony Bryk and David Yeagar for the Carnegie Foundation, is a networked improvement community that brings together academic research on psycho-social learning with improvement science practices to help teachers advance the development and measurement of student agency.

The SAIC is, for example, creating a *practical* measure to help improve classroom practices that build student agency. The practicality is achieved because the measure is short, and it is easy for practitioners to embed it within their daily work routines; however, it also employs items that are “demonstrated to be powerfully predictive of important educational outcomes. Its development has been guided by theory and linked to specific work processes and change ideas” introduced in the improvement community. One SAIC member, Summit Public Schools, has provided *thoughtful insight on its activities* related to student agency and its multiple approaches to measurement.

Similarly, the Center for Innovation in Education and Next Generation Learning Challenges launched the **Assessment for Learning Project** (ALP) to support and connect educators who are “fundamentally rethinking the core role that strategies and systems of assessment should play to advance student learning.” ALP has made grants to 17 teams of educators nationally who are fundamentally rethinking the role(s) of assessment in learning and system design. These projects are piloting assessment innovations designed to cultivate student agency, activate broader definitions of student success, and improve the cultural responsiveness of assessment strategies. ALP includes projects led by classroom teachers, school districts, professional learning non-profits, and state policy leaders. By bringing these perspectives together into an active community of practice, ALP is learning how assessment FOR learning can be supported from the classroom to state education agency.

Several other collaborative developments are also underway. The **Assessment Work Group** of the Collaborative for Academic, Social, and Emotional Learning (CASEL), in collaboration with California’s CORE Districts, Transforming Education, RAND, and Harvard University, has launched the **Measuring SEL website** and a growing **Collaborators’ Network**. The group is developing a *practical guide/online tool*
for selecting and using currently available and practical social-emotional learning (SEL) competency measures that will be released in January 2018.

The Center for Curriculum Redesign’s Assessment Research Consortium (ARC) bills itself as “a collaborative entity — a ‘pre-competitive Research & Development consortium’ modeled after industry’s similar endeavors in semiconductors, biotechnology, etc.” The ARC’s goal is to “redesign systems of measuring Learners’ progress, aligned to 21st century competencies and desired education outcomes.” The organization published two landmark reports in 2016 — *Evolving Assessments for the 21st Century*, and *Workforce Assessments: What Do We Actually Measure* — both of which do an excellent job of curating research, publications, and assessment tools. The California Performance Assessment Collaborative (CPAC), supported by the Learning Policy Institute, collaborates on performance assessment development with California districts and schools, several of the Deeper Learning school networks, the Stanford Center for Assessment, Learning, and Equality (SCALE), and others. Its newsletter makes some of its resources available to all.

In addition to these efforts and high-profile work from the likes of Angela Duckworth’s Character Lab (grit) and Carole Dweck’s Mindset Works (growth mindset), a range of assessments are being developed by educational research organizations, collaborations between next generation educational models and psychometric organizations, and other partnerships. Researchers at the University of Chicago Consortium on School Research, whose *Teaching Adolescents to Become Learners* and *Foundations for Young Adult Success* inform much of the work in this area, have completed two pilots of their *Becoming Effective Learners Survey*, which aims to consolidate existing survey scales to create a comprehensive measurement instrument and simultaneously measure student agency factors and classroom context/instructional factors. Transforming Education is working with the CA CORE on measures for their MESH (Mindsets, Essential Skills, & Habits) framework. MHA (Means & Measures of Human Achievement) Labs, an R&D nonprofit with a network engagement approach, is prototyping, testing, and validating 21st century skills and workforce readiness performance assessments based on performance reviews completed by employers and mentors/instructors for summer jobs programs over the past five years. Next Generation Learning Challenges grantees Valor Collegiate Academies and Generation Schools Network are partnering, respectively, with 6seconds, an emotional intelligence (EQ) training and assessment company, and Pairin, an HR solutions company, to develop SEL measures. Johns Hopkins’ Talent Development Secondary is developing diagnostics based on its highly regarded agency program elements that link agency skill levels, as determined by self- and teacher-reports, to the impacts of poverty.

