Reenvisioning the Future with Universal Design for Learning

Build a system that supports each student rather than a mythical average one.

James D. Basham

A central lesson driven home by the struggles of schools around the globe during the pandemic is that education systems are inadequate to meet society's future needs. It is time for systems that are learner-centered and flexible enough to meet the needs of all students—from those with disabilities and diverse learning needs to those who are gifted and high performers. Such a system would produce technologically adept, information-literate, adaptable, expert learners. The framework of Universal Design for Learning (UDL) provides a stable, evidence-based foundation for this vision of the future of education.

Of course, many problems the pandemic highlighted in the education system were set in motion well before COVID-19. Two overarching reflections should ground thinking about the future of the education system: 1) there is no average student, and 2) information literacy is the bedrock for all students' ability to thrive in the information age.[1]

Overcoming the Focus on Average

First, variability is the norm rather than the exception in schools. Yet the education system is designed for the mythical average student, who attends school daily, does the assigned work at acceptable rates, asks only necessary questions, is supported by engaged parents, and generally conforms to established expectations. Students that struggle to conform to the norm are identified as requiring extra services—say students with disabilities or gifted—or decide that school is not their best option. To achieve human betterment across society, education leaders need to overcome the barriers imposed by system designs based on the statistical average.

Historically, the education system supported social and economic development by producing socially conscious students who would graduate, support the regional labor market, enroll in postsecondary institutions, serve in the armed forces, or some combination of these. Conceptually, schools established systems to attain these ends by balancing academic rigor with life and occupational skills. They put supports in place "as needed" to catch the students and families falling through the cracks. Whenever a new crack emerged, a new support would emerge. Often these supports arose without due reflection on how the design of the education system contributed to the newly formed crack.

Some of these support systems have been enshrined in law (e.g., special education, gifted, Title I) to ensure consistency in the qualification of students and practice. As society and labor markets have become more complex, the knowledge and skills students need have increased, and the cracks and divides have grown wider.

Like every human system, the education system is rife with bias and error, which manifest in decisions about which students need (or do not need) extra support and why, in how those decisions are made, and how students so identified are served. Other times bias and error have led to well-meaning programs that achieve intended outcomes while also producing unintentional side-effects, creating more cracks to be filled. To overcome ongoing obstacles in providing equitable opportunities to learn, for example, state and local education leaders adopted academic learning standards and measures in hopes of supporting high levels of achievement across diverse groups of students. However, greater standardization leads to increased focus on the average and is in tension with the need for more personalization in student learning.

So while some of the worst impacts of the pandemic will fade over time, the

struggle toward human betterment will keep foundering without a truly learner-centered education system.

Design for the Future

Second, continuing innovation, including in information technology and its dissemination, will have societal consequences that outlast the pandemic. Education leaders have talked about the need for a technology- and information-literate society for roughly 40 years.[2] The spread of incivility and misinformation during the pandemic has further underscored the widespread lack of information literacy. There is no quick fix for this threat to human progress.

The World Economic Forum in 2016 proclaimed a fourth industrial revolution.[3] Like the preceding industrial revolutions, the fourth will instigate disruption in nearly all aspects of life.[4] Interdisciplinary innovation and continued rapid technology adoption, its two driving forces, will only increase with time. The need for information- and technology-literate lifelong learners is greater than ever. To promote lifelong learning, schools must equip students with knowledge and skills that enable them to separate good information from bad and to self-regulate—that is, to direct their behaviors toward goals in support of their learning. To design an education system for the future, we will need more than the traditional academic standards and measures of learning to ensure students are ready.

The Role of UDL

For the last 15 or so years, I have researched, designed, and supported the implementation of education programs using the UDL framework. Overall, UDL has been found to have positive impacts on varied academic and social-emotional outcomes for all students but especially for students with disabilities and other diverse learning needs.[5] For instance, the framework has been foundational to the design of effective digital, personalized, and competency-based learning environments.[6]

UDL was initially developed in the late 1990s by educational nonprofit CAST as an offshoot of Universal Design and its quest to ensure accessibility and adequacy in buildings and products.[7] It has become an educational design framework to ensure that all students, but especially students with disabilities, can adequately access and gain meaning from learning environments and experiences. The initial concept was simple: If the education system was designed to be accessible from the beginning, it would make education more inclusive and better for all students.

