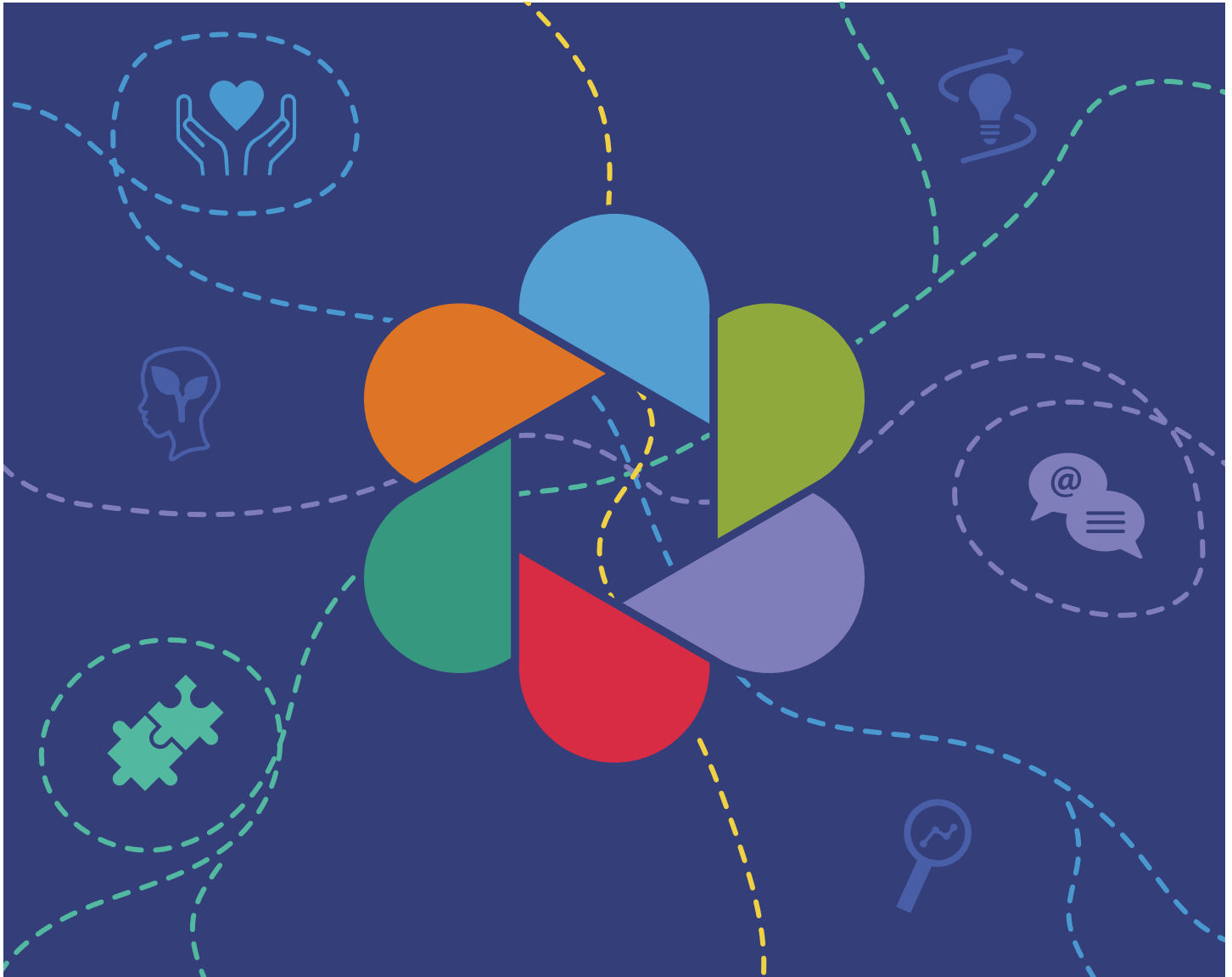


# Shifting Education with Learning Pathways: Becoming Your Portrait of a Graduate

Kelly Mills, Josh Weisgrau, Quinn Burke, Keun-woo Lee, Teresa Solorzano and Merijke Coenraad

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## Contact Information

### Digital Promise:

Washington, D.C.:  
1001 Connecticut Avenue NW, Suite 935  
Washington, D.C. 20036

Redwood City, CA:  
702 Marshall Street, Suite 340  
Redwood City, CA 94063

<https://digitalpromise.org/>



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# Executive Summary

Education must shift to prepare today's students for successful lives in a world that is rapidly changing due to emerging technologies and globalization. Learners need academic and technical skills, as well as the ability to adapt and interpret those skills in order to apply them in current and future contexts. Now is the time to rethink, **"What are the skill sets that will equip learners to lead successful lives?"**

## Portrait of a Graduate Defines a Vision for Becoming

**Portrait of a Graduate** establishes a vision for learners' future success. Over the past decade, many school districts and states have developed Portraits to articulate qualities learners should exemplify by the time they leave formal schooling. We analyzed 69 Portraits from districts across the nation to understand the **skill sets districts across the nation identify for students to exemplify by graduation**. Our Portrait of a Graduate Synthesis Model (pictured below) captures commonly identified Mindsets, Skill Sets, and Practices.





## Integrated Learning Pathways Bring Portrait of a Graduate to Life

**Integrated Learning Pathways** identify and design opportunities for students to develop Mindsets, Skill Sets, and Practices throughout K-12 learning experiences. Integrated Learning Pathways are designed with the following tenets:

**Competency-Based** actionable practices

**Complementary** to subject-area learning

**Cumulative** from grade to grade

**Consistent** across classrooms

Partnering with districts from across the nation, we have co-designed a process to design and implement Integrated Learning Pathways into teaching and learning in three phases: Plan, Build, and Implement.

## Shifting Education with Learning Pathways

The integration of Portrait Mindsets, Skill Sets, and Practices through Integrated Learning Pathways presents an opportunity to make fundamental shifts to how school leaders and policy makers envision and leverage teaching and learning systems to enable transformative change, including these:

- **Reframing Mastery as Dispositional:** From a focus solely on Ability (“I can...”) to also acknowledging Inclination (“I will ...”) and Sensitivity (“I should...”).
- **Shifting From Vertical to Horizontal:** From vertical content knowledge to horizontal integration of cross cutting Skill Sets and Practices.
- **Shifting From Adding to Integrating:** From the addition of new initiatives to aligning initiatives to a broader vision.
- **Shifting From Passive Use to Active Use of Technology:** From technology used for skill and drill to creativity and innovation.

We recommend district leaders leverage Integrated Learning Pathways to align teaching and learning to their Portrait of a Graduate and ultimately better prepare students for a successful future.

# Introduction

Fueled by emerging technologies and globalization, our world is rapidly changing. Whether at work or at home, for business or pleasure, innovation is a hallmark of modern life, and new skill sets and mindsets are needed to thrive. Education must shift to prepare today's students for unpredictable opportunities and challenges in their future lives and jobs. As new economies, fields of study, and forms of expression emerge, schools are placed in a precarious position to prepare learners for uncertain futures. Educators must shift the emphasis on building academic and technical skills to the interpretation and execution of those skills across applications both customary and unknown. They must focus not only on literacy in terms of reading and writing but also in terms of data, code, and computers, while simultaneously equipping learners with the social and emotional skills to persevere, collaborate, and innovate across cultural contexts. Now is the time to rethink, **"What are the skill sets that will equip learners to lead successful lives?"**

The Portrait of a Graduate model provides a useful framework to inform the preparation of learners to thrive within an ever-changing world and build the essential skills they will need to succeed personally and professionally. A Portrait identifies the broad skill sets that students must develop and apply across subjects and throughout learning, work, and life to reach their full potential. To create a Portrait, school leaders, educators, families, and communities work together to define the attributes that a student should embody and exemplify by the time they leave formal secondary schooling. Over the past decade, many school districts have developed a Portrait to establish a vision for their learners' future success, while more recently several states have developed Portraits as well.

However, commonly identified attributes in Portraits, such as communication or critical thinking, are challenging to operationalize and integrate uniformly into teaching and learning. While most educators agree they need to expand what they offer to their students, they are unable, due to testing and college admission requirements, to decrease time in core subject areas to create space for learning additional skill sets necessary to thrive in the 21st century.



Photo by Allison Shelley/The Verbatim Agency for EDUimages

This paper introduces Integrated Learning Pathways as a promising approach to integrate across all courses the skills and practices necessary for success in careers and civic life. Partnering with districts from across the nation, we have co-designed a process to crosswalk Portrait Skill Sets to relevant practices across core disciplines so that they can be integrated cumulatively into each grade K-12, consistently across classrooms, and in ways that are complementary to learning across all classes.

## Shifting Educational Outcomes From Knowing to Becoming

Fundamentally, education should prepare learners to lead successful lives, including but not limited to creating economic security and career mobility. However, success in our technologically evolving world and shifting economy requires more than developing the knowledge and skills to participate in a single profession. **Success in today's rapidly changing and uncertain society entails becoming a fully realized and capable lifelong learner with a clear sense of well-being, personal agency, fulfillment, and an appreciation of the wider social fabric and good.** As educators, it is important to continuously ask and investigate what is necessary to achieve these outcomes in life, particularly when developing students' skill sets and mindsets to ensure success in post-secondary endeavors where learning typically becomes more narrowed toward specific disciplines and career fields.

## Portrait of a Graduate Defines a Vision for Becoming

There is no shortage of perspectives on the essential skills that will prepare today's learners for success in an evolving society. A few of many contributors to our thinking include leaders in industry, such as Intel's Skills for Innovation (Intel, 2024), nonprofits, such as America Succeeds' Durable Skills Framework (Cole et al., 2021), international organizations, such as World Economic Forum's "Defining Education 4.0: Taxonomy for Future and Learning" (World Economic Forum, 2023), and 37 world governments collectively defining The Organisation for Economic Co-Operation and Development (OECD)'s Future of Education and Skills 2030 (OECD, 2018). Ultimately, the United States's iterative rethinking of the essential skills for all young learners originates in *A Nation at Risk*, now more than 40 years old (National Commission on Excellence in Education, 1983). *A Nation at Risk*'s imperative for rethinking U.S. schooling represents the first major modern school reform movement in the country and the bellwether of all national skills reassessments to come, most notably that of the 21st Century Skills movement (Anderson-Levitt, 2020).



Photo by Allison Shelley for EDUimages

Portraits represent the vision for a latest iteration of national skills reform. The model, defined as "a collective vision that articulates the community's aspirations for all students," was developed by the national nonprofit Battelle for Kids (Cline, 2023). Locally created but globally positioned, Portraits provide an opportunity for educators, learners, families, and communities to articulate their own vision for their lives and learning (Battelle for Kids, 2024; Stearns, 2021). In the past decade, 17 states have adopted state-wide Portraits to better prepare students for a successful future (Stanford, 2023). The National Educational Technology Plan (U.S. Department of Education, 2024) posits Portrait of a Graduate as an essential starting point for the alignment of "emerging technologies to your shared vision for education" on both the state and district levels (p. 29). Thousands of school districts have worked with their communities to create a unique Portrait that will answer these questions and identify vital skills and mindsets they believe students will need upon graduation to succeed (Getting Smart, 2024).

