Better EDTECH BUYING

A Practical Guide

REVISED EDITION

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About ISTE

The **International Society for Technology in Education** (ISTE) is a nonprofit organization that works with the global education community to accelerate the use of technology to solve tough problems and inspire innovation. Our worldwide network believes in the potential technology holds to transform teaching and learning.

ISTE sets a bold vision for education transformation through the ISTE Standards, a framework for students, educators, administrators, coaches and computer science educators to rethink education and create innovative learning environments. ISTE hosts the annual **ISTELive** Conference & Expo, one of the world's most influential edtech events. The organization's professional learning offerings include online courses, professional networks, year-round academies, peer-reviewed journals and other publications. ISTE is also the leading publisher of books focused on technology in education. For more information or to become an ISTE member, visit iste.org. Subscribe to ISTE's YouTube channel and connect with ISTE on Twitter, Facebook and LinkedIn.

About Project Unicorn

Project Unicorn is an effort to improve data interoperability within K–12 education. We aim to create a community of innovators who make the broader case for secure interoperability by determining shared priorities, working in partnership with school systems and solution providers to understand its importance and benefits, creating a demand side push for interoperability through partnerships, and educating buyers to consider the total cost of ownership through informed comparison of vendors.

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Introduction

THE EDUCATION LANDSCAPE HAS SHIFTED SIGNIFICANTLY since this guide's original release in 2019. With myriad new variables and reprioritized drivers comes the need for a new approach to problem solving by way of educational technology (edtech). What this means for school administrators—especially directors of technology/CTOs—is there are numerous factors to consider in the purchase of edtech tools that were not likely a part of the formula just a few years ago.

This entails and extends beyond the escalation of edtech product roadmaps and workflows for learning any time, anywhere, particularly, the melding of both academic and non-academic growth for students as an urgent priority to recover lost learning opportunities. Lost learning has been met with an urgency to equip every department and role in a school district with sophisticated tools for nurturing, evaluating and documenting student growth to account for the diverse needs of the whole child to ensure equity and inclusion. This is a seismic outcome and it happened at an extraordinarily rapid pace for our field. However, it also couldn't have come at a better time as we continue to prepare our students for a world in flux, and one that is being reshaped daily by emerging technologies such as artificial intelligence. The challenges we just encountered very possibly could seem mild in comparison to those on the horizon.

In spite of the stress of responding to concurrent crises with updated strategic plans, there is a silver lining to having our field's collective hand forced. Edtech professionals have in many ways had the chance to demonstrate proofs of concept converting theory into practice for digital and blended learning initiatives that have been projected by researchers and yearned for by practitioners. For those who have been critical of the quality of asynchronous or online learning, there are new metrics derived from recent research. As such, there has been an unplanned reckoning to update technology stacks, implementation processes that include sufficient professional learning school by school and district by district across the United States. There has also been a more mainstream conversation for addressing the need for better funding, stewardship, and returns on investment with regard to our edtech purchases and professional learning for using these tools and approaches with our students. We've read countless published stories of how school leaders have opened up new avenues of support for their students, even beyond academic growth.

For schools and districts that had been lagging on implementing edtech, the pandemic forced a change to keep teaching and learning from stalling out. And for those that were above average in their edtech solutions and usage, refinement, alignment, and proactively reinforcing effective strategies transformed the learning experience culture for both student academics and even professional learning for staff. There are ample stories chronicling the challenges of learning from home online, but there are also triumphant accounts detailing how entire learning communities shifted to modes of learning that support student needs that hadn't being adequately addressed, and modes of teaching that reflect the findings of pedagogical research.

Over the summer of 2020, district leaders converted the instructional triage planning they put in place when schools closed to more responsive strategies for when educators and students returned as federal support through the **CARES Acts** with **ESSER** and **EANS** funding tripled edtech spending, according to a recent **LearnPlatform report**[1]. There has never been such an infusion of federal funding at this scale and its impact is still yet to be fully realized. As that funding ends following the 2023–2024 school year, school and district leaders are keen to continue benefiting from the gains afforded by the influx of cash into their operations budgets. This requires education leaders to be intentional with

solution providers as contracts are negotiated. It also requires an understanding of how to build consensus within the entire learning community to ensure all cohorts and roles are adequately represented—especially with enterprise grade solutions that affect all school or district employees, students, and their families.

