CoSN
Leading Education Innovation

DRIVING K-12 INNOVATION

2024 HURDLES • ACCELERATORS • TECH ENABLERS

CoSN
Leading Education Innovation

VISION

CoSN is a community of visionary technology leaders empowering every learner to achieve their unique potential in a changing world.

MISSION

CoSN provides current and aspiring K–12 education technology leaders with the community, knowledge, and professional development they need to create and grow engaging learning environments.

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FORWARD

One of my favorite moments of the year is when we release this annual Driving K-12 Innovation series. It culminates exciting discussions by our talented educator advisory committee of global experts.

The best aspect of this effort is not to "tell you the answer" about K-12 innovation today. Rather, this is a thoughtful framework for thinking about innovation focused on Hurdles, Accelerators and, last but not least, Tech Enablers. Too often, EdTech stalwarts start with the technology when advocating innovation. I love that we flip that tendency and start with the "Why" (Hurdles).

My hope is you will use the 2024 report to spark a conversation about what you are trying to solve in your school/school system. Maybe you will agree with our experts. Maybe you will not. The important thing is to start a conversation that envisions the future of learning.

Keith Krueger
Chief Executive Officer
CoSN - The Consortium for School Networking
Washington DC, United States

INTRODUCTION

CoSN's Driving K-12 Innovation initiative proudly convenes an international Advisory Board of approximately 140+ education and technology experts to select the most important Hurdles (challenges), Accelerators (mega-trends), and Tech Enablers (tools) Driving K-12 Innovation for the year ahead.

The Advisory Board engages in discussion via CoSN's online forum, synchronous virtual calls via Zoom, and also participates in two surveys to select the top themes in each category that are transforming teaching and learning. This year, the Advisory Board's work took place over approximately 10 weeks.

METHODOLOGY

STEP 1: INITIAL SURVEY

The Advisory Board completed an initial survey to select the topics for subsequent discussion. This survey narrowed down the original list of Hurdles from 38 to nine, Accelerators from 26 to 10, and Tech Enablers from 28 to nine — including one new Hurdle and one new Accelerator.

STEP 2: DISCUSSION

Six weeks of fruitful virtual conversation followed the initial survey. Each week, the Advisory Board responded to prompts and engaged in conversation focused on one of the lenses of the initiative (Hurdles, Accelerators, and Tech Enablers). Discussion opportunities were offered via the online forum and a synchronous Zoom call for each lens.

STEP 3: FINAL SURVEY

Finally, the Advisory Board completed a final survey to vote on the top Hurdles, Accelerators, and Tech Enablers that are impacting their work right now. Of the many important topics considered, nine rose to the top as key considerations for driving innovation in K-12 education in 2024. The final survey also helped describe the nature of each topic — the surmountability of Hurdles, the intensity of Accelerators, and the timeliness of Tech Enablers.

CONTENTS

STATE OF THE WORLD (Context)

Education in the 4th Industrial Revolution

HURDLES (Barriers)	ACCELERATORS (Mega-trends)	TECH ENABLERS (Tools)
1 Attracting & Retaining Educators and IT Professionals	1 Changing Attitudes Toward Demonstrating Learning	1 Generative Artificial Intelligence (Gen AI)
2 Ensuring Cybersecurity & Safety Online	2 Building the Human Capacity of Leaders	2 Analytics & Adaptive Technologies
3 Scaling Innovation & Inertia of Education Systems	3 Learner Agency	3 Rich Digital Ecosystems

BRIDGES (Themes)

Intersections; Professional Development

2024 TOP 3 HURDLES

Roadblocks that force schools to slow down, prepare themselves, and make a leap.

1

ATTRACTING & RETAINING EDUCATORS AND IT PROFESSIONALS

Hiring and keeping school staff is a significant problem for school systems; many educators are experiencing social and emotional burnout, as well as low pay compared to other sectors, causing them to set aside their passion for teaching and leave the field.

2

ENSURING CYBERSECURITY & SAFETY ONLINE

Teaching, learning, and conducting business in education with digital tools is now a baseline requirement for teachers, students, and administrators. Schools must be proactive in building systems to protect and empower educated users to safely learn and grow with digital technologies.

3

SCALING INNOVATION & INERTIA OF EDUCATION SYSTEMS

Schools are challenged to engage in and effectively scale innovation — adapting what is working well and scaling it out across a school, district, or state/country.

2024 TOP 3 ACCELERATORS

Real-world megatrends or catalysts that help motivate and increase the speed of innovation.

1 CHANGING ATTITUDES TOWARD DEMONSTRATING LEARNING

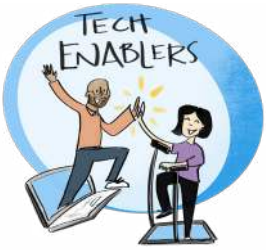
There is a rising groundswell of discussion around assessing, documenting, communicating, and assigning value to student learning, as well as relating this learning to higher education, vocational training, career pathways, and living in the real world.

2 BUILDING THE HUMAN CAPACITY OF LEADERS

Strengthening the professional community of schools and providing opportunities for educators and all K-12 professionals to learn and master new skills can open the door to innovative practices that can enhance student experiences.

3 LEARNER AGENCY

It's all about students as leaders in their learning; reconceptualizing their role from that of "student" to that of "learner." When immersed in a strong learning environment, learners could transform from order-takers to innovators.



2024 TOP 3 TECH ENABLERS

The tools that grease the wheels for schools to surmount Hurdles and leverage Accelerators.

1 GENERATIVE ARTIFICIAL INTELLIGENCE (GEN AI)

Generative artificial intelligence has emerged as a transformative force in education, changing both how students learn and what they need to learn. As school systems worldwide explore the benefits and challenges of this technology, they are both developing and seeking expert guidance to meet the urgent need for policies and processes that ensure the safe, effective, and responsible use of Gen AI for all stakeholders.

2 ANALYTICS & ADAPTIVE TECHNOLOGIES

Analytics refers to the process of analyzing data collected about student learning and the opportunity to leverage data to inform instructional decision making. Adaptive technologies are tools that adapt to the student based on their interactions with the technology.

3 RICH DIGITAL ECOSYSTEMS

Connecting systems or digital environments can form powerful digital ecosystems for enabling student learning and/or supporting education administration. These interconnected systems of online and virtual spaces can span formal school settings and beyond.

STATE OF THE WORLD

EDUCATION IN THE 4TH INDUSTRIAL REVOLUTION

"Change is the basis of learning — without change there is no learning — change is inevitable in all systems" (Kim Flintoff, IDEAcademy, Western Australia, Australia).

While the Internet of Things, cloud computing, system integration, cybersecurity, big data, and more are all part of the fourth industrial revolution, artificial intelligence — specifically generative AI (Gen AI) — is allowing us to push even harder to innovate as we explore K-12 education of the future. And while Gen AI may provide additional power, educators and technologists remain the ones who are the drivers of innovation.

"I see Gen AI as another tool in the classroom we should use, such as the calculator and other digital applications. These tools did not necessarily increase/decrease the number of teachers; however, they give students direct access to tools and fast feedback. These tools can accelerate learning and hopefully, engage the learner" (Michael Lambert, True North School, Vietnam).

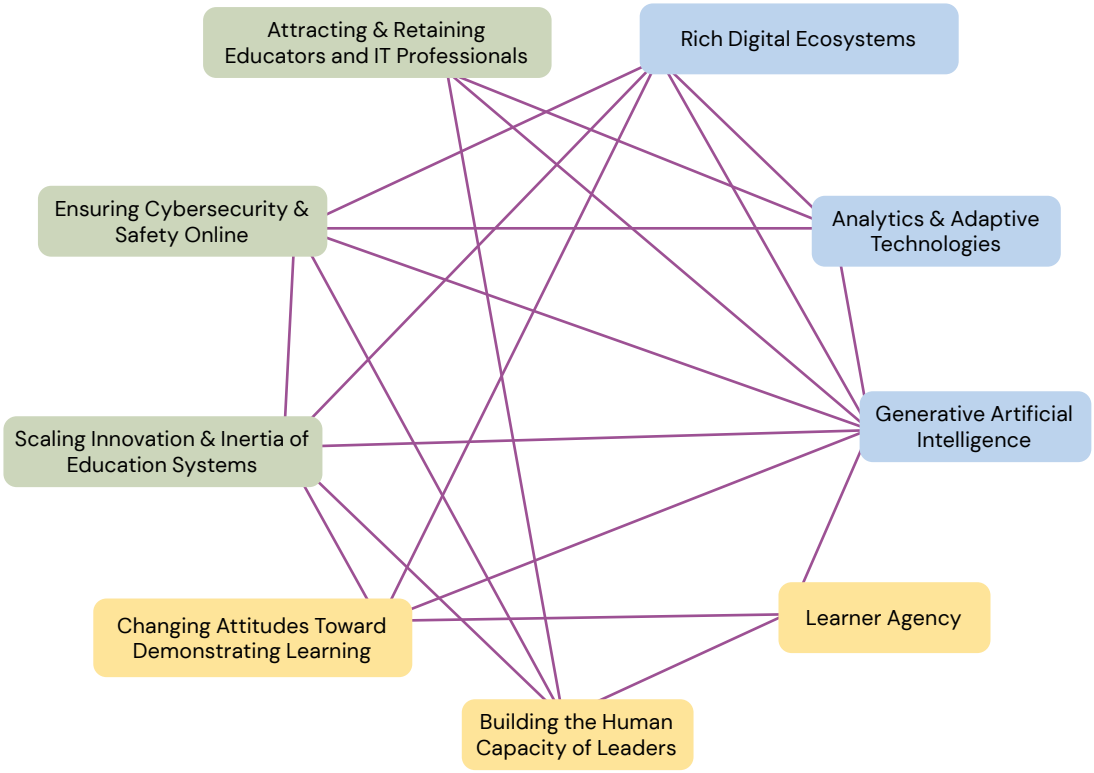
That is why you'll see Gen AI appear as a theme in the Hurdles and Accelerators sections, as well as a Top Topic in the Tech Enablers category. The changemaking potential of Gen AI knows no bounds, and our esteemed Advisory Board members will explain why.

BRIDGES (THEMES)

INTERSECTIONS

Over the past few years, we've noticed organic intersections appearing in discussions about the Top Topics and beyond. For the discussion period of the 2024 project cycle, we adjusted the structure of the online forum and created space in synchronous calls to explore this overlapping of topics and ideas. This concept carried over into the writing of the report, where you'll see more of this meshing of topics throughout the publication.

TOPIC INTERSECTIONS IN THIS PUBLICATION



PROFESSIONAL DEVELOPMENT

A call to action that you'll see the Advisory Board stress more than once is the importance of professional development. "Learning new technologies can be difficult because of how rapidly technology is changing–especially in education. Professional learning is the way to keep updated on these technologies. Seek out professional learning opportunities that are strategic in the way that they merge technology use with proven strategies to improve outcomes for students. Mentorship is also a great way to help educators and school leaders learn innovative ways to teach and lead schools. By nature of changing education, early career educators and school leaders will have significant training in innovative technology use, and they can mentor veteran teachers and school leaders on these strategies" (Krysia Gabenski, National Association of Elementary School Principals - NAESP, United States).

IN CONTEXT

The initiative's Top Topics have shifted more from 2023 to 2024 than they have in any of the past five cycles. The reality is that many innovations have brought us where we are today — at a turning point in education in which change feels like it's moving at the speed of light.

This report will serve as your guide to drive K-12 innovation in 2024 and beyond.