While Portrait of a Graduate represents the latest—and increasingly influential—reform tool driving state and district vision and alignment, there is still the need to better understand how it is being enacted and what attributes are deemed most essential for graduates. In order to uncover the attributes that were most important to districts nationwide, our team analyzed 69 Portraits of a Graduate from districts across the United States (see Appendix for full list). Most Portraits contained six to eight attributes that they identified as vital for their school system’s graduates. We expected to uncover a wide range of qualities that school districts nationwide identified as essential for student success in their unique contexts and communities. However, we were surprised to discover that most districts identified a similar set of qualities. Our analysis is detailed in the Appendix. Overall, we identified six **Skill Sets** that capture 90 percent of the attributes articulated by school districts across the country:

- Analyze to Understand
- Care For and Contribute to Society
- Collaborate Across Difference
- Communicate in All Media and Modalities
- Create to Solve and Share
- Practice Self Awareness and Regulation

A second round of coding revealed sub-categories of each Portrait Skill Set. We identified 11 districts in our initial round of analysis that had articulated each Portrait attribute with a more detailed explanation or rubric (see Appendix for full list). We synthesized these descriptions into two categories. **Practices** are actionable subcategories of Skill Sets that students can demonstrate. **Mindsets** are overarching ways of thinking or acting that support learners to develop and apply Skill Sets.

Figure 1. Synthesis Portrait Model summarizing Mindsets, Skill Sets, and Practices articulated by school districts across the country (see detailed analysis in Appendix).



Table 1. Synthesis Portrait Model includes Mindsets, Attributes and Practices.

Term	Description	Examples
<b>Mindset</b>	Overarching ways of thinking or acting that support learners to develop and apply Skill Sets	Curiosity; Perseverance
<b>Skill Set</b>	Broadly framed abilities that are essential for a person’s lifelong success	Analyze to Understand; Care For and Contribute to Society
<b>Practice</b>	Actionable subcategories of Skill Sets that learners can demonstrate across academic and professional contexts	Evaluate Appropriate and Accurate Information; Participate in a Cause to Make an Impact

While districts across the nation agree that these six Skill Sets are essential for learners, they face challenges in operationalizing them systematically. Each Skill Set is broadly defined, universally applicable, and deeply interconnected, making it difficult to concretely align them to curricular and pedagogical decision-making. They also do not directly correlate to the current assessment and credentialing paradigm, which relies heavily on standardized tests and course grades. Canvassing across district websites, for a vast majority of districts, it is difficult to decipher if and how these Mindsets and Skill Sets are being integrated and assessed. Our conversations with leaders and educators in many school districts across the country affirm this conclusion. In our ongoing work with these districts, we have seen that a first step in making these attributes concrete is to identify (as above) the Practices within these Skill Sets that can be explicitly learned, acted on, and observed in multiple contexts. Our analysis suggests that fewer than one fifth of districts with Portraits have taken this next step toward implementation.

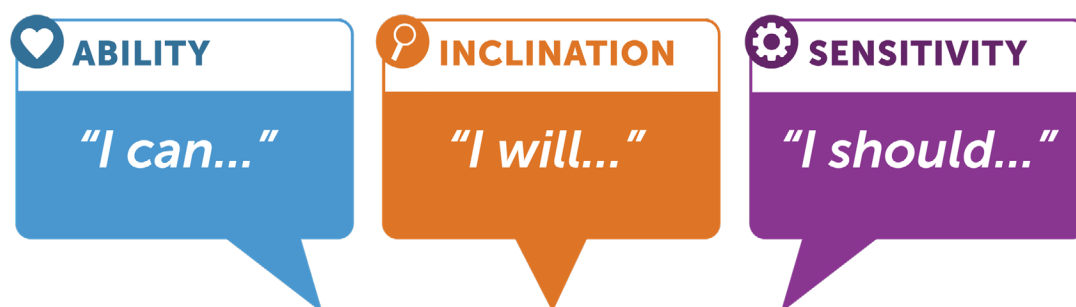
Identifying key Practices, however, is only a first step. In order to meet the goal of preparing students for an uncertain and ever-changing future, we need to examine how to cultivate Practices in a way that will enable them to be used independently and in new contexts and scenarios we cannot directly envision or prepare for. In the next section, we discuss how expanding the construct of skill mastery beyond ability is necessary for fully realizing the Portrait and essential to learners' achievement and success.

## A Necessary Shift: Reframing Mastery as Dispositional

Portrait of a Graduate Practices are intended to be applied throughout place and time, contributing to each learner's lifelong success. However, most learning and assessment models, even those that are skill-based, only consider ability and would consider a skill "mastered" once ability is proven in a single context. However, for the broad and cross-disciplinary Skill Sets and Practices of the Portrait, this is insufficient. Once mastered, if the learner does not choose to use a Practice when the opportunity presents itself or if they fail to see when using the Practice in a new context could serve a purpose, the real world implications remain the same—essentially—as if they do not have the ability to perform the Practice at all.

Skill Sets, Practices, and even many technical skills can be treated as Dispositions by extending the mastery definition. **Dispositions** include three elements: Ability, Inclination, and Sensitivity (Project Zero, 2024, Figure 1).

Figure 2. Fostering Ability, Inclination, and Sensitivity ensures students are comfortable applying and adapting essential skills in different contexts.



- I. **Ability** (“I can...”) concerns whether a learner is capable of applying a skill or practice.
- II. **Inclination** (“I will...”) recognizes that learners need to be comfortable and motivated to engage in a skill or practice.
- III. **Sensitivity** (“I should...”) acknowledges that a learner needs to be able to recognize when a skill or practice is applicable in unique contexts.

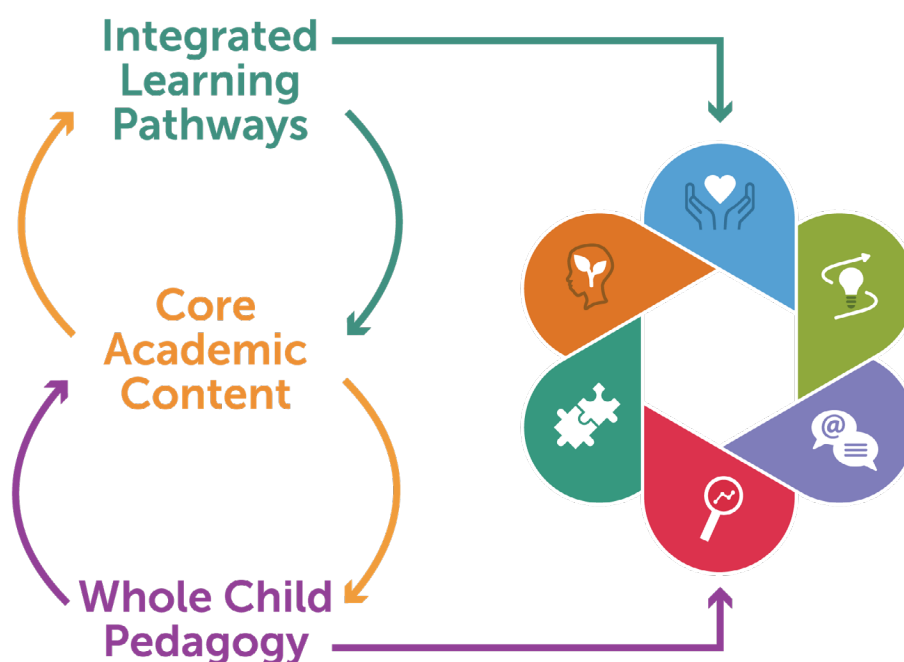
For example, consider “Evaluating Appropriate and Accurate Information” (one of the previously identified Portrait Practices). In English Language Arts, a learner may construct an argumentative essay in which they research and cite evidence to support a claim. During this process, they will likely explicitly learn skills and practices to determine the validity of their sources. That same student may have difficulty identifying an appropriate opportunity (Sensitivity) to determine if and how to evaluate the validity of sources when identifying datasets in science, where topics are traditionally presented as facts opposed to an evolving body of knowledge developed by humans. Further, this student may choose not to evaluate the validity of a source (Inclination) in science class for any number of reasons. To fully cultivate all three elements of dispositional mastery, we see a need for learners to practice and be coached in appropriate application of key Practices repeatedly in diverse contexts and varied use cases.



Cultivating Inclination and Sensitivity, in addition to Ability, is essential for school leaders to consider as they work to operationalize the Skill Sets identified within their Portrait. For assessing essential cross-cutting Practices, they must look beyond core academic content that prioritizes disciplinary knowledge and traditional tests that, while useful, still largely only gauge student recall and very limited application in subject-specific domains.

The cross-curricular implementation of repeated Practices in an Integrated Learning Pathway supports students to cultivate the **Sensitivity** to apply Practices in any context. When the learning experiences throughout the pathway are designed for each learner's variability (Digital Promise, 2024a), cultural context, and personal interests, these positive learning experiences can also lead to a greater **Inclination** to apply dispositional skills independently.

Figure 3. Integrated Learning Pathways and Whole Child Pedagogy support students to develop and apply Portrait Skill Sets and Practices.



The following sections in this paper describe a process we have co-designed with districts across the country to align Portrait Skill Sets to relevant Practices across core disciplines. We plan to address associated essential whole-child pedagogical approaches that enable this curricular approach in a forthcoming publication.

# Learning Pathways Bring Portrait of a Graduate to Life

Learning Pathways enable schools and districts to explicitly connect classroom learning to cross-cutting initiatives, such as developing Portrait Skill Sets. The pathway design process draws on the collective expertise of district leaders, school leaders, and teachers to break down broad attributes into actionable practices and identify relevant learning opportunities across disciplines and in each grade band. This horizontal integration breaks down the silos of learning within each content area so that learners build Sensitivity and Inclination to use Portrait Practices in different contexts. We describe our Learning Pathways design tenets and process in the following sections.

## Learning Pathways Principles

Learning pathways articulate system-wide learning progressions and experiences that function according to four principles: They are competency-based, complementary to disciplinary learning, consistent across classrooms, and cumulative from year to year (Digital Promise, 2024b). Below, we describe each of the principles using our Portrait Synthesis Model as an example (Figure 1). However, the Learning Pathways design process is intended to be adapted, as each community-designed Portrait is customized to the assets, needs, and contexts of specific districts and communities.

### Competency-Based

Competency-based education operationalizes learning in discrete knowledge or skills that learners demonstrate through individualized sequences and timelines (Levine & Patrick, 2019). Our competency-based approach breaks down Portrait Skill Sets into actionable Practices that learners can demonstrate. Identifying broadly applicable practices, as opposed to specific tool use, highly technical or domain-specific skills are crucial for districts and schools to integrate innovative learning opportunities across content and grade bands. Further, it provides an opportunity for students to develop and evidence skills and knowledge that are directly applicable to success in varied careers and throughout civic life.

Some cross-cutting Practices are already identified in commonly adopted academic standards. For instance, evaluating evidence and reasoning in informational text is part of the Common Core for English Language Arts and Literacy in History/Social Studies, Science, and Technical Subjects (Common Core State Standards Initiative, 2021). Reframing this standard as a cross-disciplinary Practice allows us to identify opportunities to use similar language and methods when students evaluate sources in all subjects and also provides an opportunity to examine the vital 21st century concern about digital literacy and the varying validity of online information which will only increase as AI becomes more prevalent. Other Portrait practices such as participating in a cause to make an impact are less present in existing standards and need to be identified at the level of curriculum adoption or creation.



