Designing for Learner Variability

A Guide to Getting Started
February 2024



Powered by

Learner Variability Project



Guide Overview

This guide is designed to support your own professional learning around learner variability as well as ideas and resources for sharing with other educators.

Table of Contents

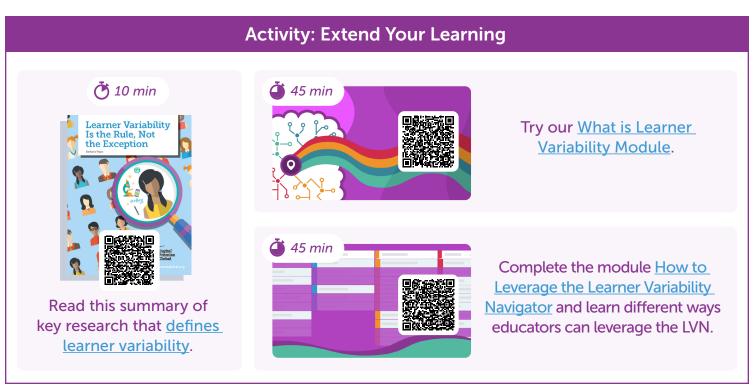
What Is Learner Variability?	. 1
Activity: Extend Your Learning	.1
Meet the Learner Variability Navigator	.2
Activity: Explore Our LVN and Take a Tour	.2
Getting Started with the Learner Variability Navigator	.4
Activity: Explore Workspaces and Make Your Own	.5
Designing for Learner Variability	.6
Activity: Complete the Learner Variability Self-Reflection	11
Activity: Complete the Self-Assessment	12
Want More Professional Learning?	17

What Is Learner Variability?

Did you know that there is no such thing as an average learner? In fact, each and every learner is different across a whole child spectrum—from the content they know, cognitive abilities, social and emotional factors, and background. Our experiences and our environment shape the way we think and feel about learning and our readiness to process new information. Understanding the research behind learner variability helps us disrupt the inequities of a one-size-fits-all education.

What is learner variability? It is a recognition that each and every student has a unique set of strengths and challenges that impact the way they learn. Learning science research supports the concept of learner variability and provides pathways and strategies for student success in school and beyond. For example, a factor of learning such as working memory, critical to learning new information like vocabulary, can be affected by emotions or sleep. Additionally, it helps us understand how factors can be affected by context. How students learn in person versus virtually or from one subject to the next can be very different. Students may respond positively to different strategies in different situations or work better with different people in different classes. It also helps us understand important social and emotional connections like how a sense of belonging can affect students' readiness and motivation to engage in learning.

Did you know that 'learning styles' is a myth? 'Learning styles' is a popular idea that many people were taught in school. This theory says that we are either auditory, visual, or kinesthetic learners. But, that is not what research tells us. Research says we learn best when all three options are present and that which modality we rely on may change according to the task. For instance, the way you remember a phone number may be different from the way you learn about a historical event or a math formula. Furthermore, people who are taught to think of themselves as only learning one way (e.g., "I am a visual learner") can close themselves off from other learning experiences.



Learner Variability Is the Rule, Not the Exception: http://hdl.handle.net/20.500.12265/16
What is Learner Variability Module: lvpdev.digitalpromiseglobal.org/app/uploads/modules/what-is-learner-variability
How to Leverage the Learner Variability Module: lvpdev.digitalpromiseglobal.org/app/uploads/modules/leveraging-the-learner-variability-navigator

Meet the Learner Variability Navigator

The <u>Learner Variability Navigator</u> (LVN) is a free online tool that translates the science of learner variability into easily accessible interactive learner factor maps and strategies.

What is a learner model?