HURDLES: TOP TOPICS EACH YEAR (2019-2024)

2019*	2020*	2021	2022	2023	2024
			Attracting & Retaining Educators and IT Professionals	Attracting & Retaining Educators and IT Professionals	Attracting & Retaining Educators and IT Professionals
	Data Privacy				Ensuring Cybersecurity & Safety Online
				Designing Effective Digital Ecosystems	
Digital Equity	Digital Equity	Digital Equity	Digital Equity	Digital Equity	
	Evolution of Teaching & Learning	Evolution of Teaching & Learning			
The Gap Between Technology and Pedagogy	Pedagogy vs. the Technology Gap				
Ongoing Professional Development					
Scaling & Sustaining Innovation	Scaling & Sustaining Innovation	Scaling & Sustaining Innovation	Scaling Innovation & Inertia of Education Systems		Scaling Innovation & Inertia of Education Systems
Technology and the Future of Work					

Note: Topics are organized in rows for easy year-over-year comparison, and are listed in alphabetical order as much as possible.

** Five Top Topics were reported in 2019 and 2020.*

ACCELERATORS: TOP TOPICS EACH YEAR (2019-2024)

2019*	2020*	2021	2022	2023	2024
Building the Human Capacity of Leaders	Building the Human Capacity of Leaders		Building the Human Capacity of Leaders	Building the Human Capacity of Leaders	Building the Human Capacity of Leaders
					Changing Attitudes Toward Demonstrating Learning
Data-Driven Practices	Data-Driven Practices				
Design Thinking					
		Learner Autonomy		Learner Agency	Learner Agency
Learners as Creators	Learners as Creators				
Personalization	Personalization	Personalization	Personalization		
	Social and Emotional Learning	Social & Emotional Learning	Social & Emotional Learning	Social & Emotional Learning	

TECH ENABLERS: TOP TOPICS EACH YEAR (2019-2024)

2019*	2020*	2021	2022	2023	2024
Analytics and Adaptive Technologies	Analytics and Adaptive Technologies		Analytics & Adaptive Technologies		Analytics & Adaptive Technologies
				Artificial Intelligence (AI)	Generative Artificial Intelligence
Blended Learning		Blended Learning Tools			
Cloud Infrastructure	Cloud Infrastructure				
	Digital Collaboration Platforms	Digital Collaboration Environments	Digital Collaboration Environments	Rich Digital Ecosystem	Rich Digital Ecosystem
Extended Reality					
Mobile Devices	Mobile Devices				
	Tools for Privacy and Safety Online				
		Untethered Broadband & Connectivity	Untethered Broadband & Connectivity	Untethered Broadband & Connectivity	

Note: Topics are organized in rows for easy year-over-year comparison, and are listed in alphabetical order as much as possible.

** Five Top Topics were reported in 2019 and 2020.*

EXPLORING THE **2024 HURDLES**

… BY IMPORTANCE

Top 3 most important Hurdles for education systems to address in 2024*:

60%

1. Attracting & Retaining Educators and IT Professionals

45%

2. Ensuring Cybersecurity & Safety Online

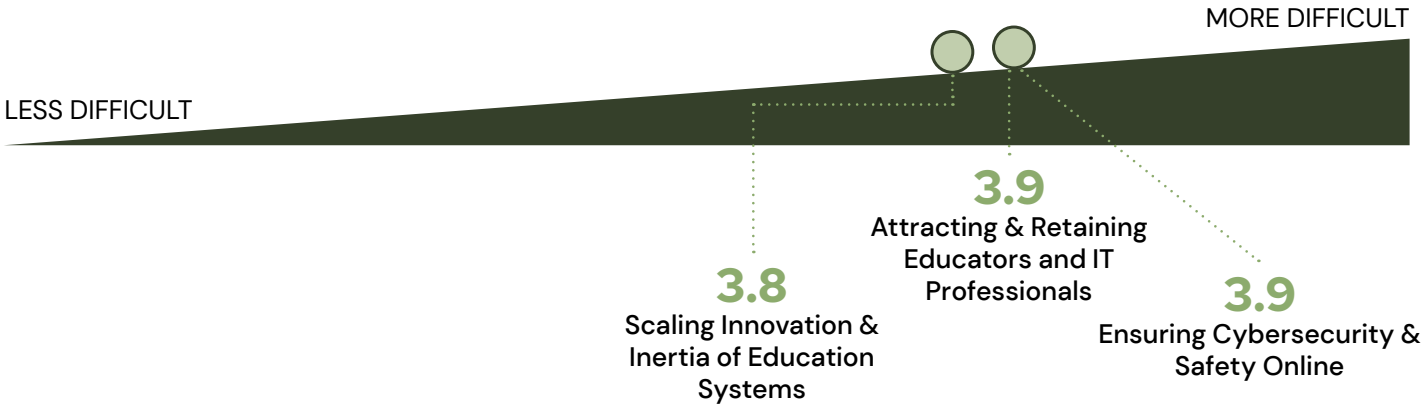
38%

3. Scaling Innovation & Inertia of Education Systems

… BY DIFFICULTY

Top 3 Hurdles in order of degree of difficulty to surmount, as ranked by the Advisory Board (Scores reflect the average score out of 5, with 1 being the easiest to surmount and 5 being the most difficult*)

From easiest to most difficult to surmount:



*86 Advisory Board respondents

EXPLORING THE **2024 ACCELERATORS**

… BY IMPORTANCE

Top 3 most important Accelerators for education systems to address in 2024*:

59%

1. Changing Attitudes Toward Demonstrating Learning

42%

2. Building the Human Capacity of Leaders

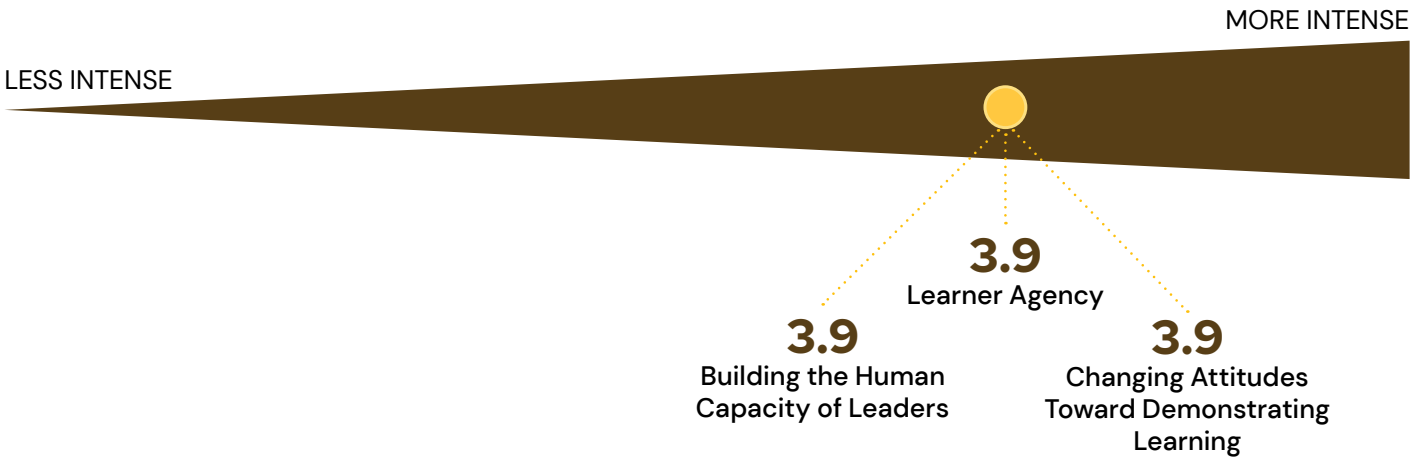
41%

3. Learner Agency

… BY INTENSITY

Top 3 Accelerators in order of degree of intensity of K-12 impact, as ranked by the Advisory Board (Scores reflect the average score out of 5, with 1 being the least intense and 5 being the most intense*)

From least to most intense:



*86 Advisory Board respondents

EXPLORING THE **2024 TECH ENABLERS**

... BY IMPORTANCE

Top 3 most important Tech Enablers for education systems to leverage in 2024*:

73%

1. Generative Artificial Intelligence (Gen AI)

42%

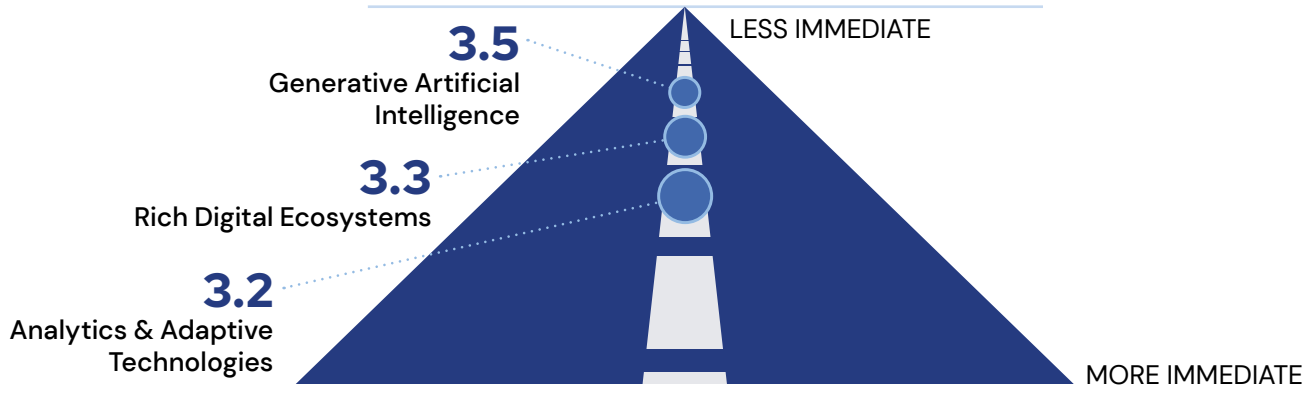
2. Analytics & Adaptive Technologies

41%

3. Rich Digital Ecosystems

... BY IMMEDIACY

Top 3 Tech Enablers in order of the immediacy of its adoption at scale by schools worldwide, as ranked by the Advisory Board (Scores reflect the average score out of 5, with 1 being the most immediate adoption; 5 being the furthest away from adoption*)



*86 Advisory Board respondents

ATTRACTING & RETAINING EDUCATORS AND IT PROFESSIONALS

DEFINITION

Hiring and keeping school staff is a significant problem for school systems; many educators are experiencing social and emotional burnout, as well as low pay compared to other sectors, causing them to set aside their passion for teaching and leave the field. Educators also face a lack of trust and respect from society and systems — trust that teachers know what they are doing and have the best interests of their students at heart.

For IT Professionals, there are the added stressors of industry comparison, as many private companies are able to offer higher salaries, flexible work schedules and locations, and more time off.

For the third year in a row, Attracting & Retaining Educators and IT Professionals has made it into the Top 3 Hurdles (obstacles) on our annual list. And while educators are feeling more satisfied at work than 2022's all-time low, about twice as many teachers and principals in a RAND Corp survey reported experiencing frequent job-related stress compared to the general population of working adults.

In addition to work stress hindering educators from staying in the field, Gen Z is less interested in becoming teachers than in previous years. District Administration reported in September 2023 that there is a sharp drop in students leaving college with a teaching degree — from about 192,700 in 2013 to 159,000 last school year.

Advisory Board Member & Superintendent Kelly May-Vollmar (Desert Sands Unified School District, California, United States) recognized these struggles in her district and launched a campaign in 2022 — Reconnecting: Listen, Learn, Grow Together — in an effort to build back the respect that teachers feel has been missing. "The campaign included a visit to every school site to listen to staff and their concerns and to express gratitude for their service," said May-Vollmar. "We also had multiple opportunities to interact with families and the community throughout the year in an effort to connect, find common ground, and champion our staff." Launched in 2023, the district's latest campaign, Growing Stronger Together, is focused on living out the district's mission statement: To inspire and nurture every student…one opportunity at a time.

"We have extended the statement to include inspiring and nurturing every staff member, as well," said May-Vollmar. "We have seen a huge growth in staff morale, and we believe this will translate to attracting and retaining educators and IT professionals. We know that we can't always throw money at issues, but we can always create a work environment that draws people in and makes them want to stay."