This updated guide provides pathways for determining need, prioritizing values, evaluating solutions, and moving forward confident of the return on the investment in edtech purchases. We need fresh approaches for this new paradigm, one wrought from a pandemic and too soon impacted by the advent of artificial intelligence in the mainstream. Prior means may not be sufficient to the new ends. The implications of new technologies and the marvels they promise against a recently augmented backdrop of heightened purpose for equity for all learners, an elimination of bias, and calls for modern, personalized learning mean we need new solutions and we need to implement them safely.

The Edtech Hierarchy of Needs

No matter what changes come with emerging technologies, modern schools will continue to purchase solutions that fit into one of three broad strata: core data infrastructure, instructional interaction management, or skills and content deployment (Figure I.1). Yet the prioritization needed among these layers is not always apparent. Much like the framework that came from Abraham Maslow's research, which prioritizes meeting certain needs before others can be addressed, edtech needs are likewise interdependent on certain priorities.

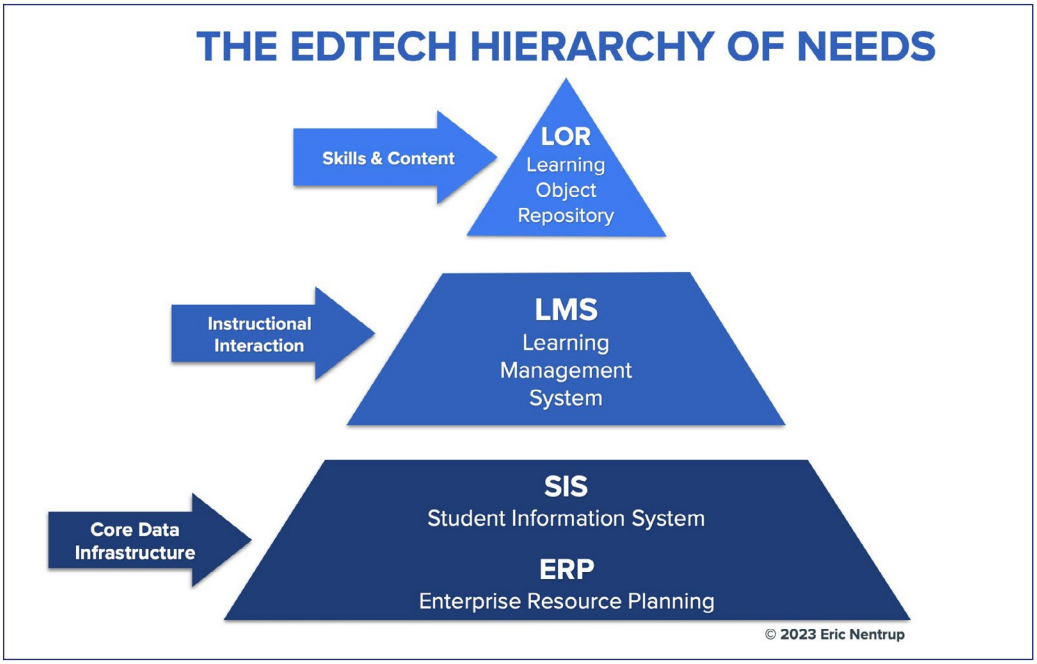

Figure I.1. The Edtech Hierarchy of Needs. ©2023 Eric Nentrup. Used with permission.

Just as Maslow predicted, insufficient solutions at the bottom will limit the breadth, depth, and success of the school's overall edtech stack. As we discuss later in this guide, unreliable data interoperability between any of the layers likewise undermines the efficacy of the solution and wastes school staff time on unnecessary data management. Below is an explanation of why this matters:

Core Data Infrastructure. From rostering to staff payroll, the amount of foundational data management required to operate schools while complying with local, state, and federal laws is significant. Educators depend on accurate data to secure funding and operate in alignment with board approved budgets and related policy. As such, student information systems (SIS) and enterprise resource planning (ERP) tools are foundational school system operations. Likewise, registration and human resources data need to be accurately propagated upwards into the edtech stack and reliably and securely synchronized with records in learning management or even payroll systems. Most often, school leaders source a single provider for this class of software to be used across the entire learning community (staff, students, parents) and do not change this class of edtech systems unless forced to do so.