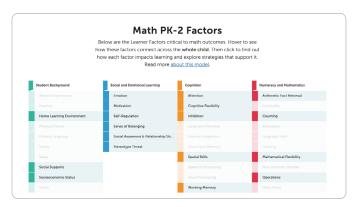
A learner model is a curation of research across many fields including cognitive science, science of learning, psychology, education, etc. that helps demystify how we learn. The learner model is a visual representation of this synthesized research that surfaces learner factors (individual differences) across a whole child framework, uniquely showing key connections across the factors of learning and research-based strategies that support these factors. Each learner model also includes an "about" section which features key themes for that age group and developmental range. The learner models include different interactive features that become accessible through hovering or filtering. These functionalities are designed to assist you in utilizing this tool to understand these connections and how they might impact student learning in your context.



Learner Variability Navigator: lvp.digitalpromiseglobal.org

What are factor maps?

Factors are variables that have been found to predict student outcomes in a specific content area and age group. We arrange these factors across four domains (student background, social and emotional learning, cognition, and content knowledge and learning skills) that comprise a whole child framework. Hover over a factor to see what factors are connected. Click on a factor to get a summary of the research, explore factor connections, and see what strategies support that factor. Check out the measures and references link at the end of each factor summary to see what assessments are associated with this factor and view the research references



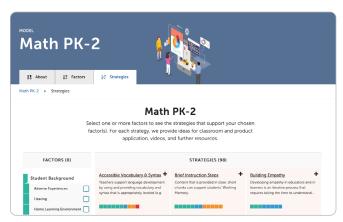
What are factor connections?

When you click on a **factor** and view the summary, you can explore the **factor connection wheel**. Factor connections are noted when there is empirical research that shows a correlation between two factors. If you *hover* over or *click* the connected factor on the connection wheel, an example of how these factors have been shown to connect will be explained. Understanding factor connections can give you deeper insight into what factors can be strengths or challenges for students beyond academics.

FACTOR CONNECTIONS Motivation is the desire and energy that guides behavior. When we are motivated, we engage more in what we are doing and learn more. Motivation has an essential influence on math learning. Country Country

How do I find strategies on the LVN?

Once you've considered some of the factors at play for your learners, you can find research backed strategies to support them. The **strategies** on the LVN can be found in two places. They are listed at the end of factor summaries in order to show strategies that support or mitigate the negative impact of a particular factor. You can also go to the **strategies tab** and utilize filters to identify strategies that support several factors you are interested in. Each strategy page provides a summary of research and resources to support implementing that strategy. Most pages also include a video depicting that strategy in action. One of the most powerful aspects of the LVN is the ability for educators to select strategies that intentionally address certain factors.



What is the difference between the Learner Models?

While all our learner models are grounded in research across the whole learner and promote learning broadly, they vary by developmental stages of learning as well as the specific learning outcomes: math, literacy, 21st century skills, or adult literacies.

Portrait of a Learner: Our newest learner models are the three Portrait of a Learner Models. These models feature 21st century learning factors that stem from a landscape analysis of Portraits of a Graduate and other similar frameworks for lifelong learning. They connect these skills and dispositions, including communication, creativity, learner mindset, and civic mindedness, across our whole learner framework. These models span from PK-12, and each age group emphasizes developmental (e.g., social, cognitive, etc.) shifts and considerations across factors.

Literacy Models: The literacy models look at factors that influence the reading and writing process across three different developmental periods and how those factors are connected to the whole child. Notably the early childhood model focuses on the different aspects of learning to read, such as decoding, morphemic awareness whereas the adolescent model focuses on reading to learn, including disciplinary and critical literacies.

Math Models: The math models look at the different factors that impact mathematical thinking including math mindset. In early childhood basic math, thinking skills such as number sense and counting set the stage for more complex mathematical reasoning into adolescence. The math models range from PK-10th grade where the groundwork is set for conceptual thinking, while the final years of high school typically become more focused on specific math skills such as algebra and geometry.

Adult Learner Model: The adult learner model looks at the different factors that affect adult literacies required for learning outside of a typical PK-12 classroom, including reading and writing, numeracy, problem solving, communication, and digital skills. Adult learners bring with them their own motivations for learning as well as more varied experiences across their lifetime, all of which are tightly connected to their learning across the whole learner framework.

Learn more about the LVN and how it is created on our About page.