The figure below illustrates how Portrait Skill Sets are broken down into actionable Practices that can be integrated across disciplines and grade bands.

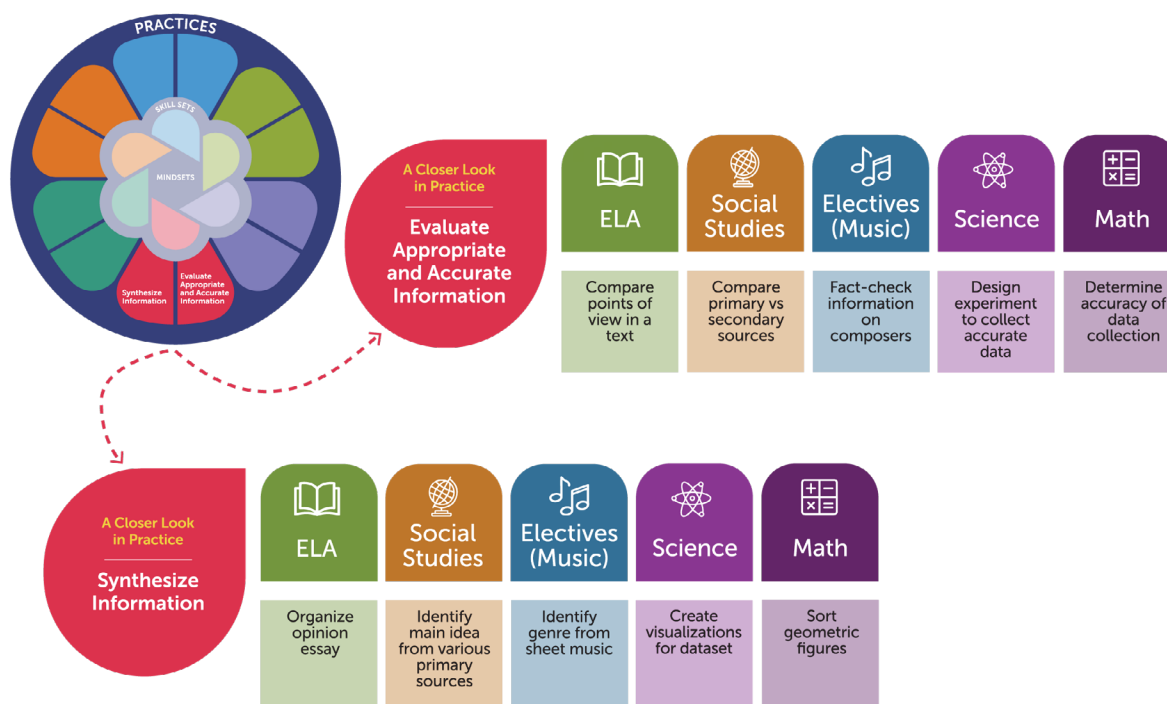
Figure 4. Portrait attributes are broken down into actionable practices that can be integrated across disciplines and grade bands.



## Complementary

Integrated Learning Pathways are not designed to replace or substitute existing structures or programs implemented during the school day. Rather, they are intentionally designed to supplement and enhance existing learning experiences with synergistic, innovative learning opportunities. Each competency-based Practice should not be integrated universally or indiscriminately across grade bands and disciplines. Teachers, leaders, and experts work together to identify and map integration opportunities that enhance disciplinary learning, as a value-add as opposed to an add-on. For instance, if a science teacher were asking students to gather data on water cleanliness, they could ask students to compare water from another country or region to practice “Aware(ness) of Local and Global Issues.” This mapping enables districts to explicitly and consistently integrate the most impactful practices into specific units and lessons. The evidence generated from these learning opportunities supplements existing measures to provide a more complete picture of students’ skills and abilities. Figure 5 illustrates synergistic integration points across academic subjects to “Evaluate Appropriate and Accurate Information,” a practice from the Portrait attribute “Analyze to Understand.”

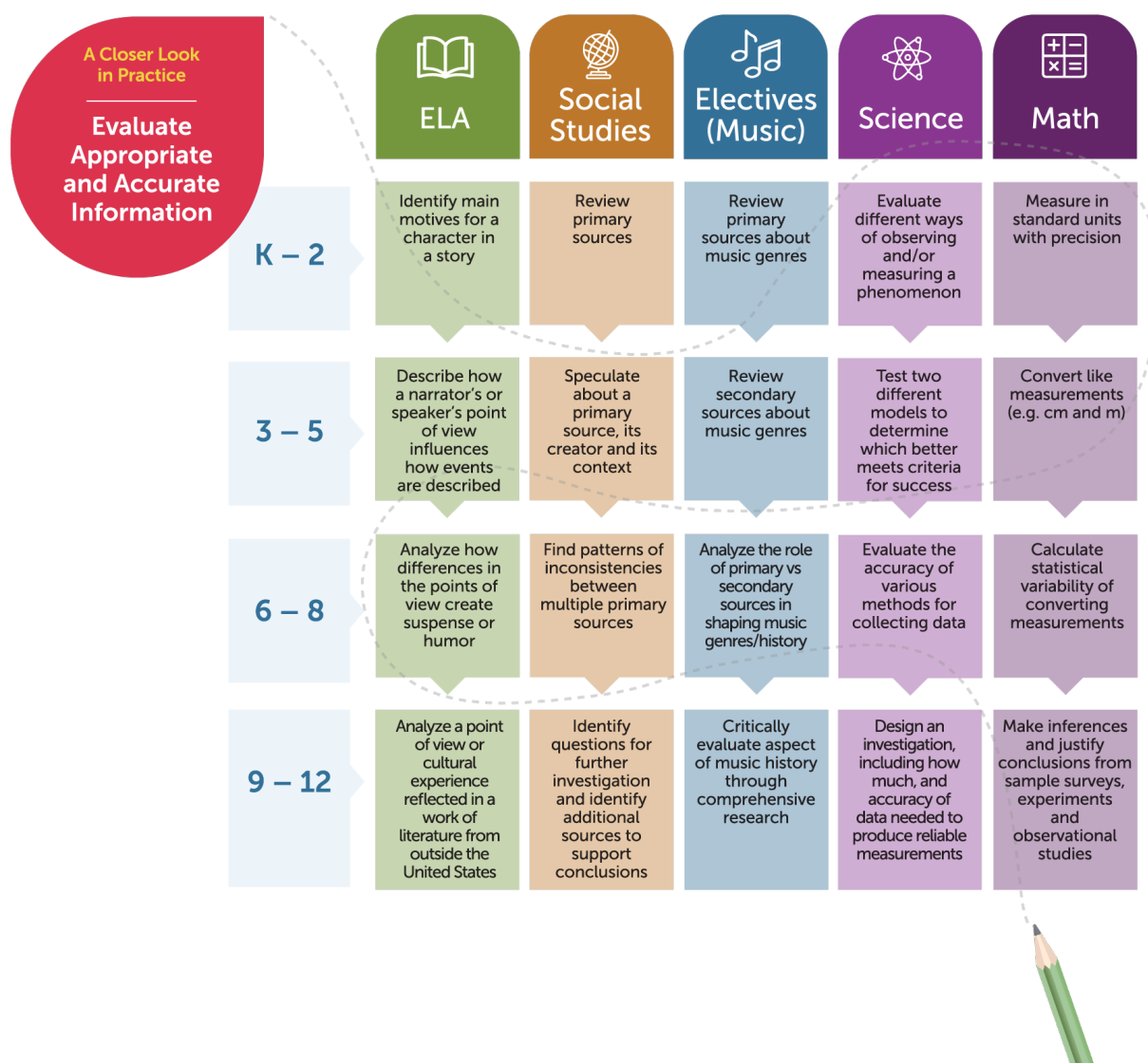
Figure 5. Synergistic integration points across disciplines for Evaluate Appropriate and Accurate Information.



## Cumulative

Integrated Learning Pathways identify developmentally appropriate learning progressions for Portrait Practices that develop from year to year toward a broader goal. By articulating a progression of these Practices across grade bands, the learning experience can be cumulative, building more advanced Skill Sets toward the Portrait over the entire K-12 experience. In order to design cumulative learning pathways, practices are broken down into “I can” statements that articulate what a student should be able to do at each grade level. This level of specificity allows identification where the practice is already present in relevant standards across multiple subject areas or where a new practice can be introduced to enhance the learning of a particular standard. These progressions ensure that opportunities to practice Portrait Skill Sets are not “one-offs” or repeated similarly without growth in ability from year to year. Figure 6 illustrates an example of a cumulative learning pathway for “Evaluate Appropriate and Accurate Information” articulated across grade bands and disciplines.

Figure 6. An example of a cumulative learning pathway for “Evaluate Appropriate and Accurate Information” articulated across grade bands and disciplines.



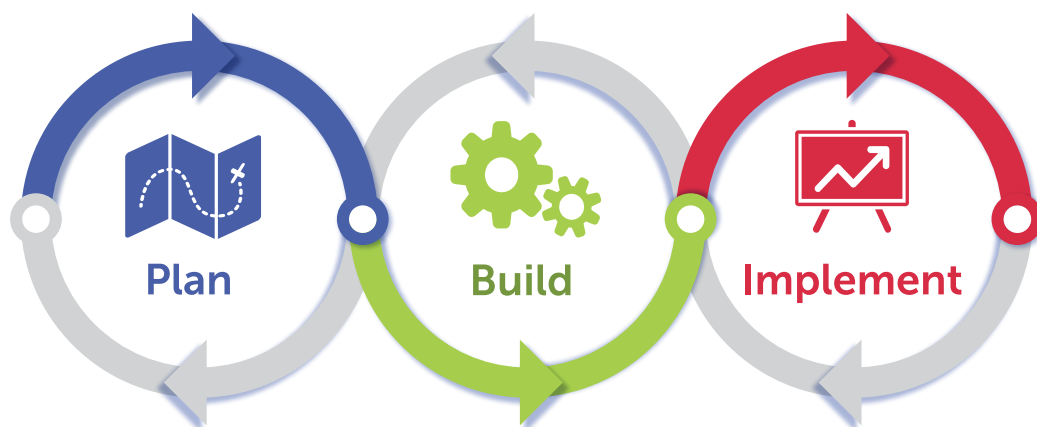
## Consistent

Consistency is paramount to ensure equity. Innovative learning opportunities (e.g., coding, project-based learning), even when integrated into core subjects, are frequently offered inequitably across classrooms and schools with learning opportunities dependent on teachers, classrooms, or after-school programs. Furthermore, these learning opportunities are less frequently offered to students who have been historically or systematically excluded. Effective Integrated Learning Pathways identify and design practice opportunities to be adapted and implemented across every school and classroom. Consistency does not mean pathways are blind to context and the specificities of individual schools and classrooms. But it does mean that the underlying attributes that districts have elected to be characteristic of all their graduates must also be realistically attainable by each of their students through universally adopted learning experiences. Therefore, opportunities to learn Portrait Skill Sets cannot rely on a particular teacher, school, or after-school club. Instead, specifically identified practice opportunities need to be sufficiently identified throughout the school's learning pathway to ensure all students have consistent opportunities to learn and demonstrate new Practices across the curriculum, regardless of their class placements, after-school activities, and elective choices.