CoSN Board Chair Diane Doersch (Digital Promise, United States) added that it all comes down to the school district and department culture. "As hiring managers, are we doing enough to promote our school district's culture so that we attract candidates who want to work for us?" asked Doersch. "We know that having a positive culture where staff and students feel seen and heard makes a difference. Like one of my teaching colleagues said long ago, 'It doesn't cost anything to smile.' How can we help leaders be the bosses people want to come and work for? Culture and a feeling of belonging is a start in working to attract and retain professionals." Supporting underrepresented populations is an important piece of this culture work.

In addition to the importance of culture and trust, competitive compensation and the ability to work remotely — especially for today's K-12 education IT professionals — are still areas in need of improvement. "Retention of IT workers in public school settings is very important" (Michael Fort, Baltimore County Public Schools, Maryland, United States). "Allowing for remote work is a key part of attraction and retention. Most public school workers do need to report on site, but IT workers can very often at least work in a hybrid fashion to maximize employee satisfaction and efficiency."

TIPS & RECOMMENDATIONS FROM THE ADVISORY BOARD

FOCUS ON WHAT TOOLS TO TAKE AWAY VS. WHAT TO ADD

"I've been in edtech for a long time now, and realize that new tools are always framed as additive, even if the intent is to streamline. Instead, let's address what teachers and schools can stop doing with technology instead of always trying to emphasize what they could or should be doing" (Beth Holland, The Learning Accelerator, Rhode Island, United States).

RETHINK THE ROLE OF THE TEACHER

"We need to rethink the structure of the day for a teacher, explore how AI can assist teachers, and redefine how teachers can supplement their income at school through after-school programs/tutoring. Of course, this will require establishing strong policies… but, in my opinion, we need to start and build the bicycle as we go" (Michael Lambert, True North School, Vietnam).

4 WAYS TO INCREASE EDUCATOR RECRUITMENT & RETENTION

"We all know that educator recruitment and retention is vitally important right now. The pandemic only exacerbated the already slowing growth. This is inclusive of both STEM/technology educators and educators at large" (Justin Thompson, National Education Association, Washington, D.C., United States). The National Education Association recommends several actions to improve educator recruitment and retention, including:

- **Make pay and benefits competitive** including base pay, substitute pay, health care benefits, paid family leave, pension benefits, union representation, child care supports, etc.
- **Improve working conditions** around staffing levels, mental health support, creating environments supportive of educators of color and LGBTQ+ educators, restructuring workdays, ensuring safe and healthy workplaces, sufficient teaching and learning resources, administrator and leadership development, etc.
- **Increase educator voice, respect, and professional autonomy** by expanding collective bargaining rights, including educators in school transformation, ensuring professional autonomy, improving conditions through educator surveys, etc.
- **Offer student debt relief and forgiveness.**
- **Include other recruitment and retention strategies,** such as offsetting costs of teacher preparation, reducing the time it takes to reach career-level pay, mentoring programs, access to quality professional learning, and more.

HURDLE 2

NEW TOPIC

ENSURING CYBERSECURITY & SAFETY ONLINE

DEFINITION

Teaching, learning, and conducting business in education online is now a baseline requirement for teachers, students, and administrators. Yet there is a lack of trust that the K-12 ecosystem and learning environments are safe and secure.

Schools must be proactive in building systems to protect every user, at every level, in every technology system, in every application, and in every workspace – home or school, 24/7. The risk is intensified as technology needs expand, new cybersecurity threats continuously enter the landscape, and malicious actors get smarter.

Schools are expected to keep up with these risks while increasing protection measures, employing qualified staff, and raising industry standards to strengthen the safety and security of the online world. To effectively manage this risk is costly, but it is non-negotiable.

"Our primary goal is to support student learning. All actions should be to maximize student learning in a safe, responsive environment" (Will Goodman, Boise School District, Idaho, United States).

Phishing, ransomware, malware, encrypted threats, Internet of Things (IoT) attacks — these are just some of the examples of the cyber attacks that K-12 education school districts must think about on a daily basis. At a recent CoSN webinar featuring Michael Klein from the Office of Educational Technology at the U.S. Department of Education, Klein pointed out that there have been at least 1,619 K-12 cyber incidents between 2016-2022. In the 2023 SonicWall Cyber Threat Report, K-12 schools experienced a significant increase in attacks:

- 827% increase in ransomware attacks
- 323% increase in malware attacks

In November 2023, the United States Federal Communications Commission proposed a three-year Schools and Libraries Cybersecurity Pilot Program to "obtain valuable data concerning the cybersecurity and advanced firewall services that would best help K-12 schools and libraries address the growing cyber threats and attacks against their broadband networks and data, while also helping us to better understand the most effective way Universal Service Fund support could be used to help schools and libraries address these significant concerns while promoting the E-Rate program's long-standing goal of promoting basic connectivity."

But cybersecurity isn't just a Hurdle in the United States. Advisory Board member Jackson Vega (Colegio Franklin D. Roosevelt, The American School of Lima, Lima, Perú) explained that districts need to understand that cybersecurity is a school challenge, not only an IT challenge. "We need to have the support of the leadership team not only to have antivirus, Endpoint Detection Response (EDR), Extended Detection and Response (XDR) or Managed Detection and Response (MDR), firewalls, etc. We also need to promote and train digital citizenship for students, educators, and administrative personnel," said Vega.

While protecting student, educator, and staff data is a top priority, changemakers cannot let these obstacles prohibit innovation. "Balancing the tension between

innovation and safety is always part of the difficult work we do in K-12 EdTech. Given the breadth of information, contextual details, and possibilities, that can sometimes feel paralyzing. Our jobs are to make the best decisions we can at the point in time we are asked to make them — then to be open to reinvestigating those decisions as context and technology change in order to make continual progress and keep students safe" (Allison Reid, Wake County Public School System, North Carolina, United States).

TIPS & RECOMMENDATIONS FROM THE ADVISORY BOARD

WELCOME NEW TECHNOLOGY WITH SECURITY IN MIND

"Embrace new technology ideologies but purposefully integrate [them] once foundational security and data privacy concerns have been met" (Ben Bayle, DeKalb CUSD428, Illinois, United States).

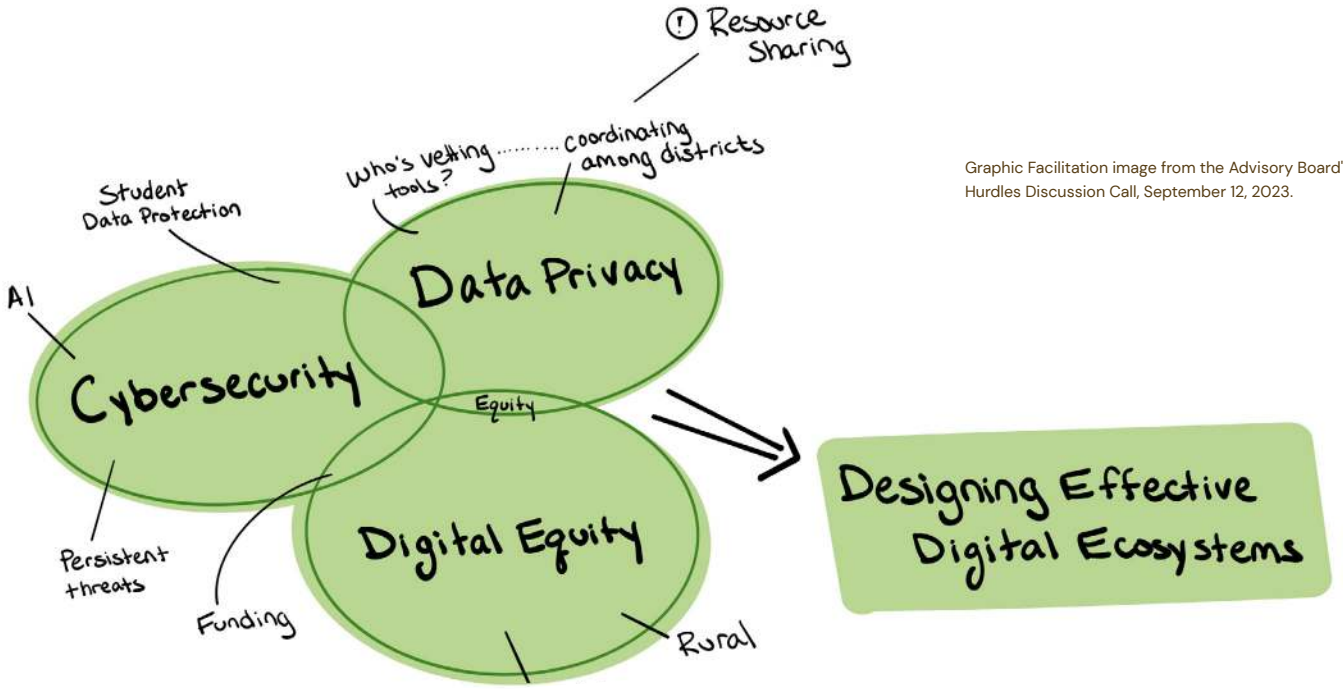
KEEP STUDENTS SAFE, ON & OFF SCHOOL PROPERTY

"Schools must accept the educational responsibility for student cybersecurity and safety online outside of school time and provide a learning environment where students can practice, make mistakes, and learn how to use current and emerging technologies safely" (Jason Zagami, Griffith University, Queensland, Australia).

BUILD & EXPAND YOUR CYBERSECURITY PROGRAM WITH CYBERSECURITY RESOURCES

Explore these cybersecurity websites, reports, and more shared by our Editorial Committee:

- NIST Cybersecurity Framework Resource Alignment for K-12 (CoSN)
- K-12 Community Vendor Assessment Tool (K12CVAT) (CoSN)
- National Cybersecurity Strategy (White House)
- National Initiative for Cybersecurity Careers and Studies' education and training resources for teachers, students, and more (Cybersecurity and Infrastructure Security Agency - CISA)
- K-12 Report: CIS MS-ISAC Cybersecurity Assessment of the 2022-2023 School Year (Center for Internet Security - CIS)
- Teachers' Essential Guide to Cybersecurity (Common Sense Education)



Graphic Facilitation image from the Advisory Board's Hurdles Discussion Call, September 12, 2023.

SCALING INNOVATION & INERTIA OF EDUCATION SYSTEMS

DEFINITION

Whether it be practices for effective teaching and learning, organizational business processes, or technology usage, schools are challenged to engage in and effectively scale innovation — adapting what is working well and scaling it out across a school, district, or state/country. Four years after the COVID-19 pandemic began, the education system we once knew has experienced seismic opportunities for change; yet, in many school systems and parts of society, there is still a desire to pull back to the familiar pre-pandemic education models. This highlights an inertia in education that resists change: a complex system that reinforces past practices and discourages innovation. This Hurdle reflects both the resistance to change that is present within many schools, and the deeply-rooted education and social systems that exert pressure against change, as well as the need to expand what is working to a larger scale.

While the coronavirus changed the trajectory of education — and life — as we knew it, it also acted as a catalyst for swift, effective, and scalable innovation for the betterment of all students around the globe.

As conversation on this Topic unfolded during the project's discussion phase, two main priorities to consider when combating this Hurdle rose to the top: **the first was access to professional development**. Advisory Board member Patrick Hausammann (Clarke County Public Schools, Virginia, United States) explained that while COVID-19 was difficult, it also brought him hope that school systems would realize that faster change and meaningful technology use could both be good things; however, the strong pull to "return to normal" was too enticing…and even encouraged.

"Since COVID, the supported effort to integrate technology has dropped off significantly alongside the time allotted or allowed to be used for technology-related PD [professional development]. It has nearly completely been absorbed by interventions, data, etc. meetings to combat learning deficits," said Hausammann. "It is important that a connection be made between meaningful technology integration and the professional learning that supports it being as important as other elements in education. Students deserve an education infused with technology and the skills to safely and effectively use it. These skills and knowledge can be the difference maker for students that are otherwise disengaged and appearing in those learning loss/deficit reports."