Getting Started with the Learner Variability Navigator

Who should use it? Anyone can use the Learner Variability Navigator (LVN) including teachers, guidance counselors, instructional coaches, professors, interventionists, paraprofessionals, district leaders, and parents! Depending on your role and purpose, there are many different ways to use the LVN. Here are a few basic steps to help you get started.

Why should you use it? The LVN is designed to help you understand your students better and identify strategies to support their learning. The real advantage of using the LVN is to understand the connections between factors and between factors and strategies. The sidebar to the right highlights some of the different reasons people use the LVN to help you get started.

How to Use the LVN

- Determine your purpose or have a question in mind before you start exploring a learner model. See examples in the sidebar.
- 2 Select one of the learner models that most closely aligns with your students and content area. If you do not see your content area, use the Portrait of a Learner model.
- 3 Explore the factors tab and identify factor connections that may be relevant depending on your query. Remember that you can view factors as strengths or challenges depending on your context and purpose.
- 4 Choose the strategies tab and use the left factor filter to narrow down the strategies that are most relevant. Select between three to five factors on the filter to narrow down the strategies, and then consider which ones make the most sense for your learners and lessons.
- Review the strategy pages to learn more about how to implement that strategy, including watching videos of the strategy in action, learning what other factors that strategy supports, and reviewing resources to help you implement that strategy.

Sample Reasons for Using the LVN

- Better understand factors impacting a specific student
- Identify strategies to support a specific student or group of students based on factors
- Make an upcoming lesson more accessible
- Deepen your own learning around research based factors and strategies
- Support intervention planning and problemsolving meetings for Multi-Tiered Support Systems (MTSS)
- Support parent-teacher conferences
- Design professional learning or training around a specific topic or instructional approach
- Support a coaching or planning meeting with a teacher
- Reflect on a lesson
- Identify ways to make your classroom more accessible

Sample Questions

- What factors might impact some of my students who are not participating in classroom discussions?
- How can I personalize or differentiate content for an upcoming literacy lesson?
- What strategies work best for specific factors like attention that impact a lot of my learners?
- How can I identify strategies that would leverage my students' strengths around <u>social</u> <u>supports</u>?
- What factors and strategies support a specific instructional approach like project-based learning?
- How can I make my classroom more accessible for students who have been historically and systematically excluded?
- How can I help my teachers address assessment anxiety in their classrooms?

Activity

Explore our <u>featured workspaces</u> and try making one of your own using the <u>Learner Centered Design Tool</u> or <u>Instructional Design Tool</u> to help identify specific strategies and factors that support your query!

Examples from the Field



Lynn's Deep Dive into Critical Literacy

Lynn's workspace highlights how she uses the LVN to plan an upcoming unit focused on developing students' Critical Literacy.



Ty's Strategies to Address Assessment Anxiety

Ty developed this workspace to help coach his teachers around factors and strategies that address assessment anxiety.



Megan's Workspace on Dyslexia

Megan designed this workspace to help her coteachers and peers understand what strategies work best for students with dyslexia.

Find more examples of how educators have used the LVN on our <u>Topics and Workspaces</u> and <u>Examples and Templates</u> pages.

Designing for Learner Variability

Our beliefs shape the way we see the world and the way we learn. A teacher's beliefs about their ability to teach, how people learn, and their students' ability to learn have an enormous impact on student achievement. This is why we must dispel the notion that there is one way to learn and acknowledge the variability of learners. "When we understand learner variability, we see a design challenge, not a student

problem." This quote from Learner Variability Is the Rule, not the Exception, reflects the shift that educators must make to address learner variability. Research shows that just as teacher beliefs have a huge impact on student outcomes, so do students' beliefs in themselves. Every student must be able to see themselves as learners who belong and who can persist through the learning process. This makes it critical that we not only understand learner variability but that teachers and students believe in their ability to navigate the learning process and succeed.

"When we understand learner variability, we see design challenges, not a student problem."