It is also worth reiterating the potential for adapting and learning from good practice outside of academic assessment. Throughout the primers, there are references to the potential of learning from practitioners in a range of sectors that have long focused on whole person development, including: coaches of novice-to-expert practice-based pursuits like music, drama, and sports; youth developers and out-of-school-time providers, who have long focused on agency and Habits of Success; special educators, who work with strategy-based instruction and assessment and interventions for executive functioning, ADHD, and autism spectrum disorders; early educators and developmental psychologists, who have established instruments
and approaches for child development, agency, and habit-related traits; and workplace human resource staff, who have long used psychometric testing in employee hiring and development. Educators have as yet only scratched the surface of collaboration with these experts on both learning and assessment, and the MyWays team believes there is a lot of potential still to be explored.

The state of assessment across the MyWays domains

As we illustrate in the previous sections, the effect of the two key paradigm shifts in assessment is a re-balancing — away from a heavy focus on traditional, single-subject-based, inauthentic, summative testing and toward greater emphasis on the continuous, embedded, authentic assessment that is naturally integrated within formative and performance aspects of Whole Learning. This directional shift is bolstered by the use of multiple measures, badges and micro-credentials (especially for learning increasingly happening in the Wider Learning Ecosystem), and the evaluation of new kinds of learning experiences (especially for parts of the domains where measures for student outcomes are still evolving).

It is important to stress that the use of all Five Assessment Strategies extends across all MyWays domains and competencies. What will not work, we are certain, is to try to isolate each of the 20 competencies and create a (likely inauthentic) way to assess each one. Indeed, educators would not even want to take each of the MyWays domains and choose a different assessment strategy for each.

One of the critical design features of next generation learning and assessment is that it maximizes the holistic, authentic nature of the learner’s experience, while being built on detailed, behind the scenes design work that ensures coverage, depth, rigor, and developmentally appropriate opportunities for advancement. From the learner’s viewpoint, next generation assessment shares the intentional, meaningful, and holistic nature of its partner, Whole Learning: each learning experience or junior version is designed to address a manageable number of competencies, including the associated aspects of agency and capability, while assessment will focus on that particular mix of knowledge, skills, habits, and personal wayfinding in as holistic and authentic a way as possible (suggesting, in many cases, some type of performance assessment). That performance assessment will provide information on the learner’s progress in most of the chosen competencies, while other assessment components will be added as needed for competencies (or, for instance, elements of agency) that may require a different approach.

All that being said, from the viewpoint of those charged with designing learning and the educational environment it occurs in, the suitability of assessment approaches, relevant cautions, and promising developments vary somewhat across the four competency domains. So, for next generation educators who are looking to understand the overall assessment landscape, as well as those who have already identified assessment gaps for particular competency domains, the following quick review focuses on considerations particularly relevant to each domain. Please note that these are just some summary points to initiate discussion. The relevant sections below are also included in the four domain reports (Reports 7–10), where you can see them as part of the full domain discussion, which covers why the domain is important, competency definitions, and key principles for implementation.
Considerations for assessing Habits of Success

Summary: The growing interest in measuring Habits of Success is partly due to the growing belief in the importance of a broader skillset for all students and partly due to the addition of a non-academic element to ESSA accountability. Effective measurement is still emerging, however, and we need to be cautious about what kinds of metrics to use and how to share them with learners. In particular, opinion about the use of this domain in accountability systems is sharply divided, and caution is urged.

The range of assessment approaches for Habits of Success includes the following:

- Three main approaches:
  - **Early Warning Indicators (EWI)** to monitor critical academic behaviors (Johns Hopkins’ [EWI](https://johnshopkins.edu/ewi), Stanford and Chicago’s [CRIS](https://crislearn.org) – College Readiness Indicator System)
  - **Rubrics, reflections, and peer assessments within performance assessment** from [New Tech Network](https://www.newtech.org), [Summit Public Schools](https://www.summitpublicschools.org), The Center for Innovation in Education (CIE) and Educational Policy Improvement Center (EPIC)’s [Essential Skills and Dispositions Developmental Frameworks](https://www.epicglobal.org/working-groups/essential-skills-dispositions). For more on these and other tools on self-direction and social skills, see the “Practice Resources for the 4Cs and More” box near the end of the Creative Know How domain report (Report 8).
  - **Various agency and SEL assessments** from different fields, including Likert and other self-reports (such as the [Holistic Student Assessment](https://www.harvard.edu/pediatrics/PEAR) for resiliency available from the Harvard University/McLean Hospital PEAR Institute), behavioral observations, ratings by others, situational judgment, climate surveys, and other measures. Ideally, such measures would be undertaken within an enhanced guidance/youth development function by teams that include people with psychology or social work backgrounds.