Lack of preparation for teachers is a significant barrier in terms of scaling innovation, agreed Advisory Board member Scott Borba (Le Grand Union Elementary School, California, United States). **The need for strong leadership** is another necessary component to combat inertia. "I believe it is one of the primary roles of an effective school leader to make sure their teachers are highly trained and proficient in all the components of a well-rounded education. This idea is intimidating to new administrators who believe this responsibility falls purely upon their shoulders," said Borba. "The Three Pillars of effective school leadership (NAESP, 2021) are Building a Culture focused on Teaching and Learning, Empowering People, and Optimizing Systems. When school leaders dive deeper into these pillars, they realize that once a culture focused on innovation is established and shared, the right people are identified and empowered to lead, and your systems are aligned…get out of the way, inertia becomes a thing of the past!"

But this professional development and the work of forward-thinking leadership cannot take place in a vacuum — working together is key. "We, as school leaders, need to support innovation by including all teachers and administrators in the process" Dipal Kapadia (Lehigh Career & Technical Institute, Pennsylvania, United States). "Many people involved in the decision-making are still not thinking outside the box and are afraid to lead the change process. We do not need to change everything, but the selection of technology must support pedagogy. Technology should not be selected because it is flashy but needs to be sure how it can be incorporated in the entire ecosystem of teaching and learning. I believe if we keep student learning at the front and center of all of our initiatives, other puzzle pieces will take their place."

TIPS & RECOMMENDATIONS FROM THE ADVISORY BOARD

BE FLEXIBLE

"We need to be willing to adjust our plans for rapid technological advances, while at the same time moving forward without too many tangents that result in inertia" (Vince Humes, Northwest Tri-County Intermediate Unit, Pennsylvania, United States).

Advisory Board member Glenn Kleiman (Stanford University, California, United States) also reminds us that this isn't going to be something that happens overnight. "We should also acknowledge that education systems have to address many factors and stakeholders to implement changes, and that education cannot be expected to change at the pace technology does, especially since with Gen AI the technology changes are accelerating."

GEN AI

CHANGE IS GOOD!

"Be open to change, and be willing to fail when trying something new" (Adam Rogers, Oklahoma State School Boards Association, United States).

MAKE SURE EVERYONE IS ON THE SAME PAGE FROM THE START

"It's important to ensure that the vision, values, and key driving factors for innovation have been identified, discussed, and agreed upon as school systems begin new innovation journeys. It is easier to drive impactful innovation when the entire school system is moving in the same direction" (Beth Havinga, European Edtech Alliance, Germany).

START WITH STRONG LEADERSHIP & COMMUNITY INCLUSION

"Leadership is essential to create conditions for the development and scaling of innovation, to create a risk-taking environment. Start with social innovation practices that allow teachers, parents, students to develop new practices, before trying to include them formally in the education system" (Laura Motta, Rural Godparents Network, Uruguay).

HOW DIGITAL INNOVATION IS LIKE A WAVE

"This is an obtuse piece of imagery. I see the work of digital innovation in schools operating like a wave of translation in the ocean, where the speed at the top is getting faster and the lower part of the wave is slowed by its dragging forces. The 'think globally' reminder is critical to our work. Amazing results are being achieved in the digital learning arena, but in so many locations, including developed nations, the inertia of reduced funding, reduced opportunities, reduced enticement to bring quality teachers and teaching to many schools, reduced acceptance of the 'why' for digital learning by administrators, teachers and even students, is preventing the engagement in, let alone acceleration of, modern learning from occurring" (Karen Swift, James Nash High School, Queensland, Australia).

DEVELOP A COMMON LANGUAGE FOR CHANGE

"I'm involved in the World of Work (WOW) movement [a comprehensive K-12 curriculum solution aimed at early exposure for children to both self and career exploration in the ever-changing landscape of the global economy] and see the focus on student strengths, interests, and values as the keys for success. We also need to develop a common language for change. Through the WOW movement, the RIASEC framework provides an opportunity to have a shared focus between learners, educators, and the community at large. Without a common language, we will never have a successful system that provides innovative solutions for student learnings" (Norton Gusky, NLG Consulting, LLC, Pennsylvania, United States).

ACCELERATOR 1

NEW TOPIC

CHANGING ATTITUDES TOWARD DEMONSTRATING LEARNING

DEFINITION

There is a rising groundswell of discussion around assessing, documenting, communicating, and assigning value to student learning — as well as relating this learning to higher education, vocational training, and career pathways. This complex issue is intertwined with discussions of learner agency and personalization, the value of the experience and social aspects provided by education institutions, student trajectories through and beyond K-12 systems, and the relationship between learning, lifelong learning, and careers.

New to our Top Topics this year, Changing Attitudes Towards Demonstrating Learning was a popular discussion in our online forum, where educators and technologists from across the globe explored, in part, what it means to demonstrate learning in a rapidly changing world.

Kim Flintoff (IDEAcademy, Western Australia, Australia) emphasized that part of Changing Attitudes Towards Demonstrating Learning is a fundamental shift to "assessment as learning" in conjunction with "assessment of learning." "There's an increasing need for real world demonstration of learning where the formative dimensions are far more important than summative," said Flintoff.

"Educators and IT professionals should anchor their work in a deep understanding of why they are in education because we must work together to equip today's students with the skills of critical thinking, problem-solving, and creativity. We all need to commit to lifelong learning and embrace being uncomfortable as we make the changes that are needed throughout the K-12 educational system. We need to work together to move past the challenges of the pandemic and find ways to overcome the hurdles that continue to come at us. These are the things that will help us create a system that meets the needs of each student and send them out into the world equipped with the skills to solve the world's biggest problems" (Emily Marshall, Vail School District, Arizona, United States).

An additional component of the discussion was how the rapid rise in artificial intelligence (AI) and other emerging technologies is forcing change in how students will show their mastery of learning. "With a technology that will likely become as prevalent in its use as the calculator, it is imperative that school systems invest time in professional learning that helps educators adapt their assessments to a world with ubiquitous AI," (Patrick Hausammann, Clarke County Public Schools, Virginia, United States).

Advisory Board member Justin Thompson (National Education Association, United States) agreed. "Educators consistently prove that they are extremely adaptable, but we can't leave them in the dark," said Thompson. "When moving forward within technology and education (and particularly at a time when the educator shortage is a real problem), we must consider both the student and educator in all decision-making processes."

Hausammann went on to explain that changing attitudes towards how students can demonstrate their learning must include multiple stakeholder groups: educators, administrators, technologists, and coaches must be part of the conversations at school,

and parents and guardians should be informed and educated outside of school.

While AI can bring about a lack of trust with educators who are concerned about its use, Advisory Board member Sandra Paul (Township of Union Public Schools, New Jersey, United States) points out that many educators are not aware that they have been using AI in many applications over the past several years and not realizing it. "There needs to be a major change in pedagogy including assessments to incorporate AI as a tool for teaching and learning. Information Literacy skills is something that will need to be addressed in learning," said Paul.

Advisory Board member Ximena Nunez del Prado (Colegio Franklin D. Roosevelt, The American School of Lima, Peru) offered two valuable insights when it comes to restructuring teaching, learning, and assessment:

- Check out the Universal Design for Learning (UDL), to see how "this initiative can be a game changer when it comes to learning equity and including all students in being successful at the learning process," said Nunez del Prado.
- Assess students' skills this year: what they need to master to be successful, productive, ethical citizens who can contribute to society and the greater good. "These skills are undoubtedly shifting year after year, and even more so now thanks to AI," said Nunez del Prado. "It is clear that AI is already causing a shift in jobs and skills humans need to develop, so soon curriculums will need to be reviewed to match our current reality."

Coincidentally, Advisory Board member Caitlin McLemore (ISTE+ASCD, Florida, United States) is leading a research project aiming to improve assessment culture and procurement processes at the time of publication. The project builds on existing work that McLemore and colleagues have done to help school and district leaders evaluate and select the tools that will best help meet student and teachers' needs, with a focus on data-driven instruction and measuring student progress. They are also looking to impact district assessment culture through a small cohort of districts interested in impacting assessment within their contexts.

As the desire to move away from K-12 education as we know it increases, this work in analyzing assessment is necessary to drive innovation. "The shift in attitudes toward demonstrating learning mastery is crucial and has the potential to shake the 'traditional' education system up quite a bit" (Frankie Jackson, CoSN, TETL, Texas, United States). "How will we know if students are successful when answers continue to be at their fingertips? How will we change our practices to encourage more critical thinking and shift away from 'recall'? As a system, we will need to equip our teachers with knowledge to adapt to the changing landscape. Hopefully, by continuing to foster open discussions, we can create a more inclusive system that benefits all students."

TIPS & RECOMMENDATIONS FROM THE ADVISORY BOARD

KEEP AN OPEN MIND TO WHAT TECHNOLOGY IS ON THE HORIZON

"Don't be afraid to try new ideas and allow students to demonstrate learning in a variety of ways" (Kathleen Stephany, School District of Holmen, Wisconsin, United States).

RECONSIDER EDUCATION AS WE KNOW IT

"To really drive impactful change, we need to re-think how we not only deliver education, but the important parts of the education system. Reading, writing, and arithmetic are important, but one could argue that critical thinking, collaboration, communication, etc. are as important in today's society and educators should really be focusing on those skills" (Zach Mather, Academy District 20, Colorado, United States).

THINK OUTSIDE THE BOX & WATCH YOUR STUDENTS GROW

"Once teachers start to see themselves and their students outside the traditional box of knowledge giver and knowledge 'getter,' things really can start happening. In the classrooms in my district where teachers open assessments up to not answer questions but to show me how you hit this standard (or standards-based grading), the possibilities for students grow and the desire to learn grows. Students learn to trust their own curiosity and their own strengths (especially those that are historically poor test takers or who 'under-perform')" (Katie Harmon, Westhill Central Schools, New York, United States).

BUILDING THE HUMAN CAPACITY OF LEADERS

DEFINITION

Strengthening the professional community of schools and providing opportunities for educators and all K-12 professionals to learn and master new skills can open the door to innovative practices that can enhance student experiences. When schools invest in their staff by providing opportunities to gain and improve upon skills, to exercise agency in their work, and to make mistakes without fear, they create an environment that attracts innovative people.

Seeing as Building the Human Capacity of Leaders has been selected as a Top Topic for five of the last six years, there's no doubt about the importance of supporting K-12 education professionals and their ability to learn and master new skills."Developing teaching requires building the human capacity of leaders. However, for this to be effective, schools, school leaders, and teachers need to work within an innovative and redesign-friendly culture" (Claus Gregersen, Herning Gymnasium, Denmark).

Inviting innovation becomes increasingly important as the landscape of education continues to change, along with what and how students are expected to learn. Advisory Board member Stacy Hawthorne (Learn21, Texas, United States) explained that this topic is, in her opinion, "one of the most pivotal accelerators in driving K-12 innovation." During her former role at Davidson Academy Online, she saw firsthand the transformative impact of a leadership style that fostered creativity to design and grow a top-notch school. "Fostering leadership in others creates a culture of continuous improvement within schools. When leaders are visionary, adaptable, and well-informed, they set the stage for innovation to flourish and they create cultures where people want to engage and stay," said Hawthorne.

Sometimes fostering leadership happens when educators least expect it. Advisory Board member and CoSN Board Member Holly Doe (RSU40, Maine, United States) believes that being a leader requires supporting others like herself, who didn't initially recognize the breadth of her own talents and skills. "I was brought into leadership by a Superintendent who saw the potential in me to lead, even though I did not picture myself in an administrator role. We need to encourage others who may not have pictured themselves in a leadership role to pursue these opportunities for the betterment of the district," said Doe.

This perspective is shared by fellow Advisory Board member Joanne McEachen (The Learner First, Canterbury, New Zealand), who stressed the importance of truly knowing your colleagues and their worth, even beyond the school building. "Have a deep understanding of individuals and their contributions to humanity, the planet, and prosperity, so that the team can complement what they may not be able to contribute themselves. Prioritizing connections through relationships — interpersonal, environmental, conceptual, and universal — is going to be essential for effective innovation, as it fosters collaboration and strengthens the team's collective ability to impact and innovate," said McEachen.