—Barbara Pape, Senior Director of the Learner Variablity Project

Our framework, Designing for Learner Variability, is intended to provide guidance to teachers so that they can see how this is possible and believe in their own ability to address learner variability. Each principle is rooted in research that helps us understand the interconnectedness of learning, how to make learning accessible, and how to cultivate the belief that helps students persist and become life-long learners. These principles combined with the Learner Variability Navigator (LVN) provide the guidance and tools to ensure you can address the learner variability you see in your students. It all starts with belonging, making students feel accepted for who they are and the strengths that they bring. We hope these guiding principles inspire you to believe that this is something you can do and that the LVN provides the support you need along the way!

It is impossible to implement any of these principles effectively if you have not done a thorough examination of your beliefs, the biases you hold, and how your own experiences as a learner have shaped you as an educator. Self-reflection is a critical part of the learning process and an ongoing part of lifelong learning. This is not something you can do one time in a workshop. It is like a muscle, something that must be part of your practice the same way planning a lesson, grading, or analyzing an assessment is. The final two activities in this guide are designed to help you do that. The first is a self-reflection on your own learner variability. The second is a self-assessment you can use with the guiding principles to assess your own practice and identify action steps.



Design inclusive environments that foster belonging.



Design for the whole learner.



Design with science of learning in mind.



Design for student agency.



Design Inclusive Environments that Foster Belonging

School environments have the potential to be a supportive environment fostering positive <u>identity</u> development or a source of adversity when trust and belonging are not established. This can be particularly true for students from historically and systematically excluded groups. Students who feel a stronger <u>sense</u> <u>of belonging</u> in school typically have greater self-efficacy and academic success. Research-based practices like <u>culturally responsive practice</u> (CRP) help teachers <u>develop their own cultural awareness</u> lens and foster belonging for students. Culture shapes how we see and make sense of the world. <u>Incorporating students'</u> <u>cultural practices</u> into classrooms and curriculum not only helps them feel a sense of belonging and sparks <u>motivation</u> but it builds connections to <u>background knowledge</u> which can support <u>attention</u> when learning new content.

In order to create a safe and inclusive space, teachers must understand how students perceive their environment. Using strategies like <u>shadowing a student</u> and <u>empathy interviews</u> can help identify factors that impact students and remove barriers that make learning inaccessible. Understanding and addressing <u>stereotype threat</u> is also an important step in creating safe, inclusive spaces. Stereotype threat can affect an individual who is aware of the stereotype even when they do not personally experience prejudiced behavior by a teacher or peer. The stress from stereotype threat can impede their working memory and can have an impact on academic performance. When teachers recognize this they can use strategies like <u>expressive</u> <u>writing</u> to help students manage their stress ahead of large academic tasks like assessments.

Factors to consider: While any of the factors on the LVN can impact a student's ability to access learning, the selected factors below are foundational to ensuring historically and systematically excluded groups feel included and respected in their school environment. These serve as a starting point which can be expanded.



Learn about these factors and more on the factor tab of any of our learning models. Explore how they are connected to other factors and what strategies support or mitigate the negative impact.

Key Resources:



Culturally Responsive Practice

Explore the intersection of learner variability and culturally responsive practice on <u>our topic page</u> which features blogs, case studies, and more resources.



Culturally Responsive Guide Book

This guide was designed by teachers for teachers to show how you can use the LVN to support a whole child approach to culturally responsive pedagogy. It includes reflection questions and protocols for developing your cultural awareness lens.



Universal Design for Learning

Make instruction more inclusive with <u>Universal Design for Learning</u>. Learn how you can use the LVN to support this pedagogical approach to making learning more accessible for all learners.