- Other assessments:
  - **Simulation and game-embedded assessments** ([Newton’s Playground](https://www.newtonspayground.com), which measures conscientiousness and persistence as well as the learning of physics concepts, [ZooU](https://zoo-u.org))
  - **Clickstream analysis of learning behaviors** (See, for example, the mention of clickstream analysis in this Summit blog.)
  - **New instruments in development** (Subscribe to the [Transforming Education MESH](https://www.transformingeducation.org) e-newsletter to track the latest developments.)

Ongoing challenges in assessing Habits of Success include inconsistent attribute definitions and “fakeability” (socially desirable responding); the need for care and nuance in sharing assessment results with learners; and potential for misuse in accountability (on the last, see Key Principle 3 in Report 7). For more on Habits of Success assessments, see the Habits of Success one-page competency primers at the end of Report 7 and two recent external reports: the Center for Curriculum Redesign’s [Evolving Assessments for a 21st Century Education](https://www.curriculumredesign.org) and the National Academies Division on Behavioral and Social Sciences and Education’s [Supporting Students’ College Success: The Role of Assessing Intrapersonal and Interpersonal Competencies](https://www.nap.edu/).
Considerations for assessing Creative Know How

- Critical Thinking & Problem Solving
- Creativity & Entrepreneurship
- Communication & Collaboration
- Information, Media, & Technology Skills
- Practical Life Skills

Summary: Evidence collection through performance assessment (curriculum-embedded and bounded) and other approaches are maturing; however, issues relating to transfer and reliability are complex and still being addressed. The growing use of project-based/performance assessment for Content Knowledge provides growing opportunity to collect evidence on the development of Creative Know How skills as part of the same processes, performances, and outputs.

The current range of assessment approaches includes the following:

- Predominant reliance on rich, curriculum-embedded performance assessments (PA), including the use of the following tools:
  - Validated performance frameworks and/or tasks created by educators and networks or pulled from rich task databases (SCALE/SCOPE/CCSSO’s Performance Assessment Resource Bank has a few Creative Know How PA items; EdLeader21 has announced a forthcoming 4Cs Performance Assessment Bank)
  - Rubrics, learning progressions, completed exemplars, portfolio and exhibition protocols, and other tools (see more information and links in the Practice Resources box in Report 8 to New Tech Network’s student learning outcomes and rubrics; Summit’s discipline-specific skills rubrics and look-fors; P21’s rubrics; EdLeader21’s rubrics for the 4Cs; and the Buck Institute’s rubrics for assessment of 4Cs).

- Innovative approaches, such as embedded assessments, which can capture student processes in competencies ranging from problem solving to creativity (see, for example, the mention of clickstream analysis of ways of working in this Summit blog on assessment for the four components of their model, and this article on Newton’s Playground, which measures creativity and conscientiousness as well as the learning of physics concepts through game-playing).

- The use of multiple, varied measures, such as the combination of self-report, situational judgment, and forced-choice methods offered within ProExam’s Tessera Noncognitive Assessment System.

- Bounded, on-demand performance tasks, such as those including, most recently, collaborative problem solving, in the Program for International Student Assessment (PISA), NextGen Science assessments, the Common Core PARCC & Smarter Balanced assessments, and the Council for Aid to Education’s CWRA+, a middle and high school level assessment that uses document-based real-world problem solving tasks to measure critical thinking skills.

Ongoing challenges in the assessment of Creative Know How include issues of transfer (such as which learning approaches improve the likelihood of transfer, especially across subject areas and widely varying circumstances), educator capacity-building in the assessment of Creative Know How skills, and the development of performance- and portfolio-based digital platforms that are flexible enough to house and track the kind of evidence required for Creative Know How skills, including evidence of processes and student reflection, as well as output and performance. (See examples in Key Principle 3 in Report 8.)
Considerations for assessing Content Knowledge

- **English Core**
- **Math Core**
- **Science, Social Studies, Arts, Languages**
- **Interdisciplinary & Global Knowledge**
- **Career-Related Technical Skills**

*Summary:* Content Knowledge is intensely measured or over-measured, often in compartmentalized ways; however, there are encouraging moves away from memory-based testing and toward higher level thinking, application of concepts, and more authentic performance assessments.

**The range of assessment approaches** includes the following:

- **Traditional assessment**, including teacher-designed tests, quizzes, essays, research papers, and labs.