Instructional Interaction. Though the learning management system (LMS) has likewise become more of a commodity this side of the pandemic, instructional interaction can happen between educators and students in many tangential platforms or approaches, including an educator's field notes and observations. Solutions in this layer may benefit from the automatic synchronization of rostering data from the SIS, while performance data and learning artifacts may pass downwards from the content and skills apps. What makes this class of edtech different from either is the focus on the interconnectedness of teaching and learning volleys between instructor and learner. This may be augmented with standards and learning objective alignment and tracking, data visualization, and associated communication during a prolonged activity. School leaders go to market for LMS-like tools more regularly than anything in the core data infrastructure layer, but may maintain multiple LMS at different buildings or grade levels.

Learning Object Repository (LOR). Whether a feature provided by an LMS solution provider for building a resource library of learning activities consisting of individual learning objects and spanning into complete project-based learning lesson plans, and everything in between, this category challenges the traditional textbook manufacturers and curriculum companies. For this class of edtech, there are often different solution providers for all the nuanced purchases that could include even individualized solution choices for students based upon need, content area or skill development, let alone school model, grade level, or developmental readiness. With proper interoperability and security procedures in place, even single student usage data can be safely passed through to the LMS and onward to the SIS to easily report out standards-based growth derived from multiple content and skill development tools.

Understanding how these layers should interact is an increasingly important domain for education leaders and their staff. Emerging technologies such as artificial intelligence will require new conversations with solution providers to ensure the safe and ethical usage of their solutions for students and educators alike. **Recent guidance from the US Department of Education** on the use of AI in education provides insight that addresses the clear need for sharing knowledge, engaging educators, and refining technology plans and policies for artificial intelligence (AI) use in education. The report describes AI as a rapidly-advancing set of technologies for recognizing patterns in data and automating actions, and guides educators in understanding what these emerging technologies can do to advance educational goals—while evaluating and limiting key risks.

ISTE has been anticipating and supporting this paradigm shift from both perspectives: **AI in our curricula**[2], and more currently, AI for better teaching, learning, and school operations. As the field continues into the foothills of this exponentially-expanding frontier, here is how each of these strata may change in the near future:

Core Data Infrastructure. AI will impact school district data management for compliance and funding state and federal reporting requirements as well as district planning and HR needs autonomously with higher reliability and accuracy.

Instructional Interaction. AI will expedite personalized learning through intelligent tutoring systems, leading to virtual grouping strategies, reteaching and enrichment prompts.

Content and Skills Development. AI will allow for interest-based and culturally-responsive learning activities and bodes well for building empathy through careful introduction of high-quality, crowd-sourced (and even student-designed) learning materials.

Additional instructional materials from **aiEDU** can provide educators with the resources to meet the challenges of now and in the future with emerging technologies. With an eye towards a quickly approaching future rich with possibilities, how that understanding translates to interactions between solution providers and customers in the marketplace will need some revision to support all stakeholders equitably throughout the procurement process.

Updating Edtech Marketing Approaches

The familiar "freemium" edtech software model encountered a forced evolution as a result of the pandemic, one that was likely past due for both solution providers and users alike—especially with the altruistic nature to support schools through the end of the 2019–2020 school year, yet transitioning into an unknown start to the 2020–2021 school year and beyond. Tools that were being offered freely to bolster learning from home would eventually need to be paid for. And as **ESSER** and **EANS** funding provisions expire at the start of the 2024–2025 school year, the total cost of ownership may mean some educators are doing without tools they've relied upon in the past few school years and districts will be faced with buying choices with more scarce resources.