🚺 Design for the Whole Learner

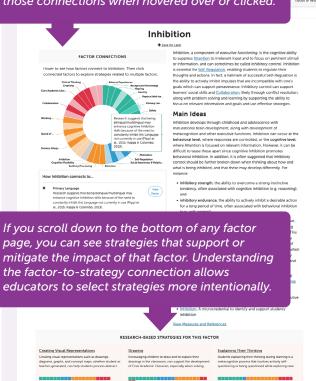
A whole learner approach reflects the understanding that learning is an interconnected process and requires that we see our students across multiple facets, including their background, social and emotional development, cognition, and academics. School systems are often designed to identify and address deficits. Over time this can diminish how we see our students, labeling them with terms like "at risk" instead of seeing all that they actually bring to the table. Viewing students through a whole learner lens helps us to see and appreciate what strengths they hold beyond academic performance. Taking a strength-based approach is an intentional pedagogical choice to see and name students' strengths and design instruction that leverages those strengths. This can have a huge impact on their learner mindset and how they see themselves as learners. When it comes to designing for the whole learner, it's important to remember that factors can be viewed as strengths. Identifying strategies that support factors that are seen as strengths for a student can help make learning more accessible for students.

In order to develop life-long learners who have mastered 21st century learning skills, as shown in the Portrait of a Learner models, we have to recognize the interconnectedness of the learning process. For example, understanding how factors like creativity and collaboration are connected to emotion and working memory can help us recognize when to employ strategies like mindfulness breaks, positive self talk, or discussing emotions when using an instructional approach like cooperative problem solving. Designing for the whole learner helps us to see the full picture of who our learners are, and the Learner Variability Navigator (LVN) helps us to see the full picture of how interconnected the learning process is.

LVN features to consider: One of the things that makes the LVN powerful is its ability to highlight researchbased connections between factors and between factors and strategies. The illustrations in the sidebar highlight some of the features that help you to see and understand those connections.

Features of a Factor Summary Page

The factor connection wheel on a factor summary page shows factor-to-factor connections and provides a brief explanation of those connections when hovered over or clicked. Inhibition



Key Resources:



Portrait of a Learner

Our blog on Portrait of a Learner explains how you can use these models to backward map from your Portrait of a Graduate.



A Strength-Based IEP Guide

This guide, created by teachers for teachers, uses research from LVN to provide teachers with strategies and language to create strength-based whole child IEPs.



Strength-Based Coaching

Read this case study to see how technology coach Renee Dawson used the adult learner model to coach her teacher around his strengths.

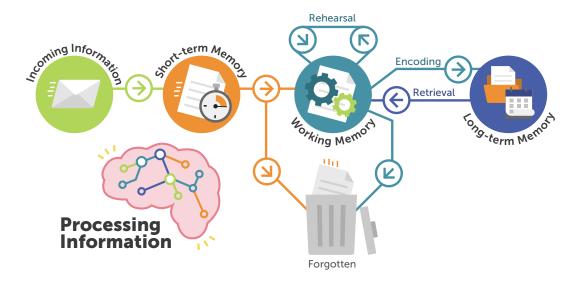


Design with the Science of Learning in Mind

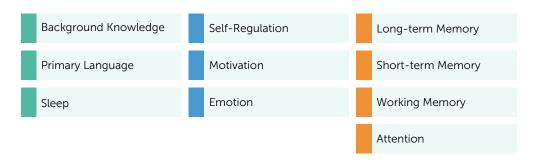
Research has shown that even brief professional development for educators on the science of learning and memory, and how it connects to classroom practices, can have vast benefits for teachers' confidence and understanding of instructional approaches, including showing an increase in student-centered approaches and improvements to lesson plans.

The science of learning can help us identify the proper scaffolds for students when learning new information or applying new learning to a task. Scaffolding is an often misunderstood term that is conflated with making things easier. What it actually means is making the learning more accessible by providing multiple pathways to access information in order to achieve a goal. Multimodal instruction and cooperative problem solving are two examples of strategies that can help make learning more accessible, thus scaffolding the learning, without necessarily changing the rigor of the task.

Understanding how new information gets stored in <u>long-term memory</u> and how cognitive load can impact a students' <u>working memory</u> can give teachers better insight into how to scaffold new learning. For example, how much <u>background knowledge</u> a student has on a given subject can affect their ability to take in and retain information. Using <u>accessible vocabulary</u> and <u>chunking</u> information can reduce cognitive load, helping to make new information easier to encode, while using strategies like spaced learning or retrieval practice can help strengthen the pathways needed to retrieve learned information when they need it.