- **Increasing attention to formative assessment**, in the form of more frequent, granular checks for understanding and the provision of real-time, high-quality feedback (or, a definition we like, “using [insights into] student thinking as a basis for teaching and learning”[11]).

- **Performance assessments for formative and summative purposes**, particularly in the form of more authentic curriculum-embedded performance assessments, including in project-based or other experiential learning.

- **Increasing use of tech-enabled assessment to contribute to diagnostic, formative, and individualized mastery purposes**, including:
  - Diagnostic and formative assessments: MAP, or computer adaptive assessments, in math and reading; OECD test for schools; tech-enabled, quick feedback assessment, such as Poll Everywhere, Google Forms, Gooru, FlexiQuiz; and other ways to help check for understanding.
  - Approaches amenable to student-managed and adaptive courseware (such as Summit Public Schools’ playlists).

- **Moves toward knowledge application and performance assessment within accountability measures** include the following:
  - Mixing application of knowledge with on-demand tasks or bounded performance assessment (Common Core PARCC/SBAC assessments).

**Ongoing challenges** in Content Knowledge assessment include ensuring that assessment for learning is prioritized over assessment for accountability, and that assessments are focused on key organizing ideas and higher-level thinking. For performance assessment, the challenge is to ensure that attention is given to
building educator capacity (which includes having educators organize thoughtful calibration and social mediation), and enabling students to separately collect evidence on progress related to Content Knowledge, Creative Know How, and Habits of Success.

For more on Content Knowledge assessment, see the Content Knowledge competency primers at the end of Report 9 and two recent external publications — the Center for Curriculum Redesign’s *Evolving Assessesments for a 21st Century Education* and the National Academies Division on Behavioral and Social Sciences and Education’s *Supporting Students’ College Success: The Role of Assessing Intrapersonal and Interpersonal Competencies*.

**Considerations for assessing Wayfinding Abilities**

- Survey the Learn, Work, & Life Landscapes
- Identify Opportunities & Set Goals
- Design & Iterate Prototype Experiences
- Find Needed Help & Resources
- Navigate Each Stage of the Journey

**Summary:** Wayfinding competencies are often unaddressed; even when they are addressed, they go largely unmeasured. To deal with this, Wayfinding innovators are turning to badging (often internally) and/or tracking and evaluating student learning experiences to help ensure that students have opportunities that are likely to help develop agency and self-direction.

**Next generation suggestions for Wayfinding assessment include:**

- Start by tracking the extent to which you are providing learners with the needed experiences (for more, see the “Visions of the Possible” box in Report 10).

- Where outcomes cannot be measured, step back in the evaluation logic model from looking at outcomes to thinking deeply about inputs. Implement quality reviews of educator capacity and Wayfinding curriculum, as well as quality standards, criteria, or guidelines for service learning (*National Youth Leadership Council*), career awareness experiences (*Linked Learning*), or internships (*National Academy Foundation*).

- Use standards-driven badging (such as *Boston Afterschool and Beyond* digital badges or *Open Badges*) where applicable, and use participation-driven badging for more informal learning.

- Create school-based badging systems and/or incorporate external micro-credentials that include not just metrics for participation but also student preparation for and reflection on their experiences. For example, you might award students a badge not for simply visiting three colleges, but for reflecting on how each of the colleges matched up to (or altered) the four factors they had chosen ahead of time to look for in a college.

**Ongoing challenges** in the assessment of Wayfinding Abilities include: carving out time in schedules to include and assess Wayfinding competencies; providing the types of student experience around Wayfinding that truly enable student agency; and creating the necessary relationships to fully involve external partners, such as families, community organizations, employers, and postsecondary institutions.

For more on Wayfinding Abilities assessments, see the Wayfinding Abilities one-page competency primers at the end of Report 10 and two recent reports: the Center for Curriculum Redesign’s *Evolving Assessments for a 21st Century Education* and the National Academies Division on Behavioral and Social
Sciences and Education’s Supporting Students’ College Success: The Role of Assessing Intrapersonal and Interpersonal Competencies.

A quick dive into broader, deeper competency assessment resources

Because the purpose of the MyWays Student Success Framework is to provide a rosetta stone for thinking about the richer, future-ready success definition for today’s learners, we have focused on describing that definition in conceptual terms. We also believe deeply that school designers, educators, and individual learners need to invest in constructing and evolving their own goal-lines within the broader framework.