Now more than ever, educators must leverage technology to improve student learning. Developers are creating tools that aim to fuel next-generation learning—and educators across the country are scooping them up by the handful. The aforementioned report from LearnPlatform mentioned that school districts with more than 1,000 students are now accessing an average of 1,417 unique edtech tools every month, a staggering increase from just 548 edtech products reported from the 2017–2018 school year. Total U.S. edtech spending has more than doubled since 2019, with an estimated $26–40B spent across all subcategories from instruction through school operations. The pandemic edtech spending boom has incentivized both new startups and established edtech brands to invest in their product roadmaps. Though investments slowed as schools returned to in-person learning ahead of the 2022–2023 school year, venture capitalists have never had a more significant stake in edtech, with investments still in excess of $10 billion, further incentivizing developers to create tools ranging from comprehensive yearlong reading and math programs to free mobile quizzing apps.

Faced with such choices, selecting the right technology solutions to meet the learning needs of students can be a daunting task. Procuring the right tools can be difficult, complicated, fraught with unknowns and often involves a large number of diverse stakeholders with competing needs and interests.

Meeting those needs is not simple. According to the **most recent report** from the EdTech Evidence Exchange[3]:

> … [E]ducators most frequently access research at least once in a year from blogs/news articles (94%), journal articles (92%), colleagues who read research (91%), and professional conferences (91%). Educators do not access research published by providers as frequently (69%) or on podcasts or radio shows (62%).

Essentially, educators form procurement opinions with information from searching the web and reading (hopefully) reliable sources that span from the anecdotal to the empirical. While searching the web and conferring with colleagues

can yield valuable information, those information sources may not suffice. For all teaching and learning in our 13,500+ school districts and even more private schools nationwide[4], we can and must do better.

Educators who vet edtech tools must balance numerous considerations in this increasingly complex landscape. Not only do solutions need to advance learning goals, but they must also comply with privacy and data security laws. Now that AI is impacting the mainstream with ChatGPT and large language models, data privacy and security regulations will continue to evolve, and complying with laws and accepted best practices must become a priority. Edtech solutions also need to complement existing tools while efficiently sharing data to provide a detailed view of student learning.

It's a lot to ask, but by being thoughtful and inclusive in their processes, decision makers can select edtech tools that represent powerful investments in teaching and learning.

To meet the needs of today's learners, we must combine our collective wisdom and experience, engage in more agile and rigorous vetting processes, consider our local contexts, pilot before we buy and continually put the individual needs of our learners first. To accomplish this, schools and districts around the country are working to overcome the divide between procurement offices and educators. They recognize educators as partners in building a collaborative culture of decision-making and continuous feedback. These approaches allow schools and districts to consider infrastructure, legal and fiscal requirements while establishing continuous feedback loops with classroom educators to understand a product's potential and success.

Educators in schools and districts that successfully bridge the divide are uniquely suited, empowered and relied upon to provide input, feedback and assistance throughout the decision-making and procurement processes. They can inform and guide districts throughout the lifecycle of technology adoption and implementation.

Educators Help Districts:

- Identify new school and classroom learning needs.
- Discover and recommend new solutions aligned with these needs.
- Determine whether a solution uniquely solves a problem instead of duplicating existing solutions.
- Share evidence from pilots and trials to identify the potential for impact.
- Raise issues of interoperability and usability of student learning data.
- Help inform rollout and implementation plans.
- Provide feedback and input on professional development needs.

Districts Help Educators:

- Comply with legal and fiscal requirements.
- Protect the privacy and security of student data.
- Ensure compatibility with the district infrastructure and devices.
- Ensure tools are selected that have an evidence base to support the use of these tools.
- Eliminate redundant solutions already purchased and available.
- Offer a level of interoperability to build a more complete picture of student learning and progress.

- Guarantee accessibility and assistive features.
- Assure equity of availability to all educators and students.
- Hold solution providers accountable for providing robust support and responding to educator feedback.

What's in This Guide

While the symbiosis between educators and procurement teams is easily celebrated, it is not so easily replicated. Procurement systems are often staid and exclusive processes. This guidebook reframes those difficulties as opportunities by heeding the ISTE Standards for Education Leaders, which call on us to "inspire a culture of innovation and collaboration that allows the time and space to explore and experiment with digital tools[5]" as well as highlighting tools and resources from across the edtech ecosystem to empower informed decision making in your edtech purchases. The following pages highlight a path to achieving a nimbleness and inclusivity in procurement that positions districts and educators as partners, each uniquely possessing distinct and complementary perspectives on how technology can support and advance learning.