## Learning Pathways Design Process

Digital Promise has partnered with a nationwide cohort of districts to co-design an iterative process to articulate learning pathways that integrate essential Skill Sets into core subject areas (Burke et al., 2019). This process includes three phases, outlined below, to support districts and schools in providing students equitable access to innovative learning opportunities.

Figure 7. Learning Pathways Design Process includes three phases: Plan, Build, and Implement.



### Plan

- Develop a vision for learner outcomes by **developing a Portrait of a Graduate** for your district, including the perspectives of students, teachers, parents, and community members in the design.
- **Conduct a needs assessment** including survey data and focus groups to understand perspectives about how existing curricula and initiatives align to the Portrait, assets to build on, and opportunities to grow.
- Based on the needs assessment, **plan the design and implementation of your pathway**. Identify priority areas for integration, a timeline, and measurable goals.

### Build

- Designate a team of **district, school, and teacher leaders** to guide the development and implementation for the pathway in each school and grade.
- Define **Practices that align to Portrait**. In this step, district leaders and curriculum specialists break down Portrait Skill Sets into demonstrable, observable competencies that should be developed dispositionally across academic and career and civic contexts.
- Explicitly map **cross-cutting integration of competencies to adopted curriculum** across disciplines. In this step, curriculum specialists and teachers work together in teams to articulate developmentally appropriate sub-practices and “I Can” statements by grade band and connect them to academic standards and specific curricular integration moments.

## Implement

- Identify existing Practice opportunities and design **new learning experiences** at integration points where they do not exist. For each integration point, teachers and curriculum specialists intentionally design learning opportunities that integrate the identified components of a Portrait Practice appropriate for enhancing the existing curricular goals while providing opportunity to develop the new Practices.
- Provide **professional learning** for teachers to integrate new experiences using pedagogies that honor the whole child and enable the development of the key Mindsets identified in the Portrait.
- Pilot implementation, gather feedback, and make iterative changes in a continuous improvement cycle.

Overall, this process allows districts to identify Practices and progressions that make Portrait Skill Sets visible for teachers and learners and also identify specific integration points in curriculum. As a result, districts design learning pathways in ways that are aligned with their internal initiatives and vision in order to develop student dispositions and career connections that will better position learners for well-being, fulfillment, and economic security.

# Leveraging Learning Pathways to Shift Education

The integration of Portrait Skill Sets and Practices through Learning Pathways presents an opportunity to make fundamental shifts to how school leaders and policy makers envision and leverage teaching and learning systems to enable transformative change. Below, we describe three shifts that support the integration of Portrait Skill Sets throughout learning pathways and open doors to further innovations that can benefit all learners.

## Shifting from Vertical to Horizontal

The Integrated Learning Pathways model presents a novel approach to designing curricula. Traditionally, scope and sequence are aligned only to progressions within academic subjects. Integrated Learning Pathways create progressions that are aligned both within and across subjects (Figures 5 and 6). This approach to design enables students to practice skills in different contexts. For instance, consider “Presenting Ideas with Clarity and Purpose” (one of the previously identified Portrait Practices). Communication in a technical discipline versus in a liberal arts discipline will have unique purposes, organization, and presentation. However, designing for a specific audience and purpose is a cross-cutting skill that can be applied across disciplines. Many educators would likely recognize that opportunities already exist for students to practice communication in their disciplines. However, teachers may not have language or approaches for designing communication for a specific audience and purpose across disciplines, so students may not easily recognize the relationship or connection of a concept across multiple subjects (Burke, Ruiz, & Mills, 2023). This focus on deliberate cross-curricular articulation is a foundational contribution that Integrated Learning Pathways provide.

### Partner Spotlight: Juab School District Integrating Portrait of a Graduate Skill Sets Across Subjects

**Juab sets an example for intentionally identifying when and how Portrait-connected learning occurs in classrooms with deliberate consideration of what’s appropriate per grade band.**

Figure 8. Photos from a “What Counts” event at Juab SD depicting the Superintendent speaking to educators and community members about Portrait (left) and a table of community members brainstorming and contributing their perspectives on sticky notes (right).



Utah has developed a statewide Portrait model called the Utah Talent MAP (Utah State Board of Education, 2019). Prior to the statewide initiative, Juab School District (SD) in Nephi, Utah, an often recognized district leading in personalized and competency-based learning, had already designed and implemented its own Portrait. Juab SD's journey to develop their Portrait started with a recurring "What Counts" community engagement event where they invited parents, caregivers, students, etc. to share their perspectives. Creating their Portrait allowed them to respond to needs expressed by local community voices in ensuring students are empowered to pursue their dreams.

In elementary and middle school, Juab has identified cross-disciplinary opportunities for students to practice the Skill Sets identified in their Portrait, tailored to different grade levels. Teachers identify developmentally appropriate "I can" statements for each grade level to demonstrate sub-skills (Figure 9). These "I can" statements are elaborated to specify what each sub-skill (Practice) looks like in the classroom and potential evidence or artifacts for students to demonstrate the skill (Figure 10).

Figure 9. Juab teachers identified "I can" statements for kindergartens to demonstrate each sub-skill.

Kindergarten	
<b>Critical Thinking</b>	
<b>Design Thinking</b>	I can plan, create, and build something for a purpose.
<b>Information &amp; Discovery</b>	I can learn through work and play.
<b>Interpretation and Analysis</b>	I can identify my feelings and express them in appropriate ways.
<b>Reasoning</b>	I can explain my thinking.
<b>Constructing Arguments</b>	<b>I can express my opinion in appropriate ways.</b>
<b>Problem Solving</b>	<b>I can find more than one solution to a problem.</b>
<b>Collaboration</b>	
<b>Leadership and Initiative</b>	I can be a good example for others.
<b>Cooperation</b>	<b>I can work with others kindly.</b>
<b>Flexibility</b>	<b>I can control how I express my feelings.</b>
<b>Responsibility and Productivity</b>	I can complete my work.
<b>Collaboration Using Digital Media</b>	I can work with others using technology.
<b>Responsiveness &amp; Constructive Feedback</b>	I can say something nice about the work of others.
<b>Communication</b>	
<b>Effective Listening</b>	<b>I can listen respectfully.</b>
<b>Delivering Oral Presentations</b>	I can speak to others about my ideas.
<b>Communicate Using Digital Media</b>	I can use digital media to show my learning.
<b>Communicate Using Writing</b>	<b>I can share my thoughts and feelings through my writing.</b>
<b>Engage in Convesations &amp; Discussions</b>	<b>I can talk with and listen to others in a kind way.</b>
<b>Communicate in Diverse Environments</b>	I can communicate with people in different places in my school.
<b>Creativity</b>	
<b>Idea Generation</b>	I can come up with an idea about a given topic.
<b>Idea Design and Refinement</b>	<b>I can make changes to an idea.</b>
<b>Openness and Courage to Explore</b>	I can try new things.
<b>Work Creatively with Others</b>	<b>I can create something through work or play with others.</b>
<b>Creative Production &amp; Innovation</b>	I can imagine and create something new.



Figure 10. In middle school, teachers across disciplines define “I can” statements for each sub-skill and provide examples of artifacts for students to demonstrate the skill.

## Design Thinking

I can define a problem and form a creative, practical solution through empathizing, challenging, and testing.

Design Thinking

PORTRAIT OF A GRADUATE

CRITICAL THINKING

### Artifacts

- 6 Science - Save the Penguins
- Music Concert preparation
- Projects in robotics or 3D design
- Projects in shop, CCA, or FFA
- Spaghetti tower challenge
- Leadership class projects/events
- Anything where you design something that helps solve a problem for someone

## Shifting from Adding to Integrating

Educators and school leaders across the country are overwhelmed with new mandates and priorities. Still trying to reestablish their footing since the global COVID-19 pandemic, schools are now looking for clarity of purpose and alignment of vision rather than simply something “new” or “different.” A Portrait provides a useful framework to align the plethora of teaching and learning initiatives that are typically in place in districts. With an Integrated Learning Pathway for a district’s Portrait, each new learning priority—whether it be computational thinking, social-emotional learning, artificial intelligence, or another—can be aligned to the Skill Sets and Practices already present in the district’s Portrait so that educators can see the alignment of each initiative to one another and to existing teaching practices and learning outcomes. Further, a developed Integrated Learning Pathway allows district leaders and educators to identify where Practices relevant to the new initiative are already present and then identify the specific places where new learning experiences need to be integrated. This removes a significant burden from each individual teacher to “figure out” how to apply the new initiative and creates the consistency that is so vital to equity.

## Partner Spotlight: Indian Prairie School District #204 Aligning District Initiatives

**Indian Prairie is using their Portrait to align the adoption and implementation of artificial intelligence and computational thinking.**

Indian Prairie School District (IPSD) is a suburban school district serving 25,632 students in the Naperville, Aurora, Bolingbrook, and Plainfield communities outside of Chicago, Illinois. They developed their Portrait as a benchmark for all the Skill Sets that students should have when they leave the school system. In collaboration with community stakeholders, staff, and students, they identified six Skill Sets that make up their Portrait (Indian Prairie School District #204, 2024).

IPSD began to put their Portrait into action in 2018, when they partnered with Digital Promise and a cohort of districts across the country to design and implement Learning Pathways for computational thinking (Digital Promise, 2021). IPSD focused on providing access to computing for all students in the district, not just those who are in elective courses and after-school programs or have access through their families. In alignment with their Portrait, they were motivated by the desire to provide students with the skills they need for future careers.

*"As we thought about computational thinking, and really, the skills and competencies that feed underneath that term, it really helped us visualize parts of the Portrait and build a learning pathway for our students to get to that outcome."*

*—Brian Giovanini, Director of Innovation, Indian Prairie School District*

They began by defining computational thinking for their teachers and students. They identified six competencies that were relevant and aligned to what was happening in IPSD: Decomposition, Pattern Recognition, Abstraction, Algorithms, Working with Data, and Creating Computational Artifacts. The curriculum team then aligned these competencies to their Portrait Skill Sets, defined what new learning opportunities would be created across grade levels, courses, and schools, and developed their competency map (Figure 11). They used the competency map to co-design examples of integration that were applicable across each grade band and provided professional learning for teachers to learn and think together about computational thinking integration in their classrooms.