Since its founding, UDL has garnered a limited but growing following of education leaders, educators, families, researchers, software developers, educational designers, and policymakers. It was highlighted in the Every Student Succeeds Act, Higher Education Opportunity Act, and the last three National Educational Technology Plans, as well as by UNESCO. Educators are applying UDL in lesson planning, education leaders in developing learner-centered programs, software developers in learning technologies, and architects in how they think about learning spaces.
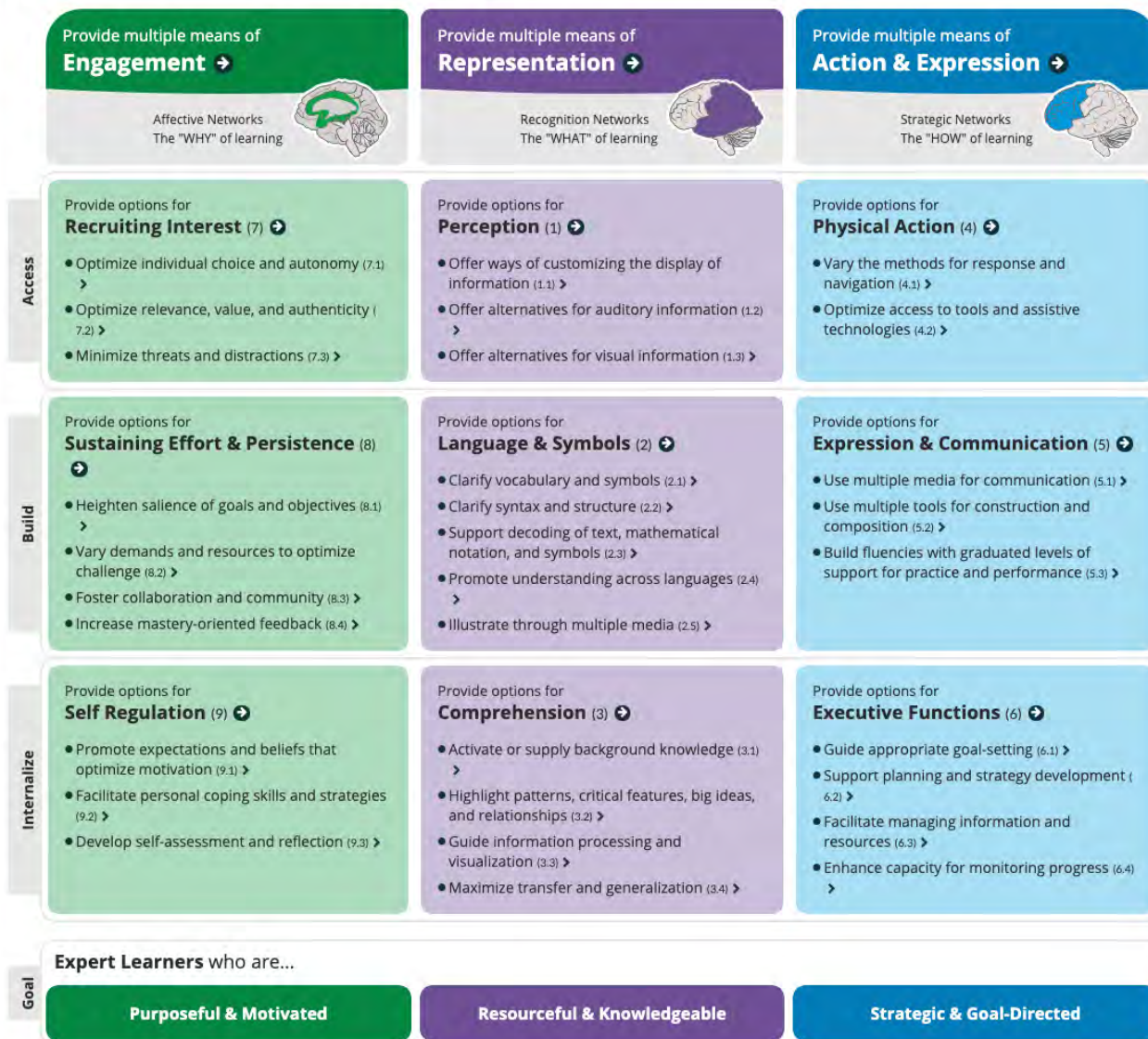
Moving beyond Accessibility

Surpassing the simplicity of the original vision, UDL now supports the design of educational experiences from early childhood through adulthood. In its current implementation, UDL focuses on all learners—still including those with disabilities but also those who are high performers, gifted, and everyone else. It helps learners engage with and understand content and express this understanding. Additionally, UDL helps each learner understand how they learn, when they need more, and how to evaluate the effectiveness of their learning. Thus it encourages lifelong learning.