Factors to Consider: There are many factors that impact how students process and encode new information. These are a few to consider when thinking about how new information is learned:



Learn more about cognition and memory.



Design for Student Agency

Student agency is the capacity a student has to act and exert power over their learning. In order to be successful beyond the K-12 classroom, students need to develop the skills of learning or 21st century skills to become life-long learners. Cultivating agency is much more than just providing <u>student choice</u>. It is about helping them understand how they learn and how to tap into their <u>curiosity</u>, leverage their strengths, and advocate for themselves. <u>Teaching students about learner variability</u> is a great way to help students understand who they are as learners.

Cultivating student agency requires a shift in the way our instructional approaches focus on the mastery of knowledge to a focus on the mastery of learning. To develop student agency, teachers must understand the importance and relevance of student motivation and metacognition. For example, providing students opportunities to reflect on their learning and lead their own parent conferences can support metacognition and self-awareness. Using real-world scenarios and authentic audiences can support students' motivation when learning new content.

Ultimately this also requires teachers to shift from being the holder of knowledge to a facilitator of learning. Student centered approaches like <u>project-based learning</u> or <u>maker learning</u> can empower students to have agency over their learning and provide opportunities to develop these skills of learning such as collaboration and creative problem solving and how to persist when the going gets tough. <u>Challenge based learning</u> provides a unique opportunity for students to tap into their natural <u>curiosity</u> and <u>civic mindedness</u> to take up a problem that is relevant to their lives and their community.

Factors to consider:



Key Resources:

The Learner's Variable by Project in the Held Carlot in Heading Publish about Learner Variable by Learner

Guide to Teaching Students About Learner Variability

The Guide to Teaching Students About Learner Variability includes free lessons. Find more lessons on the Guides θ Resources page on the Learner Variability Navigator.



Challenge-Based Learning

Find resources, projects, and programs to help you launch your own <u>challenge-based learning</u> experience!



Ciena Challenge

<u>This blog</u> highlights how teachers cultivate agency through the <u>Ciena</u> <u>Challenge</u>.



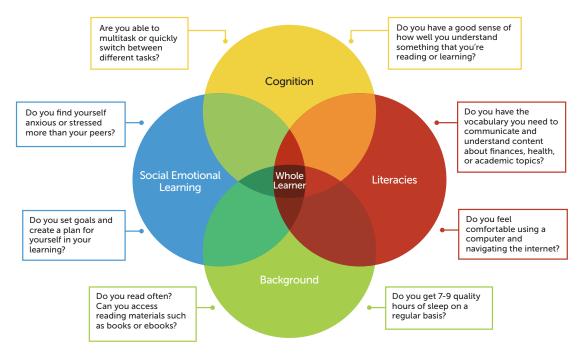
Student Voice

This article highlights why and how to center student voices in learning.

Activity: Complete the Learner Variability Self-Reflection

Self Reflection for Teachers

Bringing awareness to how our learning varies by context can help us build empathy with our students and have more insight into ways we might think about approaching learning differently for different students.



Discussion/reflection questions:

Reflect on yourself as a learner:

What are your challenges? Identify a recent challenge you had as a learner. How did certain factors show up as strengths or challenges?

What are your strengths? Identify a recent success you had as a learner. What factors showed up as strengths and challenges?

What is your ideal learning environment? How did context affect your recent learning success or challenge?

Explore the <u>factors</u> and <u>strategies</u> in the adult learner model:

Which factors are related to your strengths and challenges as a learner? How are they connected to other factors?

What strategies do you prefer to use when learning something on your own?

What strategies are helpful to you when you feel challenged?

How does your experience as a learner impact your teaching?

Select a learner model on the Learner Variability Navigator

that most closely relates to your teaching:

What are some factors that impact your students? What other factors are connected to them?

What strategies could you use to address the learner variability in your classroom?