How This Guide Can Help You

Educators

By becoming more informed about district legal and fiscal requirements and understanding systemic needs around issues such as data privacy and interoperability, you will be better prepared to make the case for inclusion of technology tools and resources in your district's collection. Also, by piloting tools before they are purchased for broad use, and by helping to uncover and communicate critical information back to the district, you will play a key role in determining whether a solution will have the desired impact on teaching and learning.

Districts

By empowering and engaging your educators as informed consumers of edtech and active participants in the procurement process, you will not only be better equipped with the right information, but you will also build the capacity necessary in modern schools. Additionally, you will better understand how to ensure critical buy-in from educators before, during and after an edtech purchase.

How This Guide Is Organized

In the pages ahead, you'll find five distinct sections, each focused on a different question:

SECTION 1. Equitable and Accessible Alignment with Student Learning Goals and Standards: What do our students need to know and be able to do, and how will all students best learn these concepts and skills?

SECTION 2. Importance of Research and Evidence: How do we know what works and what doesn't, and in what context?

SECTION 3. Data Interoperability and Student Privacy: How do solutions collect, share and secure student learning data from both malintent and exploitation?

SECTION 4. Challenges of Implementation, Use and Ongoing Support: Do we have the right people, policies and resources in place?

SECTION 5. Educators as Purchasers: What questions should we be asking, and how do we bring everyone to the table?

While each section is designed to follow the lead of the section preceding it, you are encouraged to forge your own path as determined by your needs. In the first four sections you'll find specific topics to help educators build their capacity and knowledge base to better partner with their districts in decision-making. Each section includes:

- An overview of the topic.
- An exploration of how the topic is relevant to edtech purchasing and how the educator perspective can help.
- Descriptions of resources that can level-set and provide opportunities for additional learning; and guiding questions for educators seeking more participation in edtech purchasing.
- Examples of individuals, districts and schools that show how the practices and resources presented work in educational settings.

Before beginning, consider the questions you bring to this process. What aspects of learning, procurement and communication are you working to improve in your own system? Considering each section of this guidebook, what are you hoping to learn from the content and examples? In the same way edtech purchases are most successful when they attempt to solve a particular problem of practice, how can you approach this guide by identifying specific needs and specific questions? Only when we know where we are going can we begin to plan our path to getting there.

VOICES FROM THE FIELD

District Voice: Edtech Playgrounds Help Educators Choose Better Tools

A virtual reality headset can take students on an immersive journey to another world. History students can tour ancient Rome, science students can travel to another biome and biology students can explore the inside of the human body. But no matter how cool it is, if a $3,000 piece of equipment enters a classroom and doesn't provide any real instructional value, it can quickly become a very expensive paperweight.

Rowan-Salisbury School District in North Carolina strives to make excellent edtech procurement decisions that value stewardship of taxpayer dollars. The district has a goal to avoid buying products that go unused and end up in closets—whether physical or digital—because they don't fit the instructional needs of students or are cumbersome for end users compared to alternatives that come along after decisions have been made.

CONTINUED

District leaders recognized that they needed a way to give educators hands-on experience with edtech before purchasing it, so they created an edtech playground where educators could try out new technology. Located in the district's central office, where hundreds of teachers and staff members stop by each week for professional development, the playground offers a creative space that encourages teachers to explore new tools that have been vetted and approved by the district's tech department.

The playground's museum-style design includes several "exhibit" areas showcasing a variety of tools, from virtual reality headsets to 3D printers to iPad apps. New tools are regularly cycled in to keep the space fresh and exciting. With student interns on hand to help educators experiment with the latest technology, the space has become a collaborative effort between educators and high school students who are interested in computer science or game design. The students get to spend time doing what they're good at, while the teachers get to sample the goods before purchasing them.

These playgrounds are free from solution provider marketing claims and salesmanship, giving testers a neutral environment to explore and experiment for forming conclusions about fit for their needs.