Interdisciplinary research in neuroscience, human development, and education underlies UDL—that is, what is known about the human brain and how it applies to day-to-day learning experiences (whether in a classroom or elsewhere). The science shows that learners vary in how they engage and process content and in how they demonstrate understanding.[8] This variability produces a variance in outcomes but also demonstrates each learner's individuality. Some learners are motivated and perform better in language arts, some in STEM, while others do well in band or hands-on activities like those in a vocational class. What works for some does not work for all. Therefore, designing an education system and learning experiences aimed at the "average" means missing the needs of many learners and perhaps is designed for no one.

The struggle toward human betterment will keep foundering without a truly learner-centered education system.

Figure 1. Universal Design for Learning Guidelines

Provide multiple means of **Engagement** →	Provide multiple means of **Representation** →	Provide multiple means of **Action & Expression** →
Affective Networks The "WHY" of learning	Recognition Networks The "WHAT" of learning	Strategic Networks The "HOW" of learning

Access

Provide options for **Recruiting Interest** (7)	Provide options for **Perception** (1)	Provide options for **Physical Action** (4)
• Optimize individual choice and autonomy (7.1) › • Optimize relevance, value, and authenticity (7.2) › • Minimize threats and distractions (7.3) ›	• Offer ways of customizing the display of information (1.1) › • Offer alternatives for auditory information (1.2) › • Offer alternatives for visual information (1.3) ›	• Vary the methods for response and navigation (4.1) › • Optimize access to tools and assistive technologies (4.2) ›

Build

Provide options for **Sustaining Effort & Persistence** (8)	Provide options for **Language & Symbols** (2)	Provide options for **Expression & Communication** (5)
• Heighten salience of goals and objectives (8.1) › • Vary demands and resources to optimize challenge (8.2) › • Foster collaboration and community (8.3) › • Increase mastery-oriented feedback (8.4) ›	• Clarify vocabulary and symbols (2.1) › • Clarify syntax and structure (2.2) › • Support decoding of text, mathematical notation, and symbols (2.3) › • Promote understanding across languages (2.4) › • Illustrate through multiple media (2.5) ›	• Use multiple media for communication (5.1) › • Use multiple tools for construction and composition (5.2) › • Build fluencies with graduated levels of support for practice and performance (5.3) ›

Internalize

Provide options for **Self Regulation** (9)	Provide options for **Comprehension** (3)	Provide options for **Executive Functions** (6)
• Promote expectations and beliefs that optimize motivation (9.1) › • Facilitate personal coping skills and strategies (9.2) › • Develop self-assessment and reflection (9.3) ›	• Activate or supply background knowledge (3.1) › • Highlight patterns, critical features, big ideas, and relationships (3.2) › • Guide information processing and visualization (3.3) › • Maximize transfer and generalization (3.4) ›	• Guide appropriate goal-setting (6.1) › • Support planning and strategy development (6.2) › • Facilitate managing information and resources (6.3) › • Enhance capacity for monitoring progress (6.4) ›

Goal — **Expert Learners** who are...

Purposeful & Motivated	Resourceful & Knowledgeable	Strategic & Goal-Directed

Source: CAST, Universal Design for Learning Guidelines, version 2.2 (2018), http://udlguidelines.cast.org.

State and local education leaders, educators, policymakers, and other stakeholders (e.g., educational technology developers, architects) should consider designing education systems and experiences from a UDL perspective. They should begin this process by considering how students engage with, process, and demonstrate understanding of content. The UDL guidelines help these education designers think about the variables that play a role in education systems and experiences (figure 1).

Implementation of UDL is grounded in three principles. First, every learning experience should be designed to support multiple means of engagement. If a learner cannot engage with the content, they are unable to learn it. Second, the learning experience should provide for multiple means of representation. For instance, an educator's lesson planning should represent the content in multiple ways and include strategies and tools to teach content effectively to all learners. Third, learning experiences should integrate multiple means of action and expression of understanding. For example, rather than being required to write an exam response using a pen in a blue exam booklet, students would

be afforded an opportunity to use the computer to write a response or record a response in a podcast or movie.