How is this similar or different from your own experience as a learner?

How can you support your students to advocate for themselves?

Activity: Complete the Self-Assessment

For each of the four design principles, reflect on the following questions, and then complete the self-assessment for each design principle.



Design inclusive environments that foster belonging.



Design for the whole learner.



Design with science of learning in mind.



Design for student agency.

Step 1: Reflect on where you are in your practice around each design principle.

Use the questions below to help you get started:

- 1. What are you already doing that addresses this principle?
- 2. What could you do to increase the frequency or effectiveness of these practices?
- 3. What would it look like for this to be true for your most marginalized or students who are currently struggling?
- 4. What else can you do to address students' needs in this area?
- 5. What practices or resources in this area are you curious about?
- 6. What barriers are currently keeping you from doing more in this area?
- 7. How would you like to grow in this area?
- 8. What professional development opportunities or supports would help you grow in this area?
- 9. What is something you haven't tried yet but would like to?

Step 2: Complete your self-assessment and action plan.

As you assess each design principle, consider what it would take to make this true for every student in your class, especially your most marginalized students.

Design Inclusive Environments that Foster Belonging				
Current Practice	This is an area I would like to grow.	I am trying things in this area, but there is more I could do.	I am doing a lot in this area already, but there are things I could do more frequently or effectively.	I am meeting the needs of all my students in this area.
My evidence for this rating is				
What is a strength for you in this area? What is a challenge?	Strength: Challenge:			
What factors and strategies from the LVN do you want to focus on?				
What is something you could learn more about to grow in this area?				
Set a <u>SMARTIE</u> goal and action steps for improving this design principle.				
How will you measure success?				

Design for the Whole Child					
Current Practice	This is an area I would like to grow.	I am trying things in this area, but there is more I could do.	I am doing a lot in this area already, but there are things I could do more frequently or effectively.	I am meeting the needs of all my students in this area.	
My evidence for this rating is					
What is a strength for you in this area? What is a challenge?	Strength: Challenge:				
What factors and strategies from the LVN do you want to focus on?					
What is something you could learn more about to grow in this area?					
Set a <u>SMARTIE</u> goal and action steps for improving this design principle.					
How will you measure success?					

Design With the Science of Learning in Mind					
Current Practice	This is an area I would like to grow.	I am trying things in this area, but there is more I could do.	I am doing a lot in this area already, but there are things I could do more frequently or effectively.	I am meeting the needs of all my students in this area.	
My evidence for this rating is					
What is a strength for you in this area? What is a challenge?	Strength: Challenge:				
What factors and strategies from the LVN do you want to focus on?					
What is something you could learn more about to grow in this area?					
Set a <u>SMARTIE</u> goal and action steps for improving this design principle.					
How will you measure success?					

Design for Student Agency					
Current Practice	This is an area I would like to grow.	I am trying things in this area, but there is more I could do.	I am doing a lot in this area already, but there are things I could do more frequently or effectively.	I am meeting the needs of all my students in this area.	
My evidence for this rating is					
What is a strength for you in this area? What is a challenge?	Strength: Challenge:				
What factors and strategies from the LVN do you want to focus on?					
What is something you could learn more about to grow in this area?					
Set a <u>SMARTIE</u> goal and action steps for improving this design principle.					
How will you measure success?					

Want More Professional Learning?



Join our <u>EdWeb Webinar community</u>, which offers free continuing education credits for attending webinars or watching our archives!



Explore our <u>professional learning pages</u> to find more resources and learn about our <u>direct</u> services to schools and districts.



Attribution-NonCommercial-NoDerivs 4.0 International

Written by:

Jessica Jackson, director of professional learning for the Learner Variability Project Alison Shell, senior research scientist for the Learner Variability Project

For questions or to learn more email lvp@digitalpromise.org.



Washington, D.C.:

1001 Connecticut Ave. NW, Suite 935 Washington, D.C. 20036

Redwood City, CA:

702 Marshall St., Suite 340 Redwood City, CA 94061

Website: https://digitalpromise.org/