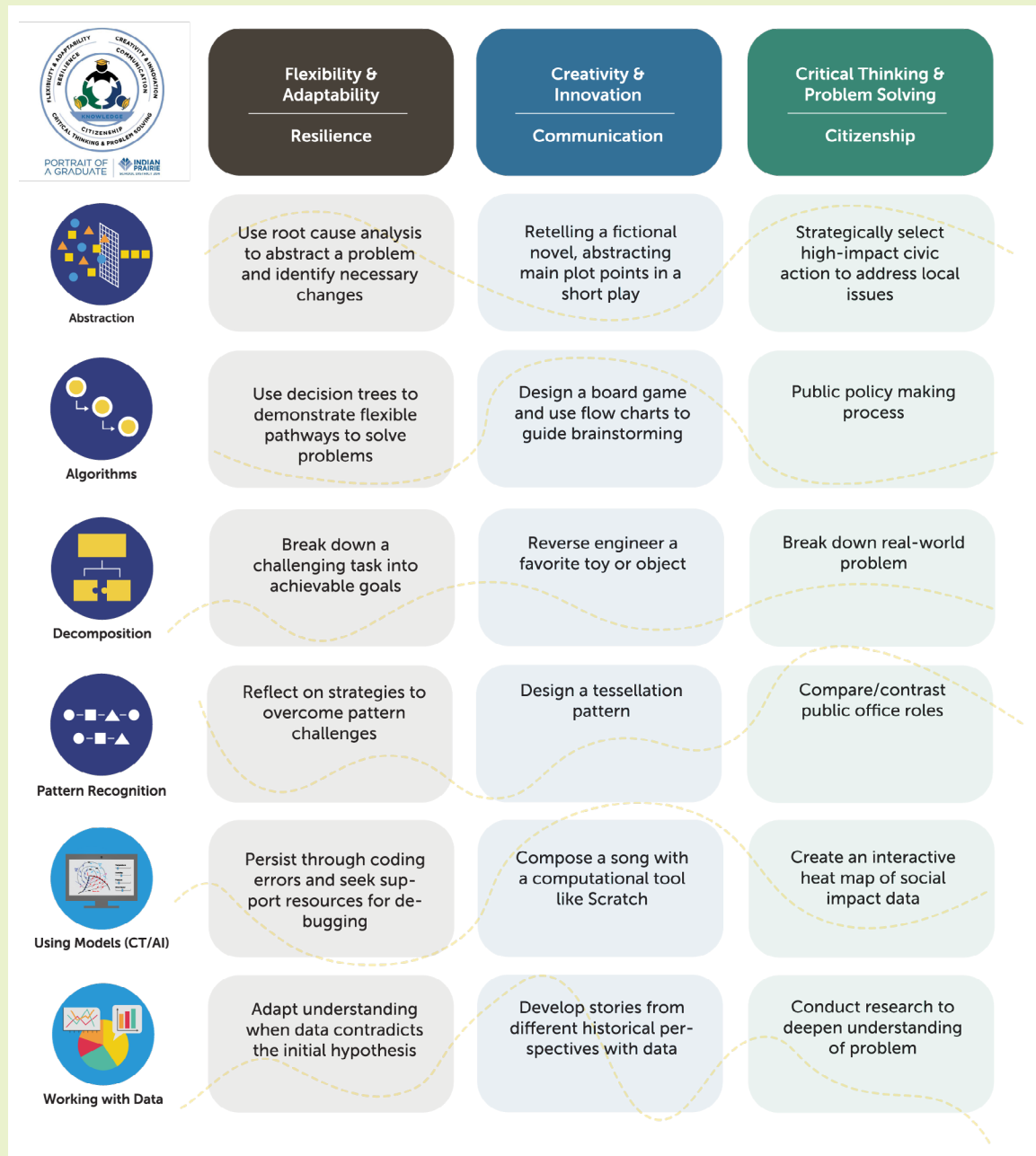
Portrait attributes are broader than computational thinking alone. However, computational thinking was a productive framework to operationalize universal and crosscutting Portrait attributes into classroom teaching and learning.

Figure 11. One page of Indian Prairie's competency map, connecting computational thinking practices to classroom practice.

<b>Decomposition: Breaking down a complex problem or system into smaller, more manageable parts.</b> <i>By the end of grade 12, what will ALL students know and be able to do?</i>			
By the end of 2nd Grade	By the end of 5th Grade	By the end of 8th Grade	By the end of 12th Grade
<i>Students will Know...</i> <ul style="list-style-type: none"> <li>• The ability to recognize appropriate and worthwhile opportunities to apply computation is a skill that develops over time and is central to computing (K-12 P3).</li> <li>• Solving a problem with a computational approach requires defining the problem, breaking it down into parts, and evaluating each part to determine whether a computational solution is appropriate (K-12 P3).</li> </ul>			
<i>Students will be able to...</i> <ul style="list-style-type: none"> <li>• Identify problems that have been solved computationally (K-12 P3.1).</li> <li>• Break problems down into their component parts (K-12 P3.2).</li> <li>• Present steps in solving a problem and explain why.</li> </ul>	<i>Students will be able to...</i> <ul style="list-style-type: none"> <li>• Ask clarifying questions to understand whether a problem or part of a problem can be solved using a computational approach (K-12 P3.1).</li> <li>• Decompose larger problems into manageable smaller problems (K-12 P3.2).</li> <li>• Evaluate and explain whether a computational solution is the most appropriate solution for a particular problem (K-12 P3.3).</li> </ul>	<i>Students will be able to...</i> <ul style="list-style-type: none"> <li>• Identify more complex problems that involve multiple criteria and constraints (K-12 P3.1).</li> <li>• Break down a program into subgoals: getting input from the user, processing data, and displaying the result to the user (K-12 P3.2).</li> <li>• Evaluate the feasibility of using computational tools to solve a problem (K-12 P3.3).</li> </ul>	<i>Students will be able to...</i> <ul style="list-style-type: none"> <li>• Identify complex, interdisciplinary, real-world problems that can be solved computationally (K-12 P3.1).</li> <li>• Decompose complex real-world problems into manageable subproblems that could integrate existing solutions or procedures (K-12 P3.2).</li> <li>• Evaluate whether it is appropriate and feasible to solve a problem computationally (K-12 P3.3).</li> </ul>
<b>Career Connection:</b> Project managers often get clients who want them to build very large and complex programs. To understand what a big project will take, these pros need to break it down into many small elements so they can figure out how to approach the project.			

In the figure below, tags for each Portrait domain indicate how they align to computational thinking competencies.

Figure 12. Crosswalking Portrait Skill Sets with computational thinking practices



Next, they will align artificial intelligence (AI) literacy skills to their Portrait framework and computational thinking pathway. In IPSD, Portrait has provided broader vision and alignment to the several ongoing initiatives in the district and will continue to do so going into the future.

With the rapid growth of AI tools across all parts of life, districts everywhere are now grappling with how to ensure their students will develop vital AI literacies. Figure 13 illustrates Portrait practices aligned to AI literacy and computational thinking. The computational thinking practices of “Automation,” “Computational Modeling,” and “Data Practices” (Mills et al., 2021) align to domains of the Portrait synthesis model “Create to Solve and Share,” “Analyze to Understand,” and “Communicate in All Media and Modalities.” AI literacy includes the knowledge and skills that enable humans to critically understand, use, and evaluate AI systems and tools (Mills et al., 2024). Understanding AI aligns “Automation” and “Data Practices” from computational thinking. The evaluation of AI adds four additional categories: “Transparency,” “Safety,” “Ethics,” “Impact,” and that align to “Care for and Contribute to Society,” “Self-Awareness and Regulation,” and “Collaborate Across Difference.” In this way, Portrait can help teachers and students see how a new initiative, such as AI literacy, expands and relates to the work they were already doing to integrate computational thinking, which they already in turn have seen as supporting their Portrait Skill Set development. When new priorities are woven into existing communally shared priorities and practices, it may alleviate much of the feeling of “Initiative Fatigue” that is engendered when leaders continue to add one more thing on top of one more thing.

Figure 13. Aligning computational thinking practices and AI literacy practices with Portrait of a Graduate Skill Sets

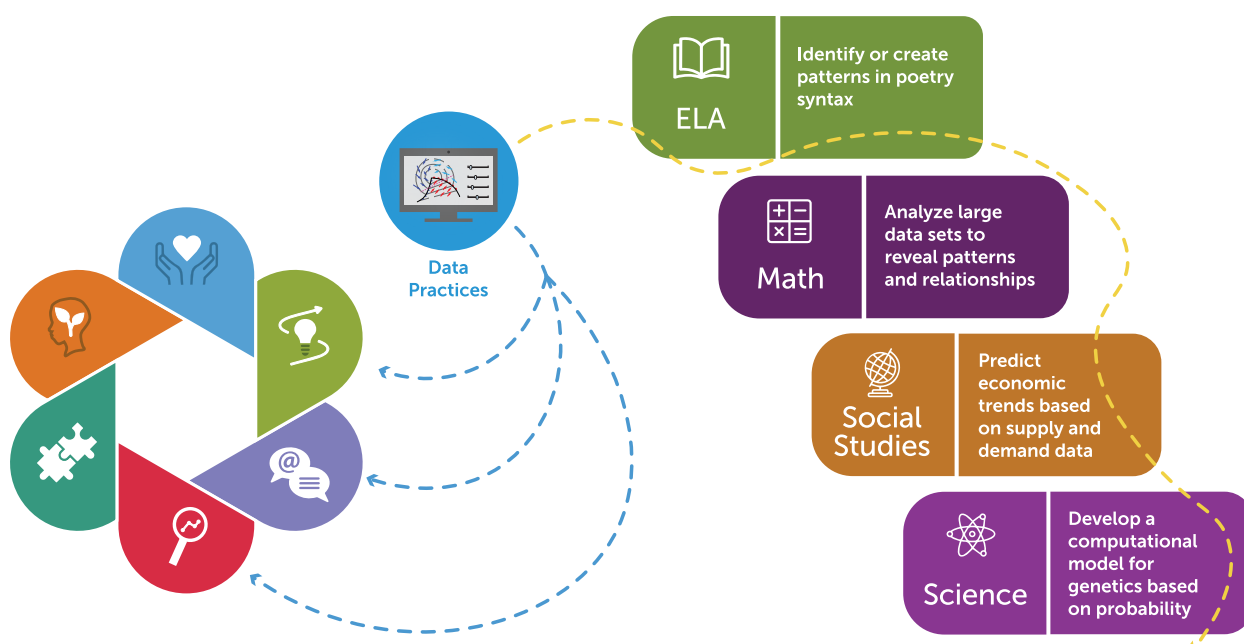


## Shifting from Passive Use to Active Use of Technology

A Portrait provides an especially promising framework for considering best practices for technology integration. The National Education Technology Plan (U.S. Department of Education, 2024) recently reasserted that the “Digital Use Divide” contributed to inequitable instruction across the nation. That is, some students are asked to use technology for critical thinking, exploration, and creative expression, or “active use” of technology. On the other hand, some students are only asked to use technology to complete skill and drill exercises or assessments and are even discouraged from collaborating in doing so. The latter is an all too common learning experience for those learners who experience marginalization (Rafalow, 2020).

As noted at the outset of this paper, the National Education Technology Plan (2024) specifically calls on the Portrait model as a means for states and districts to establish a vision for student learning to inform technology integration. For example, students could experience both active and passive technology integration for learning about “Data Practices.” Students could “passively” engage with technology around data practices if they were instructed to complete an online module about statistical analysis with practice data sets to calculate descriptive values, such as mean, median, and range. Alternatively, students could “actively” learn data practices by manipulating a data set to present an argument to an audience about a relevant issue. They would still have to calculate mean, median, and range, but also consider how to create a data visualization that presented their argument in a way that would be compelling to their audience. In the first example, students use technology to analyze data but lack overall purpose and opportunities to be creative. Both examples engage in similar technical practices (calculating mean, median, and range) but only in the second example do learners practice the uniquely human and creative Portrait Skill Set of “Communicating in All Media and Modalities.” The figure below illustrates examples of active technology integration of data practices across different subjects.