In doing this work, educators may find the resources on the following pages helpful:
Starter Resources for Assessment Design for Broader, Deeper Competencies

This list offers some resources to get you started. A separate box below offers the best links for databases or compendia of assessment tools. The resources here may also include some tool information, but the focus is on introducing overall assessment approaches and reviews of the field.

**General resources:**

**Starter blogs:**
- Andrew Miller, “Using Assessment to Create Student-Centered Learning,” Edutopia blog, September 2, 2015.

**Reviews of established and new measures by educators and youth developers:**

**Resources on performance assessment (including embedded formative assessment):**
- McREL/Measured Progress, *Re-Balancing Assessment: Placing formative and PA at the heart of learning and accountability*.
- Ron Berger et al., *Leaders of their Own Learning: Transforming Schools Through Student-Engaged Assessment* book and website.
- The Buck Institute for Education’s “Resource List: Assessment in PBL.”

**Resources on multiple measures for Habits of Success and Creative Know How:**
- *From Soft Skills to Hard Data: Measuring Youth Program Outcomes*, Forum for Youth Investment.
- For a shorter survey, see Patrick Kyllonen, ETS, *Soft Skills for the Workplace*.
- For cautions on using existing measures, see Angela Duckworth and David Yeager, “Measurement Matters: Assessing Personal Qualities Other than Cognitive Ability for Educational Purposes.”
- To keep up to date with new developments, subscribe to the Transforming Education MESH newsletter.

**Resources on badges and micro-credentials and quality reviews**
- *Expanding Education and Workforce Opportunities through Digital Badges*, Alliance for Excellent Education.
- “Assessing Learning in Digital Badge Systems,” in *Ten Principles for Assessing Learning that Apply to Badging and More*, Design Principles Documentation Project.
- *Understanding CTE and Stackable Credentials*, Transitions Academy.
MyWays Tools and the Mayan Worked Case Study

The MyWays Toolkit, available on the Tools page of the MyWays website, includes simple matrix tools to help you reflect and promote discussion on the MyWays concepts, and evaluate your existing assessment practices or design new ones.

The Toolkit also includes a worked case study that uses a selection of the MyWays evaluation tools to analyze a High Tech High middle school project on Mayan culture. The Mayan worked case study serves as:

- one example of the kind of Whole Learning and authentic assessment design required to address the competencies needed for a world of acceleration, and
- a way of illustrating how you might use a few of the MyWays diagnostic/design tools with your educator and designer teams, and to build the will to transform among your fellow stakeholders.

Two assessment tools from the MyWays Toolkit

We highlight here two of the MyWays assessment-related tools. Both are designed to help you use MyWays and the Five Assessment Strategies to address the fourth big question in the MyWays Through-line: HOW do we gauge students’ progress in developing richer competencies? The first is the Assessment-Competency Correlation Tool. This tool helps you ask: How well is my school employing the five strategies that support assessment for broader and deeper competencies? The second is the Assessment Strategy Analysis Tool. This tool helps you ask: How well is my school using elements of the five strategies to assess student progress within our learning projects? These two tools are matrices to help you evaluate and improve assessment experiences. Simple, easy-to-follow instructions for using the tools are provided in the toolkit.

The goal is to equip your assessment design team with a reliable process for critiquing emerging assessment approaches — strengthening the extent to which you integrate your assessment with your learning, moving the team toward more authentic tasks, and increasing the range of assessment approaches so that you can address broader and deeper competencies. Even at a quick, conceptual level, these tools can flag key issues and “help change the conversation” within your team with respect to transforming assessment as a force for teachers to better know and guide their students, as well as for learners to understand themselves more fully.

Using the tools: High Tech High’s Mayan Community Project

In Report 11 we introduced the Mayan Community Project, an experiential learning project developed by Heather (Riley) Lovell, a seventh grade teacher at a High Tech High middle school. We chose the project because Lovell and High Tech High offer an abundance of materials on the High Tech High Project website that let us share with you many different aspects of the experience that are relevant to the MyWays competencies and authentic assessment. And of course because the project provides an inspiring example of Whole Learning and authentic assessment! In Report 11, the Mayan project was analyzed using three of the learning-related tools. Here we extend that case to demonstrate how you can use the concepts we present in this report to align your assessment design with the two key assessment shifts and Five Assessment Strategies.
Potential tool for assessment reporting

As assessment becomes more authentic and multi-measured, we must also recognize the student-facing side of assessment reporting. For centuries, the simple report card has been the dashboard of student achievement and progress. As we move to broader, deeper competencies and more complex assessment systems, we must address a key question: How will our reporting to students, parents, colleges, and employers add needed depth and meaning in readily understandable ways?