Graphic Facilitation image from the Advisory Board's Accelerators Discussion Call, September 26, 2023.

TIPS & RECOMMENDATIONS FROM THE ADVISORY BOARD

CREATE ROLES TO SUPPORT LEADERSHIP DEVELOPMENT

Advisory Board member Kelly May-Vollmar (Desert Sands Unified School District, California, United States) shared how her district created the role of Director of Leadership Development and how it has changed the culture of leadership in the district. "Within a year, we saw an increase of those wanting to go into leadership and those staying in the role. Our leadership/ management team annually comments on how supported they feel in their role due to the ongoing training and support they receive from the Director of Leadership Development."

PROVIDE EDUCATOR SUPPORT

"As the landscape of education continues to change and what and how students are expected to learn changes, we cannot forget that we must support the educator in as many ways as we can. Educators consistently prove that they are extremely adaptable, but we can't leave them in the dark. When moving forward within technology and education (and particularly at a time when the educator shortage is a real problem), we must consider both the student and educator in all decision-making processes" (Justin Thompson, National Education Association, United States).

ENCOURAGE CREATIVITY AND INNOVATION

"Establish school cultures where everyone at every level feels empowered to try creative and innovative new ideas. Sure, not all of them will be successful, but if people feel empowered to try new things you're sure to find some amazing and new paths forward. Adjust quickly when an idea shows it doesn't have promise, but never chastise someone for trying something new for the right reasons" (Stacy Hawthorne, Learn21, Texas, United States).

FORM A DISTRICT COMMITTEE TO PROVIDE VOICE, AUDIENCE, AND COLLABORATION

"Our district formed an Innovation Committee to ensure we had stakeholders from every school and department to collaborate on important elements and bring things to light proactively before they became issues. This group has teachers from every level, building level administrators, special educators, district leaders, technology specialists, and more. Each voice is encouraged and honored to help shape professional development, look at critical issues, and more" (Patrick Hausammann, Clarke County Public Schools, Virginia, United States).

REVIEW COSN'S FRAMEWORK OF ESSENTIAL SKILLS

The Framework of Essential Skills of the K-12 CTO comprises three primary professional categories in the education technology field: Leadership & Vision, Understanding the Educational Environment, and Managing Technology & Support Resources. Each of these categories includes 10 essential skill areas, outlining the responsibilities and knowledge needed to be a viable educational technology leader.

LEARNER AGENCY

DEFINITION

It's all about students as leaders in their learning; reconceptualizing their role from that of "student" to that of "learner." When immersed in a strong learning environment, learners could transform from order-takers to innovators, experience the state of flow, and learn far more authentically. In order for schools to facilitate Learner Agency, they must also encourage educator agency. Learner Agency is essential for lifelong learning and requires a different approach to school structure and practices. Truly embracing Learner Agency will require transforming education systems. This Accelerator is deeply intertwined with the Personalization Accelerator.

In a chaotic world of pandemics, global disasters, war, financial uncertainty, and so much more, having ownership over their learning — learner agency — can be powerful for today's K-12 students. Strategies for fostering learner agency in the classroom include establishing a classroom culture of inquiry and creativity, making time for feedback, and emphasizing relevance to create engagement.

But before we can create an environment that focuses on student agency, we must also consider how vital it is to give educators this same ability. "With the changing landscape, learning how to learn and keep up with new tech is essential. This deep learning by educators calls for mindsets and skills that make educator agency a prerequisite. This includes involving teachers in discussions and trials designed to improve learner agency, motivation, and ability to learn through 'doing' rather than from just 'listening,'" (Marie Bjerede, E-mergents, Oregon, United States).

Another key component to Learner Agency is trust. "Simply put, we are able to provide students with incredibly powerful tools for analyzing, problem-solving, creating, communicating, collaborating, and more to enhance their learning," (Glenn Kleiman, Stanford University, California, United States). "Will we guide and trust students to put these tools to good use, or will we lock the tools away and limit their use due to a lack of trust?" Kleiman added that when he participated on a CoSN study tour in Finland, trusting students and teachers was often highlighted as essential to their success in education.

GEN AI

Something that we should also consider is the role that generative artificial intelligence (Gen AI) will play in the development of this topic. "We have an amazing opportunity right now to utilize Gen AI technology to truly reach learner agency," (Lindy Hockenbary, InTECHgrated Professional Development, Montana, United States). "I am amazed at how it can customize any content to the unique interests and needs of each learner."

Advisory Board member Frankie Jackson (CoSN, TETL, Texas, United States) went on to explain that because Learner Agency is largely focused on transforming the roles of traditional students to being learners and innovators, we can't deny how impactful generative AI will be in this shift. "At a recent conference session, I was able to hear from a district about how they are using Gen AI to increase student choice, engagement, and agency," said Jackson.

"In this specific example, students were using ChatGPT as a 'debate partner' on a controversial topic, which ultimately helped them write a persuasive paper. ChatGPT was specifically asked to give biased and controversial points that combated and 'poked holes' in the students' stances. In the current educational landscape, students have varying levels of exposure to the world around them and 'real-world events.' In many ways, the use of Gen AI continues to give all students an opportunity that otherwise may not be there," explained Jackson.

TIPS & RECOMMENDATIONS FROM THE ADVISORY BOARD

LET GO OF WHAT'S NOT WORKING

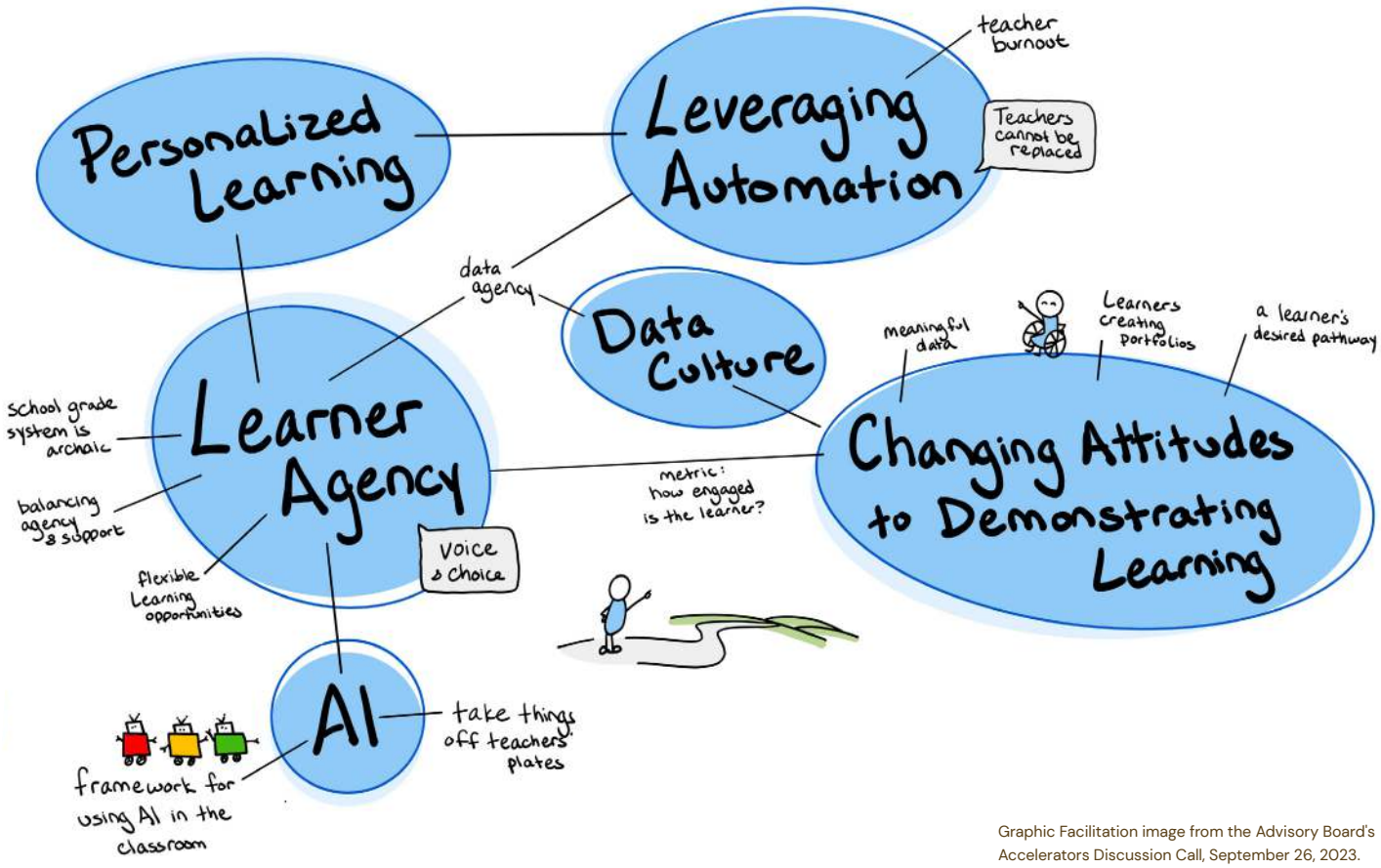
"School systems need to continue to let go of practices that are no longer relevant for today's learners. While there are unknowns, hanging on to one-size-fits-all approaches of learning will not support our diverse learners" (Ryan Cox, St. Cloud Area School District ISD742, Minnesota, United States).

KEEP AN OPEN MINDSET

"Focus on an open mindset to ensure learner variability is addressed and that each student has access to universally designed instruction and the tools and resources that best fit their needs for each learning experience" (Christine Fox, CAST, United States).

FOCUS ON THE LEARNER & LEARNING VS. TECHNOLOGY & TOOLS

"It all comes down to the impact on the child in the classroom. The most sophisticated systems and advanced tools are useless if they do not positively impact the learner" (David Jarboe, District 2 Harrison Schools, Colorado, United States).



Graphic Facilitation image from the Advisory Board's Accelerators Discussion Call, September 26, 2023.

TECH ENABLER 1

NEW TOPIC

GENERATIVE ARTIFICIAL INTELLIGENCE

DEFINITION

Artificial intelligence, the ability of machines to perform tasks that are typically associated with human intelligence, such as learning and problem solving, has been around for decades. Generative AI refers to a type of artificial intelligence system designed to generate new content such as text, images, audio, or video in response to user prompts. Unlike other AI systems that focus on pattern recognition or classification, Gen AI can create new and original content that closely resembles human-created content.

Generative AI has emerged as a transformative force in education, changing both how students learn and what they need to learn. As school systems worldwide explore the benefits and challenges of this technology, they are both developing and seeking expert guidance to meet the urgent need for policies and processes that ensure the safe, effective, and responsible use of Gen AI for all stakeholders.

"Generative AI fundamentally changes the game for K-12 moving forward. Every aspect of our profession will be impacted in one form or another and sooner than later" (Joe McBreen, Innovation Center, St. Vrain Valley School District, Colorado, United States).

In 2023, the Driving K-12 Innovation Final Survey had already taken place when Generative Artificial Intelligence (Gen AI) arrived on the scene in a very big way in November of that year. Fast forward to our 2024 cycle, and 73% of our surveyed Advisory Board members identified this Tech Enabler as one of the Top 3 selected.

Gen AI has been an innovation powerhouse, allowing K-12 professionals to increase productivity while saving time and, often, money. And while this technology is a game changer, there are a few things that our Advisory Board wants to remind us of as we take the leap and navigate this new world.

First, let's be sure that our teachers receive professional development to become knowledgeable about the technology and to be able to teach their students...and fast. "We need to upskill teachers and help prepare students for this new world. It will need to be as much [a part] of their lives as the internet is now. This will happen a lot quicker than the spread of the internet" (John Heffernan, Tipperary Education and Training Board, Ireland).

Part of this upskilling process is play.