Figure 14. Portrait domains inform active integration of automation across disciplines



# Conclusion

The skills that will equip learners to lead successful lives are shifting in our rapidly changing world. Educators must prepare learners to apply, innovate, and problem-solve across disciplines and contexts. Portrait of a Graduate is a useful framework for states and districts to articulate the skills that are most essential for their students to succeed—both in our familiar world today and in our unknown future. Districts from across the nation have identified a similar set of skills for students' success, summarized in our Portrait of a Graduate Synthesis Model.

Educators should aim for Portrait Mindsets, Skill Sets, and Practices to be mastered by learners as dispositions by supporting the development of Sensitivity and Inclination as well as Ability. This can be operationalized through Integrated Learning Pathways, which identify integration points that enhance teaching and learning curricula. These pathways are competency-based, integrated cumulatively into each grade K-12, implemented consistently across classrooms, and in ways that are complementary to learning across all classes. Partnering with districts from across the nation, we have co-designed a process to plan, build, and implement Integrated Learning Pathways across K-12 classrooms. This is a promising strategy to align multiple initiatives, inform best practices for technology integration, and ultimately better prepare students for a successful future.



Photo by Allison Shelley/The Verbatim Agency for EDUimages

The integration of Portrait Mindsets, Skill Sets, and Practices through Integrated Learning Pathways presents an opportunity to make fundamental shifts to how school leaders and policy makers envision and leverage teaching and learning systems to enable transformative change. This paper identifies requisite shifts from current educational practices, such as shifting from vertical content knowledge to horizontal integration of cross cutting practices that enable effective Integrated Learning Pathways.

Of course, these are not the only shifts necessary to fully realize the Portrait. While the scope of this paper primarily addressed curricular integration, educational systems must also consider complementary practices such as facilitating whole-child pedagogical approaches, developing competency-based rubrics for capturing mastery of essential Skill Sets, and establishing systems that recognize these skills in connection to postsecondary opportunities. Digital Promise is working across sectors to develop innovative solutions to these ongoing challenges. We look forward to sharing more transformative approaches to shift education toward the fulfillment of every learner's potential in forthcoming publications and partnerships.



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# Appendix

## Developing the Portrait of a Graduate Synthesis Model

Over the last decade, thousands of school districts have worked with their communities to create a unique Portrait of a Graduate that identifies vital skills and mindsets that they believe will lead to their learners' lifelong well-being, fulfillment, and economic security. Digital Promise analyzed a sample of these Portraits in order to understand **what Skill Sets do districts across the nation identify for students to exemplify by graduation?**

## Analysis of Portraits Across the Nation

We analyzed 69 Portraits from districts across the United States. The districts within the sample include 31 from districts in the League of Innovative Schools (Digital Promise, 2024c) and other districts from across the nation that have a publicly available published Portrait (see full list in Table A1). We conducted an initial round of inductive coding (Saldaña, 2015) in which we documented each Skill Set within an individual districts' Portrait and developed categories to capture similar Skill Sets across multiple districts.

In some cases, Skill Sets were articulated using the same language across a majority of Portraits. For instance, "critical thinking" appeared in 39 of the Portraits we examined. On the other hand, there were Skill Sets with wide variability in language. For example, "responsibility," "persistence," and "adaptability" each appeared a few times throughout our sample. While these terms certainly mean different things, we see their intent in terms of the higher level Skill Set necessary for life success as similar (in this case, practicing Self-Awareness and Regulation) and therefore classified them within the same grouping.

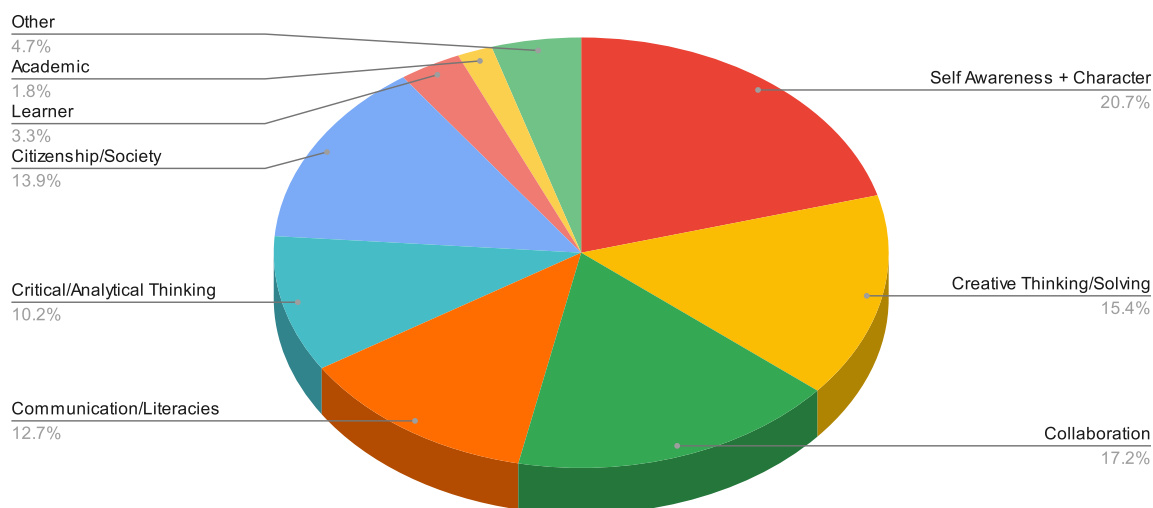
Figure A1. Inductive analysis of Portrait of a Graduate from 69 districts across the nation

Name of School	Element 1	Domain 1 (primary)	Domain 1 (additional)	Element 2	Domain 2 (primary)	Domain 2 (additional)	Element 3	Domain 3 (primary)
Anaheim Union High School District	Critical Thinking	Critical/Analytical Thinking		Character & Compassion	Self Awareness + Character	Collaboration	Collaboration	Collaboration
Capital School District	Responsible	Self Awareness + Character		Accountable	Self Awareness + Character		Respectful	Self Awareness + Character
Howard-Suamico School District	Adaptable	Self Awareness + Character		Self-Starter	Self Awareness + Character		Critical Thinking	Critical/Analytical Thinking
Indian Prairie School District	Citizenship	Citizenship		Critical Thinking & Problem Solving	Critical/Analytical Thinking	Creative Thinking/Solving	Communication	Communication/Literacies
Iowa City Community School District	Adaptability	Self Awareness + Character		Empathy	Self Awareness + Character	Collaboration	Communication/Literacies	Communication/Literacies
Kettle Moraine School District	Communicator	Communication/Literacies		Collaborator	Collaboration		Continuous Learner	Learner
Lakota Local School District	Persistent Problem Solvers	Creative Thinking/Solving	Self Awareness + Character	Critical Thinkers	Critical/Analytical Thinking		Engaged Community Members	Citizenship/Society
Menden School District	I am a Thinker	Critical/Analytical Thinking		I am an Advocate for DEI	Citizenship/Society	Collaboration	I am a Collaborator	Collaboration
Oak Ridge Schools	Every Student Prepared	Other		College & Career Ready	Other		4 C's	Other
Sioux Falls School District 49-5	Empowered Learner	Self Awareness + Character		A Global Citizen	Citizenship/Society		A Resilient Thinker	Self Awareness + Character
Sunnyvale Unified School District	Knowledge of Learning	Learner		Other			Creative Confidence	Creative Thinking/Solving
Valle Unified School District	Kind and Confident	Self Awareness + Character	Collaboration	Curious and Connected	Critical/Analytical Thinking	Communication/Literacies	Capable and Knowledgeable	Self Awareness + Character
Arizona State University Prep Academy	Critical Thinking	Critical Thinking		Problem Solving	Problem Solving		Collaboration	Collaboration
Abington School District	Growth mindset	Self Awareness + Character		Social Emotional Learning	Self Awareness + Character	Collaboration	Collaboration	Collaboration
Adams 12 Five Star Schools	Problem Solving	Creative Thinking/Solving		Financial Literacy	Other		Communication	Communication/Literacies
Arcadia Unified School District	Character & Compassion	Self Awareness + Character	Collaboration	Communication	Communication/Literacies		Collaboration	Collaboration
Avonworth School District	Creativity & Innovation	Creative Thinking/Solving		Critical Thinking	Critical/Analytical Thinking		Literacy & Numeracy	Academic
Blue Valley Unified School District	Problem Solving	Creative Thinking/Solving		Critical Thinking	Critical/Analytical Thinking		Innovation	Creative Thinking/Solving
Brightline Public School District	Problem Solving	Creative Thinking/Solving		Information & Communication	Communication/Literacies		Higher Order Thinking	Critical/Analytical Thinking
Bristol Township School District	Problem Solving	Creative Thinking/Solving		Critical Thinking	Critical/Analytical Thinking		Innovation	Creative Thinking/Solving
Bristol Warren Regional School District	Real World Learning	Citizenship/Society	Creative Thinking/Solving	Problem Solving	Creative Thinking/Solving		Critical Thinking	Critical/Analytical Thinking
Brooklyn Laboratory Charter School District	Social Emotional Learning	Self Awareness + Character	Collaboration	Leadership	Self Awareness + Character	Citizenship/Society	Innovation	Creative Thinking/Solving
Broward County Public Schools	Creativity & Innovation	Creative Thinking/Solving		Collaboration	Collaboration		Experiential Learning	Other
Cajon Valley Union School District	Collaboration	Collaboration		Social Emotional Learning	Self Awareness + Character	Collaboration	Real World Learning	Citizenship/Society
Hampton Town School District	Collaboration	Collaboration		Entrepreneurship	Creative Thinking/Solving	Citizenship/Society	Real World Learning	Citizenship/Society
Henry County Public Schools	Collaboration	Collaboration		Creativity	Creative Thinking/Solving		Citizenship	Citizenship/Society
Lexington County School District One	Extraordinary Communicators	Communication/Literacies		Collaborators	Collaboration		Creators	Citizenship/Society
Liberty Public School District 53	Collaboration	Collaboration		Critical Thinking	Critical/Analytical Thinking		Communication	Communication/Literacies
North Salem Central School District	Communication	Communication/Literacies		Collaboration	Collaboration		Critical Thinking	Critical/Analytical Thinking
Portland Public Schools	Compassionate	Self Awareness + Character		Critical Thinking	Critical/Analytical Thinking		Collaborate	Collaboration
West Valley Unified School District	Communication	Communication/Literacies		Creative Thinking	Creative Thinking/Solving		Citizenship	Citizenship/Society
Fairfax County	Communicator	Communication/Literacies		Collaborator	Collaboration		Ethical and Global Citizen	Citizenship/Society
Northwest Local OH	Adaptability	Self Awareness + Character		Communication	Communication/Literacies		Critical Thinking	Critical/Analytical Thinking
creative oh	innovative thinker			informed citizen			invested worker	Citizenship/Society
alton oh	strong habits of mind	Self Awareness + Character		real world skills	Citizenship/Society		a plan for the future	Other
brooklyn city oh	cultural acceptance and citizenship	Citizenship/Society	Collaboration	care + self awareness	Self Awareness + Character		connection to community	Citizenship/Society
columbus city OH	adaptability	Self Awareness + Character		creativity	Creative Thinking/Solving		communication	Communication/Literacies
gwinnett county GA	adaptability	Self Awareness + Character		collaborative leadership	Collaboration	Self Awareness + Character	resourcefulness	Self Awareness + Character
mesa public schools	ethical	Self Awareness + Character	Citizenship/Society	inclusive	Citizenship/Society	Collaboration	resilient	Self Awareness + Character
oxford ms	Effective Communicators	Communication/Literacies		Culturally Aware	Citizenship/Society		Ethical	Self Awareness + Character
west bloomfield MI	COLLABORATOR	Collaboration		CRITICAL THINKER AND CREATIVE	Creative Thinking/Solving	Creative Thinking/Solving	CRITICAL COMMUNICATOR	Communication/Literacies
mesquite	Creative and Critical Thinker	Creative Thinking/Solving	Critical/Analytical Thinking	Self Aware	Self Awareness + Character		Persistent	Self Awareness + Character
shrewsbury ma	critical thinking and content mastery	Critical/Analytical Thinking		leadership	Self Awareness + Character	Citizenship/Society	global citizenship and engage	Citizenship/Society
olathe ks	Critical Thinking and Problem Solving	Critical/Analytical Thinking	Creative Thinking/Solving	Creativity and Innovation;	Creative Thinking/Solving		Initiative and Self Direction;	Self Awareness + Character
wilton ct	Contemporary Multi-Literate Scholar	Communication/Literacies	Academic	Balanced, Healthy Human Being	Self Awareness + Character		Self-Navigating Expert Learner	Learner
east penn PA	LEXIBLE AND CREATIVE THINKERS	Creative Thinking/Solving		EFFECTIVE COMMUNICATORS	Communication/Literacies		INNOVATIVE CREATORS	Creative Thinking/Solving
pike county GA	Think Critically	Critical/Analytical Thinking		Solve Creatively	Creative Thinking/Solving		Collaborate Effectively	Collaboration
marion county GA	committed individuals	Self Awareness + Character		creative thinkers	Creative Thinking/Solving		content masters	Academic
port washington NY	creative innovative thinkers	Creative Thinking/Solving		rigorous curriculum	Academic		communication skills	Communication/Literacies