The UDL framework is simple enough to be represented on one page, as in figure 1, but also complex because it is not a checklist. Rather, UDL implementation requires implementers to understand that the guidelines outline variables associated with barriers to learning, which must be overcome with proactive design. When implementing UDL, educators must consider the UDL Guidelines in relation to four critical elements that must be present in UDL learning environments: (1) clear goals, (2) proactive plans for learner variability, (3) integration of flexible methods and materials, and (4) timely progress monitoring.[9]

What Does UDL Mean for Schools?

UDL is not a Band-Aid for schools, good for a year or so until the next bandwagon comes along. Its implementation is also not something to be laid on the backs of educators—something for them "to do in their classrooms." Implementation focuses on uncovering and overcoming barriers to learning across all systems and subsystems associated in states, districts, or schools that are working toward creating equitable learning environments for all students.

Over the last few years, the global UDL community has been building Learning Designed, a nonprofit global platform hosted by CAST, to bring together research and resources for UDL. Several resources there can help schools better understand and implement UDL. There are field-based microcredentials for preservice and in-service educators to demonstrate understanding and competencies in implementing the framework. Additionally, the newly added UDL School Implementation and Certification Criteria provide school teams a way to visualize, plan, and support implementation. Eventually, these criteria will provide a means for schools to be recognized for their efforts.

Roles for State Boards, Education Leaders, and Policymakers

The overarching lesson of the last year is that the post-pandemic system should not be the pre-pandemic education system. UDL provides a basis for an education system rooted in what is known about the design of learning environments and experiences for all learners.

I offer these questions for those who make state-level and district-level decisions to help them reflect on the design of those systems:

- What framework and principles guide every school employee in the development of a learner-centered education system?

- What barriers must be overcome to produce learners who can be successful in the economy of tomorrow?

- How is the education system identifying and overcoming barriers to support a learner-centered approach that minimizes bias and error?

- How is the education system preparing learners who are information and technology literate?

- How are students developing the self-regulation knowledge and skills to support lifelong learning? ■

[1] Sometimes referred to as digital or media literacy, information literacy builds students' ability to identify, find, evaluate, and use information effectively. Students learn how to evaluate the quality, credibility, and validity of information and give proper credit. See Common Sense Education, https://www.commonsense.org/education/digital-citizenship/information-literacy.

[2] National Commission on Excellence in Education, "A Nation at Risk: The Imperative for Educational Reform," *Elementary School Journal* 84, no. 2 (1983): 113–30.

[3] Klaus Schwab, "The Fourth Industrial Revolution: What It Means, How To Respond" (Geneva: World Economic Forum, January 14, 2016), https://www.weforum.org/agenda/2016/01/the-fourth-industrial-revolution-what-it-means-and-how-to-respond.

[4] James D. Basham et al., "Considering the Fourth Industrial Revolution in the Preparation of Learners with and without Disabilities," in Mantak Yuen, Wendi Beamish, and Scott V. Solberg, eds., *Careers for Students with Special Educational Needs* (Singapore: Springer, 2020).

[5] James D. Basham, Jose Blackorby, and Matthew T. Marino, "Opportunity in Crisis: The Role of Universal Design for Learning in Educational Redesign," *Learning Disabilities: A Contemporary Journal* 18, no. 1 (2020): 71–91.

[6] On competency-based learning, see James D. Basham et al., "An Operationalized Understanding of Personalized Learning," *Journal of Special Education Technology* 31, no. 3 (2016): 126–36.

[7] Molly Follette Story, James L. Mueller, and Ronald L. Mace, *The Universal Design File: Designing for People of All Ages and Abilities* (NC State University, Center for Universal Design, 1998), https://eric.ed.gov/?id=ED460554. UD helps ensure that all people, including those in wheelchairs, those who are blind, and those with arthritis, can access the library, shop, text and make calls, and use kitchen tools (e.g., ice cream scoops).

[8] David Osher et al., "Science of Learning and Development: A Synthesis" (Washington, DC: AIR, January 2017).

[9] Those new to UDL might find this short guide useful: Blueprint for UDL: Considering the Design of Implementation.

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