Advisory Board member Punya Mishra (Mary Lou Fulton Teachers College, Arizona State University, Arizona, United States) said, "These new AI technologies are fundamentally different from any of the technologies that have come in the past. These technologies require a shift in perspective from a mere utilitarian technological approach to a relational one. ... Gen AI doesn't just operate in isolation, but it interacts, learns, and grows through dialogue with humans. Thus, we're not just users or operators, we're co-creators, shaping and being shaped by these technologies in a continuous and dynamic process of co-constitution. This is a critical shift in understanding that educators need to embrace as we navigate the wicked problem of technology integration in teaching."

Advisory Board member Andrew Smith (Education Services Australia Ltd, Victoria, Australia) explained that, in Australia, K-12 professionals are balancing

the risks and the opportunities of Gen AI. "There is no doubt in my mind that well-designed, well-used, and well-governed AI can be a significant enabler in reducing teacher workload, accelerating learning growth and closing equity gaps. Our current priority is to establish a safe and ethical baseline that addresses privacy, information security, and inherent bias. Without this foundation, I fear a powerful enabler could have the opposite of the desired impact for many students," said Smith.

While there may be uncertainty surrounding innovation and the new products available, Advisory Board member Maria Crabtree (KnowledgeWorks, Ohio, United States) expressed her appreciation and excitement for what's next. "The most important thing about the introduction of generative AI into the education conversation is that it is opening the dialogue to more 'what if' questions that nudge people into thinking about the consequences of their actions and decisions today. Having a taste of what generative AI can do has also allowed for a challenge of a lot of the assumptions that the general audience hold as true for learning and the education system."

TIPS & RECOMMENDATIONS FROM THE ADVISORY BOARD

DIVE RIGHT IN!

"It does take time to vet all of the new tools (especially those using AI), but it is time well spent that can truly revolutionize how we innovate" (Lisa Gustinelli, St. Vincent Ferrer School, Florida, United States).

BE THOUGHTFUL, YET SWIFT, IN YOUR AI ADOPTION

"Move quickly and thoughtfully forward with the adoption of AI, in both its classical and generative forms. Our students need this toolset now: the challenges and opportunities that it defines are in the world today — not in a hazy and still remote future. They need to learn how to think and create autonomously with the technology, rather than having it bolted on to their lives and careers as an outside imposition" (Ruben Puentadura, Hippasus, Massachusetts, United States).

DEVELOP & PROVIDE CLEAR GUIDELINES FOR MANAGING AI-ASSISTED TOOLS FOR STUDENT USE

"I believe that teaching our students how to effectively harness the power of AI-assisted tools will be a challenge for years to come, but will be exponentially beneficial" (Brandon Manrow, Corpus Christi ISD, Texas, United States).

TEACH STUDENTS HOW TO USE NEW TECHNOLOGY, SUCH AS AI, SAFELY

"Generative Artificial Intelligence will drive learning forward, but it also brings risks. We must all recognize our role in securing the types of information we share, and encourage our students to know the value of their data. How can we prepare our students to know how to use AI in the world to make better decisions and increase efficiency? Those are the skills on the resume of the future" (Pam Batchelor, Johnston County Public Schools, North Carolina, United States).

KEY RESOURCES TO HELP EDUCATORS GAIN MOMENTUM IN THEIR GEN AI PRACTICE

Whether you're just getting started or looking to gain momentum with Gen AI, explore these resources shared by our Editorial Committee:

- AI Guidance For Schools Toolkit (Teach AI)
- K-12 Generative AI Readiness Checklist (Council of the Great City Schools and CoSN, lead partners)
- Join the AI in Education CoSN Network Discussion Area in the Online Forum (CoSN)
- View Snapshots: AI in Education, EdTech leaders' suggestions of AI applications that are useful to you right now (CoSN)
- Watch artificial intelligence webinar recordings, including AI & Cybersecurity, empowering school districts with AI, how to empower deeper conversations on AI, and more (CoSN)

ANALYTICS & ADAPTIVE TECHNOLOGIES

DEFINITION

These are digital technologies that collect and use data related to teaching and learning. Analytics refers to the process of analyzing data collected about student learning and the opportunity to leverage data to inform instructional decision making. Adaptive technologies are tools that adapt to the student based on their interactions with the technology, changing the pathway provided according to user need and/or interaction. These adaptations could be in the form of suggesting next steps, providing remediation, controlling pacing, or providing feedback based on analysis of the student's performance. Adaptive technology is broader than assistive technology or accessibility-supporting technology and can be beneficial for all students.

No two students are alike — each child has their own unique skill set, learning styles, attitude toward learning, home and social life, physical abilities, and more. Thus, they learn in very different ways. For example, "two learners start a digital learning activity. The tech identifies the differences in how they each perceive and engage with the learning experience and the experience offered begins to shift according to the needs/preferences of each learner" (Kim Flintoff, IDEAcademy, Western Australia, Australia).

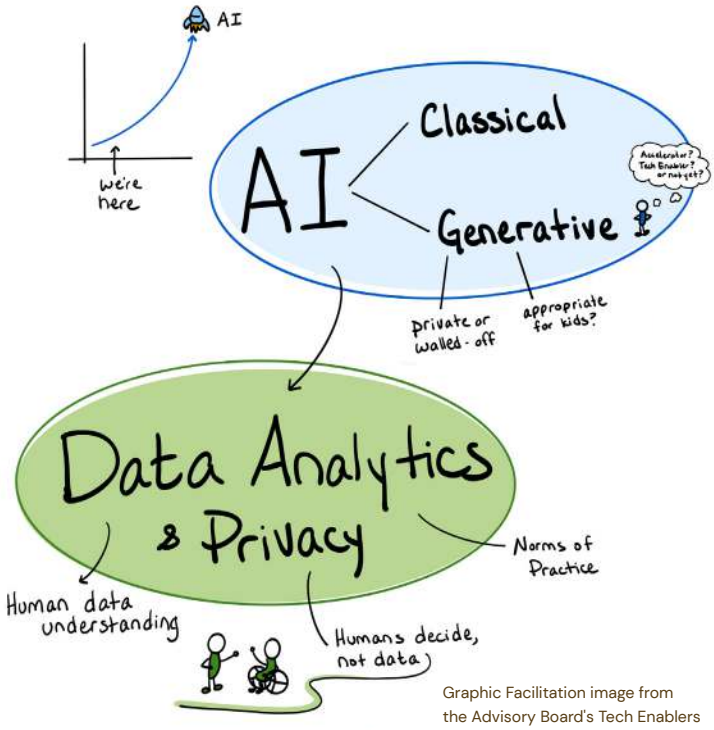
The more we know about students, with the help of data, the more we can support them as learners and make better decisions to provide valuable, more individualized instruction. This is especially true with the help of adaptive technologies that can adjust to the student based on their interactions with the technology. "Data analytics, augmented by AI's predictive power, can lead to unprecedented customization of educational content, making learning more adaptive to individual student needs" (Sheryl Abshire, formerly Calcasieu Parish School Board, Texas, United States). "This should be underpinned by a culture that encourages experimentation and views setbacks as vital stepping stones, fostering a resilient growth mindset."

Sometimes this data gathering process may seem like a hassle, but data analysis is a powerful tool. Advisory Board member Lisa Gustinelli (St. Vincent Ferrer School, Florida, United States) explained that her school participates in MAP testing (Math and Reading) three times a year, and the testing gives teachers analytics to help them determine instruction. "With the incorporation of AI, the results of these tests give a huge boost to teachers looking to adapt their curriculum to the needs of specific students and classes," said Gustinelli. "The way material is delivered, as well as the structure of how a class takes place from beginning to end, is already being changed due to analytics. I see more and more students being pulled for extra support, as well as more independent learning by students who are given time to work on areas of weakness or strength. Learning is no longer a one-size-fits-all experience."

While data can be helpful for educators to see student readiness or to identify when students may need additional support, it's also important to note that there isn't value in high-quality data if it isn't used effectively. Gustinelli added that analytics are only as good as the person interpreting the data, so professional development, with school resource teachers for example, is encouraged to best maximize the results.

Stacy Hawthorne (Learn21, Texas, United States) explained: "We need to make sure that the data is readable and interpretable by classroom teachers, who rarely have degrees in statistics and analytics. If the data isn't in a format that is actionable by teachers, it's just another stressor that helps to push them out the door."

In addition to having high-quality data that can be well interpreted by educators, education leaders also need to manage the data and ensure that it is meaningfully and accurately translated into actionable information, including multiple perspectives and multi-modal analysis. "This is something that most schools (or even whole systems) are not adequately structured to support," said Flintoff. "One of the roles of AI might eventually be creating processes that help users with the diversity required in interrogating vast data oceans."



Graphic Facilitation image from the Advisory Board's Tech Enablers Discussion Call, October 10, 2023.

TIPS & RECOMMENDATIONS FROM THE ADVISORY BOARD

DEVELOP A PROCESS SO GOOD DATA IS NOT LOST

"Solve real struggles and problems for your teams, students, constituents etc., but while you do so, look toward unification, alignment, and systematization so that data, insight, knowledge is not lost. Too much good work is done, only to be left behind when the next project or initiative emerges. One hundred percent sustainability may not be realistic, but data assets, processes, systems, and deliverables should be kept with an eye on forward compatibility" (Phil Boltz, Muncie Community Schools, Indiana, United States).

THINK OF DATA AS PART OF A 3-LEGGED STOOL

"When I had the privilege of creating my department at a regional education service agency, each department was dependent on the other like the three legs of a stool: instruction, data, and technical. Each had to work with and understand what the other was doing as one leg did not work without the support of the other. This was novel then and I find this type of discourse or organization does not exist in most education organizations. IT/Tech is a silo and the educators are doing their own thing. Working together and understanding the value and expertise each brings to the table as equal partners yields much greater outcomes when making change and bringing innovative/creative ideas to fruition. In addition, it is key to bring the business office along, as well, so they understand the 'why' behind requested expenditures versus just being stewards of the funds" (Beverly Knox-Pipes, BKP Solutions/Nova Southeastern University, Michigan, United States).

MAKE SURE THERE ARE NO DATA PRIVACY COMPLICATIONS

"Remove the obstacles to allow everyone in your organization (students, teachers, and non-certificated staff) to have access to new tools and to play with them — to innovate" (Lawrence Molinaro, The National Center on Education and the Economy - NCEE, United States).

RICH DIGITAL ECOSYSTEMS

DEFINITION

Connecting systems or digital environments can form powerful digital ecosystems for enabling student learning and/or supporting education administration. These interconnected systems of online and virtual spaces can span formal school settings and beyond.

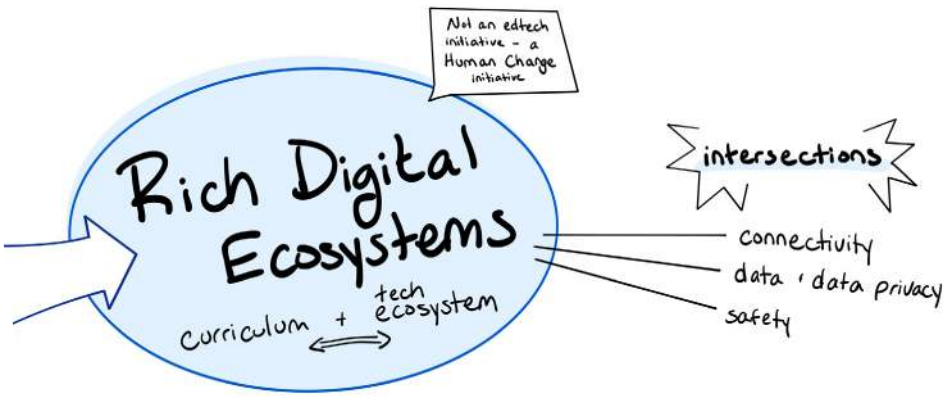
"The power of a rich digital ecosystem lies in its ability to connect various systems and environments, creating a seamless learning experience. This interconnected web of digital spaces spans formal school settings and extends beyond, allowing for versatile learning opportunities" (Stacy Hawthorne, Learn21, Texas, United States). "To maximize the potential of a rich digital ecosystem, it's important to establish strong data integration and interoperability standards. This streamlines the administrative processes and also enables educators to make data-driven decisions that benefit student learning."