Our analysis revealed that 90% of the sample districts' Skill Sets aligned to the following six categories:

- Analyze to Understand (critical thinking) 10.2%
- Create to Solve and Share (creativity, innovation, problem solving) 15.4%
- Communicate in All Media and Modalities (collaboration, digital literacy) 12.7%
- Collaborate Across Difference (collaboration, empathy, social awareness, cultural competence) 17.2%
- Practice Self-Awareness and Regulation (character, mindful, responsible, compassionate, growth mindset, kindness) 20.7%
- Care for and Contribute to Society (citizenship, leadership, global competence, community) 13.9%

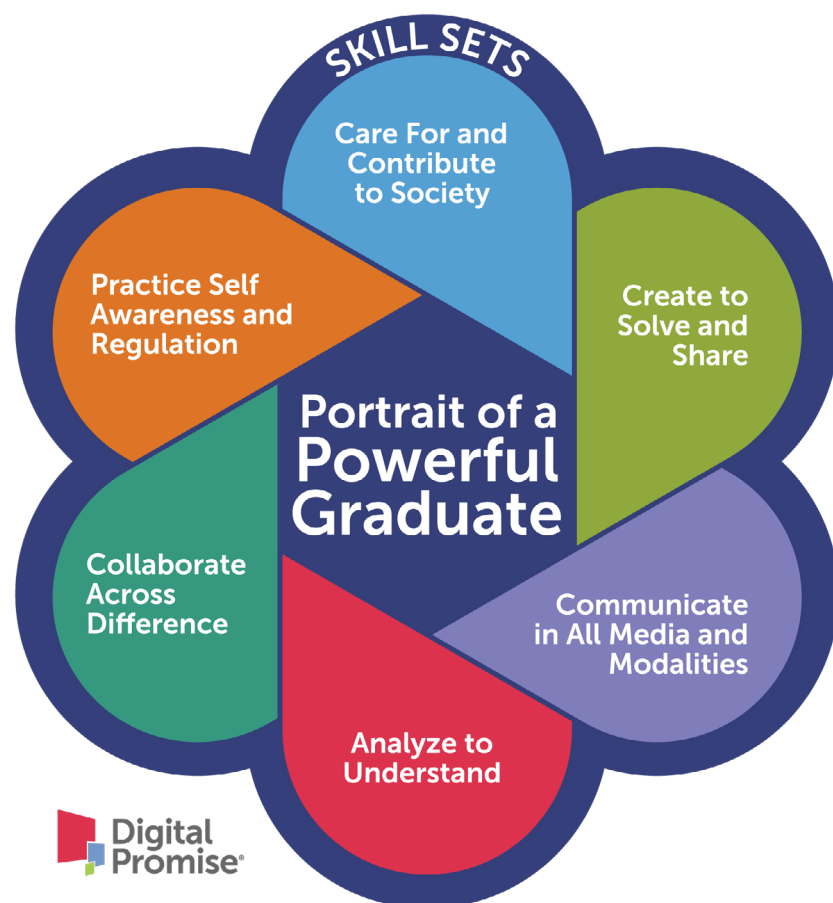
Figure A2. Inductive analysis revealed that 90% of Skill Sets in districts' portraits aligned to six categories



## Our Portrait of a Graduate Synthesis Model

We used the categories to develop a **Portrait of a Graduate Synthesis Model**, pictured below. The purpose of this model is to inform policymakers and other organizations about district priorities in order to support schools in achieving these goals for their students. We acknowledge the importance of the Portrait's community-centered framing and support districts to develop an individualized Portrait that captures their unique viewpoints and priorities.

Figure A3. The Portrait of a Graduate Synthesis Model, developed from our analysis of 69 Portraits from across the nation.



## Operationalizing Skill Sets with Practices

To further understand the skills districts have identified as essential for their learners, we conducted an additional round of coding to uncover how districts define, elaborate, or operationalize each Skill Set. We identified 11 districts from our initial round of analysis that had articulated each Portrait attribute with a more detailed explanation or rubric (Table A1). We documented each Skill Set, sub-skills, and accompanying descriptions from each individual districts' Portrait. Then, we conducted a round of deductive analysis (Saldaña, 2015) to code the sub-skills and descriptions from each district's Portrait to the six Skill Sets identified in the first iteration of coding and summarized in the Synthesis Model (Figure A3). Certain pieces of text were relevant to more than one domain or did not quite fit into any in which the text was coded as a "misfit."

Figure A4. Deductive analysis of district's sub-skills and descriptions to the six Skill Sets in the Synthesis Model

School District	Notes	PoG Language	Domain 1 (Strongly Aligned)	Domain 2
Indian Prairie School District	Exact language	<b>Flexibility &amp; Adaptability</b>	Practice Self Awareness and Manage...	
Indian Prairie School District	Exact language	Adjust to new conditions, different roles, unpredictable situations, and shifting contexts.	Practice Self Awareness and Manage...	
Indian Prairie School District	Exact language	Manage ambiguity and adjust to changing priorities	Practice Self Awareness and Manage...	
Indian Prairie School District	Exact language	Recognize there are often several paths to a desired outcome	Misfit	
Indian Prairie School District	Exact language	<b>Communication</b>	Communicate in All Media and Mod...	
Indian Prairie School District	Exact language	Express thoughts and ideas collaboratively using oral, written and non-verbal communication skills in a variety of forms and contexts	Communicate in All Media and Mod...	
Indian Prairie School District	Exact language	Listen with empathy to make meaning and build understanding.	Misfit	
Indian Prairie School District	Exact language	Communicate effectively in diverse environments	Collaborate Across Difference	Communicate in All Media and Mod...
Indian Prairie School District	Exact language	<b>Citizenship</b>	Care For and Contribute to Society	
Indian Prairie School District	Exact language	Understand and be informed of civic processes and obligations to be of service to others at a local, state, national, and global level	Care For and Contribute to Society	
Indian Prairie School District	Exact language	Use empathy when collaborating with others to guide civic participation.	Care For and Contribute to Society	Collaborate Across Difference
Indian Prairie School District	Exact language	<b>Critical thinking &amp; problem solving</b>	Analyze to Understand	
Indian Prairie School District	Exact language	Collect, assess, and analyze relevant and reliable information to reason effectively	Analyze to Understand	
Indian Prairie School District	Exact language	Collaborate with others to consider different perspectives, test ideas, and evaluate solutions.	Collaborate Across Difference	Create to Solve and Share
Indian Prairie School District	Exact language	<b>Creativity &amp; Innovation</b>	Create to Solve and Share	
Indian Prairie School District	Exact language	Use idea creation techniques to improve, analyze, and evaluate ways to grow creative efforts.	Misfit	Analyze to Understand
Indian Prairie School District	Exact language	Empathize with others to gain new perspectives.	Practice Self Awareness and Manage...	Collaborate Across Difference
Indian Prairie School District	Exact language	Recognize that originality may challenge constraints	Practice Self Awareness and Manage...	
Indian Prairie School District	Exact language	Understand that creation in a collaborative process requires risktaking and learning from mistakes.	Practice Self Awareness and Manage...	
Howard-Suamico School District	Exact language	<b>Self-starter</b>	Practice Self Awareness and Manage...	
Howard-Suamico School District	Exact language	Motivated	Practice Self Awareness and Manage...	
Howard-Suamico School District	Exact language	<b>Responsible</b>	Care For and Contribute to Society	Practice Self Awareness and Manage...
Howard-Suamico School District	Exact language	Takes ownership	Care For and Contribute to Society	Practice Self Awareness and Manage...
Howard-Suamico School District	Exact language	Acts with empathy	Care For and Contribute to Society	Practice Self Awareness and Manage...
Howard-Suamico School District	Exact language	<b>Adaptable</b>	Practice Self Awareness and Manage...	

We first synthesized sub-skills and descriptions for each of the six domains, collapsing similar language, resulting in the emergence of two Practices per domain. Practices are actionable subcategories of Skill Sets that students can demonstrate. Learner mindsets emerged as its own category, capturing attributes relevant to a learners' self-concept and self-efficacy beliefs as well as their persistence at learning tasks including: curiosity, agency, adaptability, and perseverance. Mindsets are overarching ways of thinking of acting that support learners to develop and apply Skill Sets.

Figure A5. Portrait attributes are broken down into actionable practices that can be integrated across disciplines and grade bands. Mindsets support learners to develop and apply Skill Sets.



Lastly, in order to support districts to connect their individualized Portrait language and initiatives to the Synthesis Model, we tagged related competencies (e.g. critical thinking, civic engagement) and familiar initiatives (e.g. social emotional learning, computational thinking, digital citizenship) to each Practice. These tags clarify how different competencies are captured within each Practice and Skill Set and how districts can leverage their Portrait to align different initiatives.