We have received positive, early responses to the MyWays Whole-Student Competency Plot — an idea we borrowed from the Lumina Foundation’s Degree Qualification Profile. To enable educators to use the plot, we created two simple, publicly available tools in Excel that are easily customized and can be used to compare any two states, such as student A vs. B, school A vs. B, or, as in the example that follows, today vs. future. Two versions of the MyWays Whole-Student Competency Plot Tool are available on the Tools page of the MyWays website, along with a more detailed explanation. Currently, the tool is conceptual, but some members of the Next Generation Learning Challenges network are interested in using learning progressions, rubrics, and scoring protocols to make it empirically driven. (See, for example, this EdSurge article on Two Rivers Public Charter School’s assessment work.) For guidance on emerging tools of this sort, see the next resource box.

This plot illustrates a shortcoming that plays out almost every day in schools using the traditional, narrow academic metrics for student success. Tia (a fictionalized composite of two real students in the Boston area) is a complex learner whose natural gifts and competencies in Habits of Success and Creative Know How are neither recognized nor developed. Using a visual tool with a broader and deeper set of competencies enables Tia and her advocates to visualize her strengths and set goals for her future success.
Guidance on Finding Tools for Performance Assessment, and Multiple Measures for Habits of Success, Creative Know How

This box provides guidance on sets of assessment tools used in the assessment strategies that have been of greatest interest to the MyWays Community of Practice. These resources particularly focus on links, databases, or compendia for 1) the tools related to performance assessment (such as learning progressions, rubrics, skills maps, and performance tasks. Note that most of these can also be used for formative assessment); and 2) multiple, varied, and emerging assessment measures used to assess competencies in Habits of Success, Creative Know How, and a few of the Wayfinding Abilities.

We know from our beta piloting work with next generation educators that those interested in and inspired by the MyWays Student Success Framework are also thirsty for practitioner tools, exemplars, and documentation. In some cases, practitioners may be tempted to latch onto tools and use them without the internal mindset-changing and learning-model-revising work required for successful implementation; we caution against this! We also realize, however, that many thoughtful developers and practitioners want and need to see more concrete exemplars and tools to better understand the broader, deeper goal-line; to help work through their own approach; and to help plan and implement their assessment activities — which is why we provide these links. Note that MyWays and Next Generation Learning Challenges do not endorse any specific tools for assessment or curriculum planning — and particularly urge practitioners to ensure that tools they use are authentic, holistic learning.

Performance assessment tools

- **The Institute for the Future of Learning’s open source tool repository**
  As part of the Institute for the Future of Learning project (which produced the excellent report, *Assessing the Learning that Matters Most*), Julie Wilson created a database of learning progressions, rubrics, and tasks on the 4Cs and on self-assessment and social-emotional learning. The tools were provided by EL Education, New Tech Network, High Tech High, Mount Vernon, Two Rivers Public Charter School, Sanborn Regional School District in New Hampshire, Catalina Foothills, Science Research Academy, and KIPP Socratic Seminar — more than 75 documents in all. The tools are searchable by topic, school model, and grade level, and can be found on this beta website.

- **EdLeader21’s 4C’s rubrics**
  This is a nationally vetted set of rubrics for the 4Cs from EdLeader21. The master set of 4Cs rubrics covers grades 3–4, 7–8, and 11–12 can be purchased from EdLeader21, but you can see adapted versions in links from this blog by Ken Kay, EdLeader21’s CEO, who noted that, “The rubrics are a great resource on their own, but you and your teachers can also adapt them to your needs. For example, some of our districts have modified the rubrics and associated learning targets to make them student-friendly.”

- **The Buck Institute rubrics for assessing the 4Cs in a PBL context**
  These rubrics describe what 4Cs good practice looks like, specifically in the project-based learning (PBL) context, with different sequenced rubrics for K–2, 3–5, and 6–12. Critical Thinking and the “Process” section of Creativity & Innovation are organized by the four phases of a typical project. The Presentation Rubric is used only in a project’s last phase, when students share their work with a public audience. Collaboration is relevant to all phases. See this blog for more on how to use these rubrics.