Along with strong data integration and interoperability standards, Advisory Board members shared other traits of a Rich Digital Ecosystem throughout the discussion phase of the initiative, including:

- Well-planned
- Secure
- Collaborative
- Support efficiency
- Needs to be more than an "add-on" layer of support
- Easy to use

Rich digital ecosystems can be incredibly effective when they allow educators to focus on teaching. Advisory Board member Katie Harmon (Westhill Central Schools, New York, United States) shared that her district has seen teachers grow exponentially from their digital ecosystem, including planning for more collaboration in and outside of the classroom, providing instruction that is accessible anytime, anywhere on any device, and beginning to shy away from paper-based assessments.

"We have given them the tools to be successful in formative assessments, student growth, the feedback cycle, and communication through digital tools that make sense, make their lives easier and data more accessible, and fit together," said Harmon. "Teachers have seen the power of using digital formative assessments to inform instruction, learn about their students' needs, and champion student growth. They have studied how using digital tools shows student growth, and success rates have increased. I am getting goosebumps just thinking about all they have done and accomplished."



Graphic Facilitation image from the Advisory Board's Tech Enablers Discussion Call, October 10, 2023.

TIPS & RECOMMENDATIONS FROM THE ADVISORY BOARD

CONTINUOUSLY IMPROVE YOUR SYSTEMS WHILE BUILDING CULTURE

"We sometimes get a sense of urgency and excitement around emerging technologies, but the instructional impact, alongside safety and security considerations, often have not been fully researched. To this end, educators and school system leaders working toward the thoughtful broad-based adoption of impactful tools and innovative practices must work together to drive a sense of urgency, yet at the same time build a foundational capacity with smaller well-designed initiatives that can help a school system make a successful leap forward as technology matures and key practices become part of the district culture. This steady approach to continuous improvement and culture building can ensure that critical elements of data collection, broadband infrastructure, and the digital ecosystem are in place, whereby tools like artificial intelligence can be layered into established systems and practices to enhance and accelerate opportunities for all" (Edward McKaveney, Hampton Township School District, Pennsylvania, United States).

RICH DIGITAL ECOSYSTEMS ALLOW LEADERS TO FOCUS AND TEACHERS & STUDENTS TO LEARN

"A rich digital ecosystem should solve connectivity, safety, data privacy, and interoperability needs so that the leaders in the organization can focus on a clear vision that includes definition of common values and objectives—so that the teachers and students can focus on learning" (Beatriz Arnillas, 1EdTech Consortium, United States).

KEEP ACCESSIBILITY IN MIND WHEN DESIGNING THE ECOSYSTEM

"Systems and environments must ensure that students with disabilities have seamless access to such environments. Embedding accessibility in the procurement process and providing professional learning from the top down so that each learner has access is critical." (Christine Fox, CAST, United States).

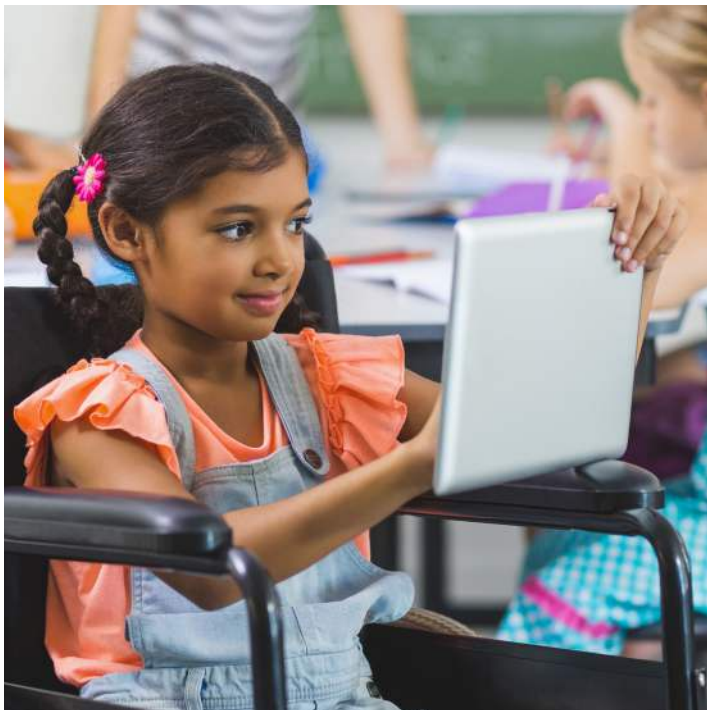
COMPARATIVELY HOW SURMOUNTABLE, INTENSE, OR IMMEDIATE ARE THESE TOPICS?

Each year, the Advisory Board considers dozens of topics before narrowing them down to the top three Hurdles, Accelerators, and Tech Enablers for Driving K-12 Innovation in the coming year. The initial list of 92 topics was narrowed down to 28 (see the following pages) for discussion and voting.

Every year, we report the "surmountability" of the Top Hurdles, "intensity" of the Top Accelerators, and "Immediacy" of the Top Tech Enablers (see pages 11-13). In the 2024 report, we're also sharing this information for the topics that the Advisory Board discussed but that did not make it into the Top Topics list.

HOW MIGHT I USE THIS INFORMATION?

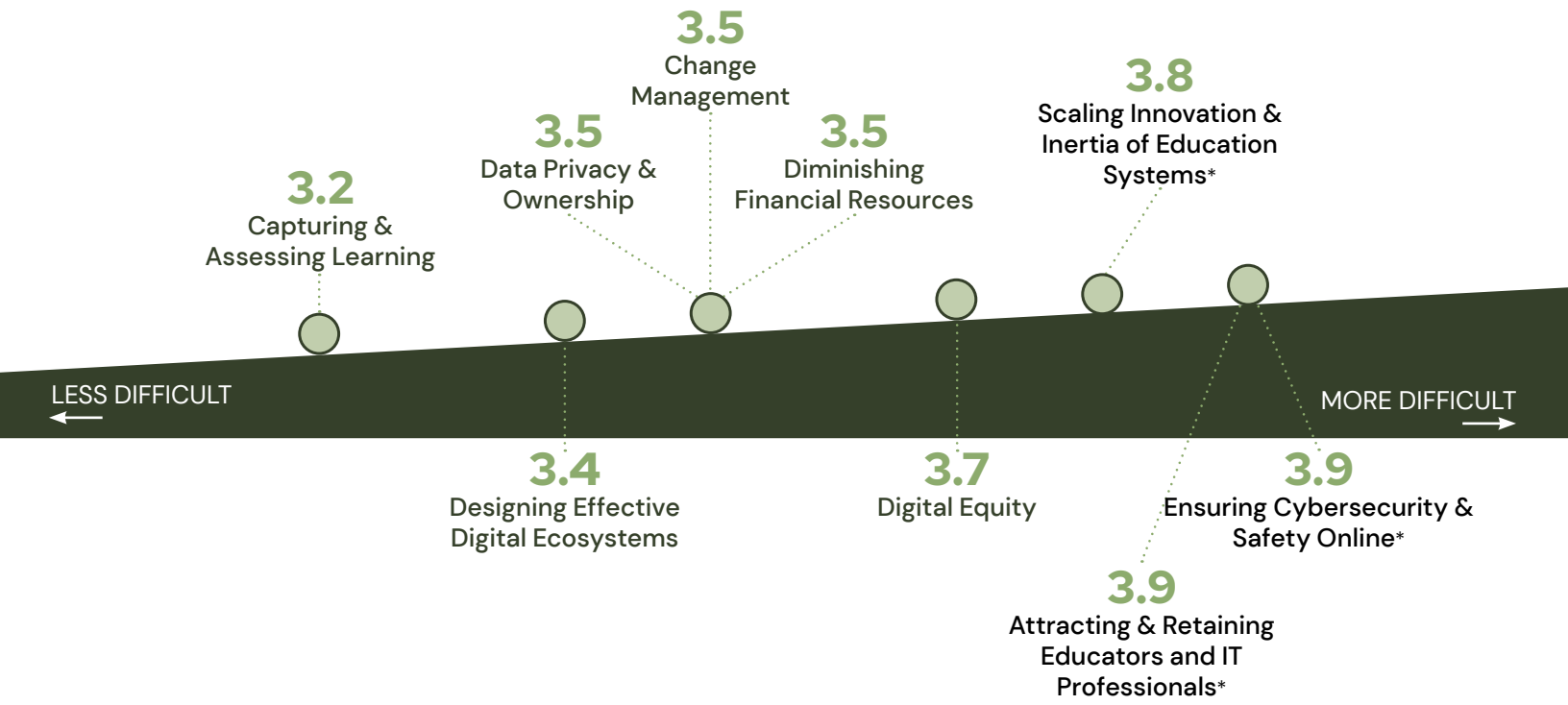
- **To spark conversation with your team or community:** What topics are most important to your school or district? How difficult, intense, or immediate are they for you?
- **Provides context to the Top Topics:** From the Advisory Board's perspective, which topics are more difficult, intense, or immediate than others? Do you agree or disagree? Why?
- **As a comparative tool:** How do you think your school/district is experiencing these topics?
- **As a barometer** that reflects the state of education innovation through the eyes of this global Advisory Board.



HURDLES: **DIFFICULTY**

Hurdles in order of degree of difficulty to surmount, as ranked by the Advisory Board (Scores reflect the average score out of 5, with 1 being the easiest to surmount and 5 being the most difficult; 86 respondents).

From easiest to most difficult to surmount:



Viewed another way...

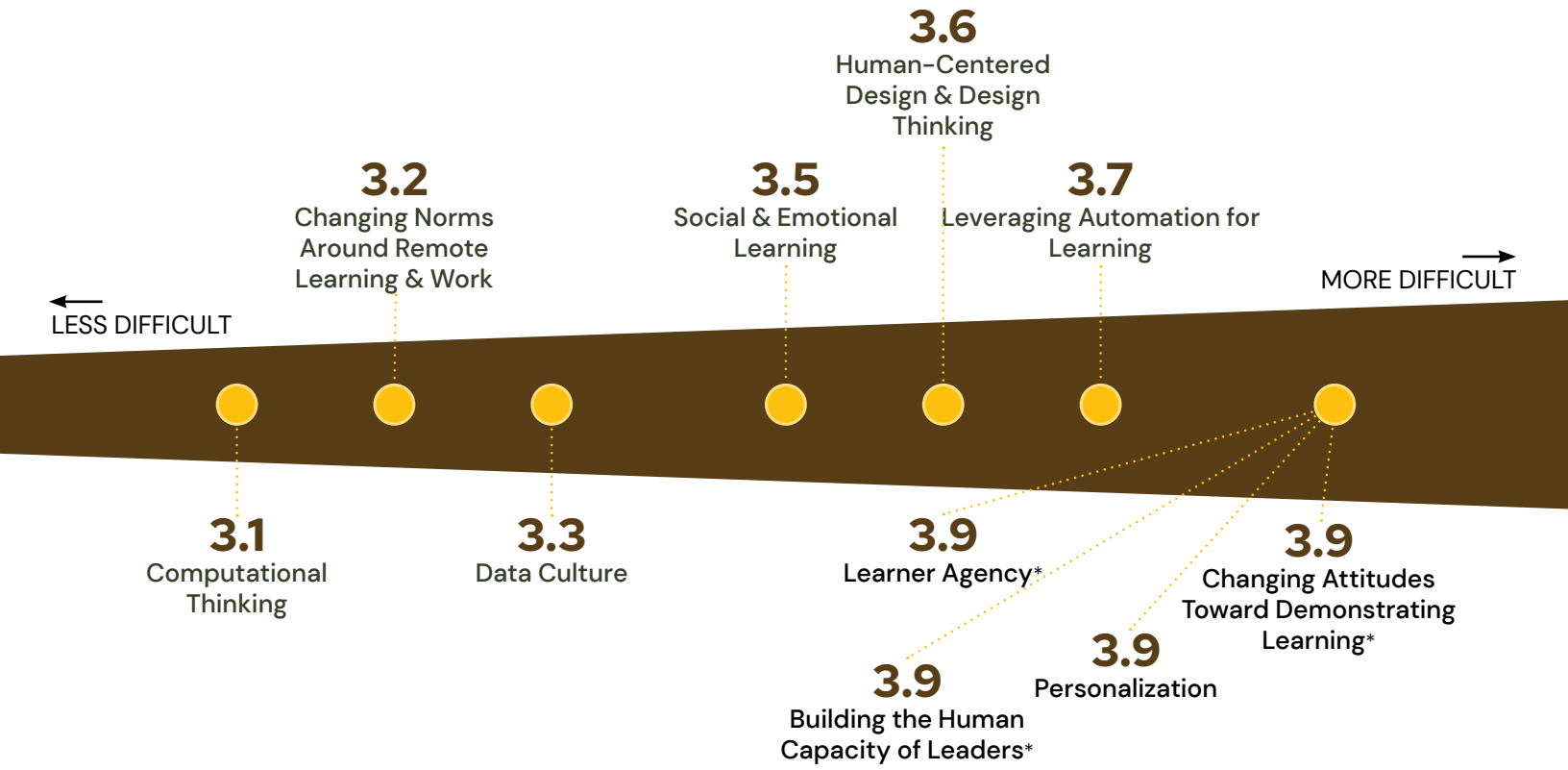
HURDLE	DIFFICULTY SCORE
Capturing & Assessing Learning	3.2
Designing Effective Digital Ecosystems	3.4
Data Privacy & Ownership	3.5
Change Management	3.5
Diminishing Financial Resources	3.5
Digital Equity	3.7
Scaling Innovation & Inertia of Education Systems	3.8
Attracting & Retaining Educators and IT Professionals	3.9
Ensuring Cybersecurity & Safety Online	3.9