Portrait of a Graduate			Cross-cutting		
Skill Set	Practice	Evidence	Competency	Technology	SEL
Analyze to Understand	Evaluate appropriate and accurate information	<ul style="list-style-type: none"> <li>Distinguish between reliable and unreliable information/sources.</li> <li>Articulate perspectives and potential bias</li> <li>Evaluate the most relevant information to solve problems.</li> <li>Integrate and document valid and reliable resources and knowledge to execute solutions.</li> </ul>	Critical thinking	Media Literacy, Digital Citizenship	Problem solving, Ethical responsibility, Organizational skills
	Synthesize information to understand phenomena, perspectives and connections	<ul style="list-style-type: none"> <li>Evaluate the relevance and importance of information about a topic or problem</li> <li>Analyze and synthesize multiple perspectives of an issue.</li> <li>Adjust ideas based on new learning in response to complex problems in unique and evolving situations.</li> </ul>	Critical thinking, Civic Engagement	Computational Thinking	Reflecting, Focusing Attention, Ethical responsibility, Problem solving
Collaborate Across Difference	Share Power and Responsibility to Achieve a Common Goal	<ul style="list-style-type: none"> <li>Work together to create an action plan to achieve a common goal, promoting individual and shared outcomes</li> <li>Utilize personal and team member strengths and opportunities to learn in order to design strategies and solutions</li> <li>Participate in setting and establishing roles that balance power dynamics within a group</li> </ul>	Advocacy	Computational Thinking, Design Thinking, Media Literacy, AI Literacy, Digital Citizenship	Empathy, Conflict-resolution, Recognizing and Managing Emotions, Relationship-building, Cultural Competence, Social engagement, Reflecting, Problem solving, Ethical responsibility
	Value Different Identities and Perspectives through Respectful Interactions	<ul style="list-style-type: none"> <li>Values diverse cultures and unique perspectives through mutual respect and open dialogue.</li> <li>Engaging in conversations to create inclusive and welcoming communities</li> <li>Engage with people and ideas using technology safely, ethically and responsibly.</li> </ul>	Civic Engagement, Advocacy	Digital Citizenship	Cultural Competence, Social engagement, Relationship-building, Recognizing and Managing Emotions, Reflecting, Empathy, Ethical responsibility, Problem solving



Portrait of a Graduate			Cross-cutting		
Skill Set	Practice	Evidence	Competency	Technology	SEL
Create to Solve and Share	Express Ideas & Experiences	<ul style="list-style-type: none"> <li>• Create representations and models of systems, structures, and concepts to learn from and/or share</li> <li>• Share stories, representations and new perspectives of the world and/or community</li> </ul>	Creativity, Civic Engagement	Media Literacy, Design Thinking, Digital Citizenship, Computational Thinking, AI Literacy	Organizational skills, Reflecting, Problem solving, Ethical responsibility, Social engagement, Cultural Competence, Self-confidence
	Innovate, Test and Improve Solutions	<ul style="list-style-type: none"> <li>• Design user-centered solution in response to a problem</li> <li>• Reflect on performance and process, considering effectiveness of multiple approaches</li> </ul>	Critical thinking, Advocacy	Design Thinking, Media Literacy, Digital Citizenship, Computational Thinking, AI Literacy	Growth mindset, Empathy, Reflecting, Problem solving, Social engagement, Organizational skills
Care for and Contribute to Society	Aware of Local and Global Issues	<ul style="list-style-type: none"> <li>• Be informed and understand context of current events and challenges to the local and global community</li> <li>• Understand systems that contribute to societal challenges</li> <li>• Identify organizations and civic processes that drive to impact local and global initiative</li> </ul>	Critical thinking, Civic Engagement	Media Literacy, Digital Citizenship, Computational Thinking, AI Literacy	Empathy, Focusing Attention, Cultural Competence, Recognizing and Managing Emotions, Social engagement, Problem solving, Relationship-building, Ethical responsibility
	Participate in a Cause to Make an Impact	<ul style="list-style-type: none"> <li>• Seeking diverse views to understand how difference perspectives experience a problem</li> <li>• Apply individual talents to serve others in the local and global community</li> <li>• Advocate for issues impacting the sustainability, health, equity and/or peace of the local or global community</li> </ul>	Advocacy, Civic Engagement	Digital Citizenship, Media Literacy, Computational Thinking, AI Literacy	Self-efficacy, Self-motivation, Reflecting, Problem solving, Social engagement, Relationship-building, Cultural Competence, Empathy, Conflict-resolution, Ethical responsibility

Portrait of a Graduate			Cross-cutting		
Skill Set	Practice	Evidence	Competency	Technology	SEL
Communicate in All Media and Modalities	Listen to Understand	<ul style="list-style-type: none"> <li>Listens actively and effectively to discern meaning, and understand values, attitudes, and intentions</li> <li>Adapt ideas in response to feedback from others</li> </ul>	Critical thinking	Digital Citizenship	Focusing Attention, Empathy, Reflecting, Cultural Competence, Relationship-building, Social engagement, Ethical responsibility, Recognizing and Managing Emotions
	Present Ideas with Clarity and Purpose	<ul style="list-style-type: none"> <li>Share ideas effectively and efficiently through written, verbal, digital, and non-verbal communication</li> <li>Selecting appropriate technology or tools to deliver an idea to a target audience</li> <li>Understand purpose, audience and voice to design messaging</li> </ul>	Creativity, Critical thinking	Media Literacy Digital Citizenship Computational Thinking AI Literacy	Organizational skills, Problem solving, Reflecting, Self-efficacy, Focusing Attention, Self-confidence, Social engagement, Empathy, Cultural Competence, Ethical responsibility
Practice Self-Awareness and Management	Reflect on Strengths and Opportunities	<ul style="list-style-type: none"> <li>Reflects on past learning experiences when faced with new situations and challenges</li> <li>Reflect upon and defend one's thinking</li> <li>Identify opportunities for growth and self-improvement</li> </ul>	Advocacy, Critical thinking	Computational Thinking	Reflecting, Growth mindset, Problem solving, Organizational skills, Stress management, Recognizing and Managing Emotions, Empathy, Focusing Attention
	Set Goals for Success	<ul style="list-style-type: none"> <li>Design measurable goals, implementing self-discipline and time management through routines and milestones</li> <li>Monitor and adjust goals, advocating for any needed support</li> </ul>	Advocacy, Critical thinking	Computational Thinking	Self-efficacy, Organizational skills, Reflecting, Growth mindset, Self-motivation, Focusing Attention, Self-confidence, Problem solving, Recognizing and Managing Emotions

Figure A6. Tags clarify how different competencies align to the Synthesis Model and how districts can leverage their Portrait to align different initiatives.

Table A1. Districts included in our Portrait of a Graduate analysis. Highlighted columns indicate districts with a more detailed explanation or rubric, included in our second round of analysis.

School District	Location	Grade Levels
<a href="#">Abington School District*</a>	Pennsylvania	K-12
<a href="#">Adams 12 Five Star Schools*</a>	Colorado	PK-12
<a href="#">Akron Public Schools</a>	Ohio	K-12
<a href="#">Alexandria Public Schools</a>	Minnesota	K-12
<a href="#">Amphitheater Public Schools</a>	Arizona	PK-12
<a href="#">Anaheim Union High School District*</a>	California	8-12
<a href="#">Arcadia Unified School District*</a>	California	TK-12
<a href="#">Arizona State University Prep*</a>	Arizona	K-12
<a href="#">Avonworth School District*</a>	Pennsylvania	K-12
<a href="#">Blue Valley Schools*</a>	Kansas	PK-12
<a href="#">Brigantine Public Schools*</a>	New Jersey	PK-8
<a href="#">Bristol Township School District*</a>	Pennsylvania	PK-12
<a href="#">Bristol Warren Regional School District*</a>	Rhode Island	K-12
<a href="#">Brooklyn City Schools</a>	Ohio	PK-12
<a href="#">Brooklyn Lab Charter School*</a>	New York	6-12
<a href="#">Broward County Public Schools*</a>	Florida	TK-12
<a href="#">Cajon Valley Union School District*</a>	California	PK-12
<a href="#">Capital School District*</a>	Delaware	K-12
<a href="#">Columbus City Schools</a>	Ohio	PK-12
<a href="#">Community Unit School District 200</a>	Illinois	PK-12
<a href="#">Crestview Local Schools</a>	Ohio	PK-12
<a href="#">Dripping Springs Independent School District</a>	Texas	PK-12
<a href="#">East Penn School District</a>	Pennsylvania	K-12

<a href="#">Evanston/Skokie School District 65</a>	Illinois	K-8
<a href="#">Fairfax County Public Schools</a>	Virginia	PK-12
<a href="#">Guilford County Schools</a>	North Carolina	PK-12
<a href="#">Gwinnett County Public Schools</a>	Georgia	PK-12
<a href="#">Hampton Township School District*</a>	Pennsylvania	K-12
<a href="#">Henry County Public Schools*</a>	Virginia	PK-12
<a href="#">Herricks Public Schools</a>	New York	K-12
<a href="#">Howard-Suamico School District*</a>	Wisconsin	K-12
<a href="#">Humble Independent School District</a>	Texas	PK-12
<a href="#">Indian Prairie School District #204*</a>	Illinois	PK-12
<a href="#">Iowa City Community School District*</a>	Iowa	PK-12
<a href="#">Kettle Moraine School District*</a>	Wisconsin	PK-12
<a href="#">Lakota School District*</a>	Ohio	PK-12
<a href="#">Lee's Summit R-7 Schools</a>	Missouri	PK-12
<a href="#">Lexington County School District One*</a>	South Carolina	PK-12
<a href="#">Liberty Public Schools 53*</a>	Missouri	PK-12
<a href="#">Marion County Public Schools</a>	Kentucky	PK-12
<a href="#">Mehlville School District</a>	Missouri	PK-12
<a href="#">Meriden Public Schools*</a>	Connecticut	PK-12
<a href="#">Mesa Public Schools</a>	Arizona	PK-12
<a href="#">North Salem Central School District</a>	New York	K-12
<a href="#">Northwest Local School District</a>	Ohio	PK-12
<a href="#">Oak Ridge School District*</a>	Tennessee	PK-12
<a href="#">Olathe Public Schools</a>	Kansas	PK-12
<a href="#">Omaha Plus Public Schools</a>	Nebraska	PK-12
<a href="#">Oxford School District</a>	Mississippi	PK-12

<a href="#">Ozark School District</a>	Missouri	PK-12
<a href="#">Pike County Schools</a>	Georgia	PK-12
<a href="#">Port Washington Union Free School District</a>	New York	PK-12
<a href="#">Portland Public Schools*</a>	Oregon	PK-12
<a href="#">Putnam County School District</a>	Florida	PK-12
<a href="#">San Gabriel Unified School District</a>	California	TK-12
<a href="#">Sauk Rapids-Rice Public Schools</a>	Minnesota	PK-12
<a href="#">School District of Holmen</a>	Wisconsin	PK-12
<a href="#">Shrewsbury Public Schools</a>	Massachusetts	PK-12
<a href="#">Sioux Center Community School District</a>	Iowa	PK-12
<a href="#">Sioux Falls School District 49-5*</a>	South Dakota	PK-12
<a href="#">Sonoma County Public Schools</a>	California	PK-12
<a href="#">Sunnyside Unified School District*</a>	Arizona	PK-12
<a href="#">Thompson School District</a>	Colorado	PK-12
<a href="#">Unionville-Chadds Ford School District</a>	Pennsylvania	PK-12
<a href="#">Val Verde Unified School District</a>	California	PK-12
<a href="#">Vista Unified School District*</a>	California	PK-12
<a href="#">West Bloomfield School District</a>	Michigan	PK-12
<a href="#">West Valley School District*</a>	Washington	PK-12
<a href="#">Wilton Public Schools</a>	Connecticut	PK-12

\*Members of Digital Promise's League of Innovative Schools (Digital Promise, 2024c)