- **P21 21st Century Skills Maps**
  These 21st Century Skills Maps address how to implement learning models that integrate the 4Cs into core academic content mastery. 4Cs skills maps are available for math, science, social studies, geography, English, languages, and arts; ICT skills maps are available for social studies, English, and math. Each skills map provides examples of the types of skills that are appropriate for 4th, 8th, and 12th grade levels.
• EdLeader21’s 4Cs Performance Assessment Bank (forthcoming)
  According to the EdLeader website, “For EdLeader21 members, the lack of easily accessible, easily deployable assessment tools focused on the 4Cs is an ongoing issue. Most of our members have expressed interest in the development of assessment instruments that will help measure 4Cs student performance. The 4Cs Performance Assessment Bank project aims to establish a 4Cs-aligned bank of performance tasks that can be customized locally; EdLeader21 members may develop their own tasks for inclusion in this bank (using common design guidelines). The focus will be on... formative instruction and assessment.”

• The Center for Innovation in Education (CIE) and Educational Policy Improvement Center (EPIC)’s Essential Skills and Dispositions Developmental Frameworks
  This set of developmental frameworks covers collaboration, communication, creativity, and self-direction in learning. The frameworks define five components inherent to each skill and describe performance for each component across a beginner to emerging expert progression, informed by research on the development of expertise. Unlike discipline-specific learning progressions and rubrics, the developmental progressions reflect components essential to the skill itself and describe growth dependent on many years of active exploration, experimentation, setbacks, and reflection.

• New Tech Network’s learning outcomes, rubrics, and college-ready assessments
  New Tech Network (NTN), working with Envision and the Stanford Center for Assessment, Learning, and Equity (SCALE), created open-source learning outcomes and rubrics related to: knowledge and thinking in different core subject areas; agency; collaboration; and oral and written communication. These tools are used in NTN’s curriculum-embedded performance assessments called College Readiness Assessments. The network also offers a three-part Student Literacy video series (10–15m each) that guides users through the delivery of workshops focused on the creation of high-quality tasks, looking at student work, and the use of the knowledge and thinking rubrics (including the difference between grading and scoring).

• Two Rivers Public Charter School’s resources
  Two Rivers Public Charter School, a high-performing EL Education School, hosts its own excellent professional sharing site, Learn with Two Rivers. Its tasks and rubrics that address critical thinking, problem solving/“expert thinking,” collaboration, and communication are currently being curated in this separate Deeper Learning Assessment folder. For a public share of excellent resources on working with Habits of Success (Valor’s Compass program) by this thoughtful MyWays Community of Practice member, see links to over a dozen resources in their “Working the Compass” Resource Guide, Summer 2017.

Multiple measures assessment tools for Habits of Success, Creative Know How

• CASEL/Measuring SEL’s Assessment Guide for Educators, an online tool for selecting and using currently available SEL measures is forthcoming in winter 2017.

• Center for Curriculum Redesign’s Assessment Research Consortium (ARC), Evolving Assessments for a 21st Century Education. Recent report that does an excellent job of curating assessment tool information, as well as related research and publications.

• Asia Society and RAND, Measuring 21st Century Competencies: Guidance for Educators.

• Forum for Youth Investment, From Soft Skills to Hard Data: Measuring Youth Program Outcomes.

• ETS, Soft Skills for the Workplace. A shorter, older survey with some useful explanations.

• For nine more compendia, see the selected assessment list on page 9 of CCR ARC’s Evolving Assessments for a 21st Century Education.
Series End

This is the final report in the MyWays Student Success Series: What Students Need to Thrive in a World of Change.

For further resources please see the Next Generation Learning Challenges MyWays website. To meet the Community of Practice members and share your ideas see our Community of Practice page, and to receive updates on MyWays join our mailing list.

Report 12 Endnotes

1 From a Statement by the Global Education Leaders’ Program (GELP), “Transforming Global Education with New Metrics,” issued in June 2014. This statement is no longer available on the GELP site, but see the New Metrics page for links to subsequent reports on assessment from GELP.


3 Asia Society and RAND, the Gordon Commission, Big Picture Learning, EL Education, and Digital Learning Badges, among many others linked and cited throughout this report.


6 Andrew Miller, “Using Assessment to Create Student-Centered Learning,” blog, Edutopia, September 2, 2015.


10 Ibid.

11 “Formative assessment is more of a mindset on using student thinking as the basis for teaching and learning rather than a quick checklist or a list of strategies.” From David Wees, “Formative Assessment: More than just an exit ticket,” blog, The Reflective Educator (undated).