*Voted one of the Top 3 Hurdles for 2024. Top Topics are determined by the Advisory Board's votes for "most important" not by difficulty score.

ACCELERATORS: **INTENSITY**

Accelerators in order of degree of intensity of K-12 impact, as ranked by the Advisory Board (Scores reflect the average score out of 5, with 1 being the least intense and 5 being the most intense; 86 respondents).

From least to most intense:



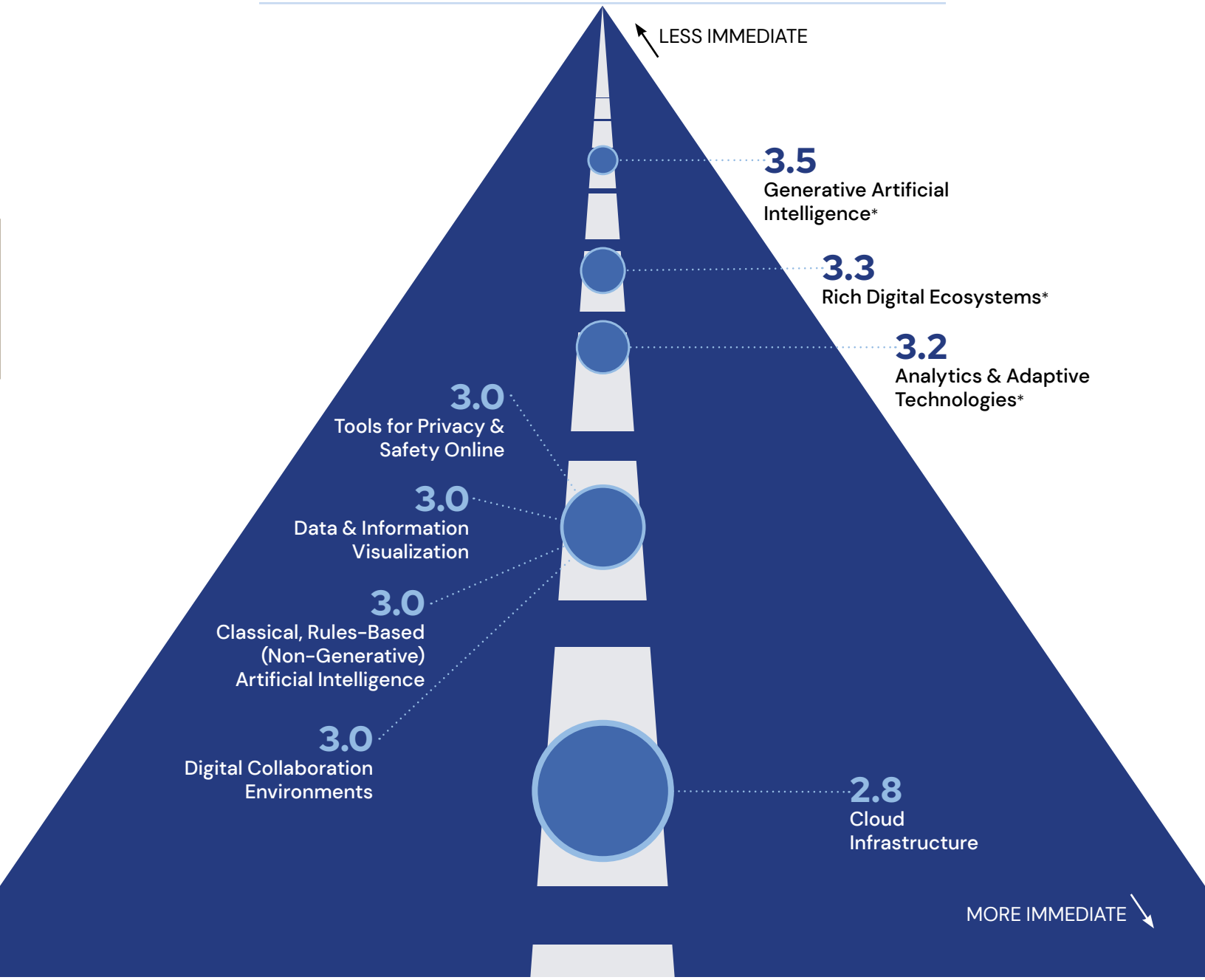
Viewed another way...

ACCELERATOR	INTENSITY SCORE
Computational Thinking	3.1
Changing Norms Around Remote Learning & Work	3.2
Data Culture	3.3
Social & Emotional Learning	3.5
Human-Centered Design & Design Thinking	3.6
Leveraging Automation for Learning	3.7
Learner Agency	3.9
Building the Human Capacity of Leaders	3.9
Personalization	3.9
Changing Attitudes Toward Demonstrating Learning	3.9

*Voted one of the Top 3 Accelerators for 2024. Top Topics are determined by the Advisory Board's votes for "most important" not by intensity score.

TECH ENABLERS: **IMMEDIACY**

Tech Enablers in order of the immediacy of its adoption at scale by schools worldwide, as ranked by the Advisory Board (Scores reflect the average score out of 5, with 1 being the most immediate adoption; 5 being the furthest away from adoption; 86 respondents).



*Voted one of the Top 3 Tech Enablers for 2024. Top Topics are determined by the Advisory Board's votes for "most important" not by immediacy score.

Viewed another way, from most immediate to least immediate adoption...

TECH ENABLER	IMMEDIACY SCORE
Cloud Infrastructure	2.8
Digital Collaboration Environments	3
Classical, Rules-Based (Non-Generative) Artificial Intelligence (AI)	3
Data & Information Visualization	3
Tools for Privacy & Safety Online	3
Untethered Broadband & Connectivity	3.2
Analytics & Adaptive Technologies	3.2
Rich Digital Ecosystem	3.3
Generative Artificial Intelligence (Gen AI)	3.5

TAKING A HOLISTIC VIEW

In addition to selecting the Top Topics for 2024, Advisory Board members looked across topics and offered recommendations that stretch beyond specific areas.

As you continue driving K-12 innovation forward in 2024, remember these wise directives from our Advisory Board of education and school system leaders from around the globe.

WHAT DO YOU THINK IS THE MOST IMPORTANT THING FOR EDUCATORS AND SCHOOL SYSTEM LEADERS TO KEEP IN MIND IN ORDER TO DRIVE IMPACTFUL K-12 INNOVATION IN 2024?

"Keep the end goal(s) in mind. Technology is a means to an end, not an end" (Keith Krueger, CoSN - Consortium For School Networking, DC, United States).

"Students, all students, need to continue to always be 'the why' we do what we do when it comes to driving K-12 Innovation. The innovations, especially Gen AI, mentioned in this document foster collaboration, work to level the playing field, provide opportunities, and improve inclusivity for all students" (Phil Hintz, Niles Township School District 219, Illinois, United States).

"We, as educators and school system leaders, need to transform in order to innovate" (Jackson Vega, Colegio Franklin D. Roosevelt, The American School of Lima, Peru).

"Stay connected beyond your classroom, school, and community. Know what is going on in other counties, states, and regions. With perspective comes appreciation, growth, and ideas for change" (Suzy Brooks, Mashpee Public Schools, Massachusetts, United States).

"Ensure the 6 Cs are a focus of all work: communication, creativity, collaboration, critical thinking, citizenship, and character" (Shari Camhi, Baldwin UFSD, New York, United States).

"Try the 80/20 model. Keep 80% of the current system, then ask ourselves, what 20% would you like to change. Then...go for it" (Michael Lambert, True North School, Hanoi, Vietnam).

"Continue to embrace the many elements currently disrupting traditional education. Engage communities and colleagues in conversations that push the boundaries of your comfort zone as you think forward around the many ways innovation is reframing the 'box' for students and teachers" (Jody Kokladas, Shady Side Academy, Pennsylvania, United States).

"Today we have more technological innovations and tools than at any point in history. The capability and maturity of these tools far outpace an educational system's ability to adopt all of them. Because of this, school system leaders must put in place a policy, process, and the necessary resources to identify, evaluate, and integrate the technology tools that will enhance their current educational goals, and enable them to leverage these innovations to maximize the learning potential of all students" (Brad Rellinger, Northern Buckeye Education Council).

"Find someone who you can work with to drive innovation, an Instructional Technology Coach, a 'techy' teacher or parent, someone who you can partner with to help make the innovations happen" (Mike Carvella, Oak Ridge Schools, Tennessee, United States).

"The time from idea to implementation for impactful innovation in education is rapidly shrinking. Advances in technology have accelerated, and old models for digital learning and technology integration have been showing their age for some time. Our systems need to build capacity and structures that allow for a rapid pivot when necessary, so that the current needs of all students are supported and their future needs can be accounted for" (Teshon Christie, Highline Public Schools, Washington, United States).

"Innovation should never happen in a vacuum. Seek out the voices, needs, and perspectives of the stakeholders most impacted by your decisions" (Michael Ham, The Learning Accelerator, United States).

"We are in a sweet spot of exponential growth if we can leverage the technological advances we have seen over the past few years and build upon the COVID-inspired universal awareness that learning can happen in ways other than a traditional classroom. Be brave and lean into this space so we can ensure that all students and teachers have opportunities to learn and contribute within the educational ecosystem" (Mary Wegner, University of Alaska Southeast, Alaska, United States).

ACKNOWLEDGEMENTS

CoSN gratefully acknowledges its sponsors for supporting the Driving K–12 Innovation series:

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Additionally, CoSN is grateful for its supporting organizations (in-kind partners):

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- State Educational Technology Directors Association (SETDA)
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- XINYUN (BEIJING) EDU-TECH LTD.

CoSN would also like to extend special thanks to our Editorial Board:

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- Kathleen Stephany, Director of Information and Technology, School District of Holmen, Wisconsin, United States

CoSN acknowledges the vision and leadership of

- Laura Geringer, Project Director, and Graphic Facilitator, and Graphic Designer (PumpkinBerry Consulting)
- Stephanie King, Writer and Communications Manager
- Karina Branson, Graphic Facilitator for Summit (ConverSketch)

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