A secondary goal of the edtech playground is to allow teachers to give feedback on the tools they sample so developers can deliver products that genuinely meet students' needs. Teachers from Rowan-Salisbury School District have met with developers from several companies to help them refine their products, and many of their suggestions have been implemented, which is a mutual win with long-term implications: better return on the investment equals more word of mouth and expanding adoption of a quality edtech solution—even if it's not in accordance with a solution provider's preferred timeline.

The district's long-term vision for the playground is to use it as a testing and launching ground for new products in an effort for bridging the gap between the public and private sectors in their own mutual space.

Excerpted from an article by Nicole Krueger published on the ISTE blog[6].

NOTES

1 "Edtech Top 40 List," LearnPlatform, **https://learnplatform.com/top40**.

2 "AI Exploration For Educators", ISTE. **https://www.iste.org/areas-of-focus/AI-in-education**

3 "Study Finds Even Tech-Savvy Educators Struggle to Find Reliable Research on Edtech," The EdTech Evidence Exchange (formerly the Jefferson Education Exchange). http://jexuva.org/blog/study-finds-even-tech-savvy-educators struggle-find-reliable-research-edtech

4 "Number of Public School Districts and Public and Private Elementary and Secondary Schools: Selected Years, 1869–70 Through 2010–11," National Center for Education Statistics. **https://nces.ed.gov/programs/digest/d12/tables/dt12_098.asp**

5 "ISTE Standards for Education Leaders," International Society for Technology in Education (ISTE), **https://www.iste.org/standards/for-education-leaders**.

6 Nicole Krueger," Edtech Playground: Helping Teachers Choose Better Tools," International Society for Technology in Education (ISTE), ISTE Blog (blog), April 3, 2018. **https://www.iste.org/explore/articleDetail?articleid=2177**.

SECTION 1

Equitable and Accessible Alignment with Student Learning Goals and Standards

What do our students need to know and be able to do, and how will all students best learn these concepts and skills?

THOUGH CONTINUOUS IMPROVEMENT IS A CONSTANT THEME OF THE PROFESSION, the past few years expanded our scope as educators to put action behind theory to design learning activities and support systems to educate the whole child.

For example, **CAST's Universal Design for Learning**[1] has influenced empathy in educators for many years, highlighting how to design inclusive and accessible learning activities and environments with their framework. Also, the events of the pandemic thrust social-emotional learning (SEL) into the foreground, and substantiated it with significant financial investment from the CARES Act and subsequent rounds of additional funding. **CASEL**[2], a leading authority for defining and implementing SEL practices, has been instrumental in helping educators and families understand the interrelated nature of a student's non-academic needs impacting their learning progress. The culture has shifted for all roles in the modern school and implementing SEL support effectively can be supported with our edtech choices and even how we **espouse digital citizenship**[3] in our practice.

UDL and SEL may be two of the most important examples for school leaders reprioritizing strategic efforts, and as broad-reaching frameworks, they serve as an excellent backdrop for other redesigns to stay current and relevant in our offerings as educators. More recently, the "ChatGPT Effect" forced another seismic reaction to school leaders contending with the greatest disruption to assessment since the Internet broadly became available in schools (which in immediate hindsight seems too recent given the current pace of innovation). Plagiarism and cheating on projects and tests permeated the headlines of mainstream and education press alike. Banning ChatGPT at school or on student devices was the reaction, but educators are formulating responses that embrace how AI can be used and *should* be used.

The good news is as mentioned above, this is the inflection point for converting known theoretical approaches to redesigning teaching and learning to actual practice. What awaits on the other side is a more equitable and accessible learning environment and experience for all learners as well as all educators.

Below, we showcase several examples of how organizations, districts and ISTE are responding to both the highest order of human need (for both students and teachers) aligned with responsibly embracing emerging technologies. The key (or perhaps, the goal) is to stay adaptable and keep people at the center of redesigning holistic approaches to student growth that surface even in our edtech procurement decisions.

CASEL

CASEL's SEL Framework provides educators with a comprehensive structure for considering all the growth needs of young learners beyond academic standards and allows for evidenced-based strategies to be easily implemented in any school. Effective use of their framework increases equity for all learners and educators alike. CASEL provides a robust library of resources to navigate conversations around SEL with staff and the larger learning community alike.

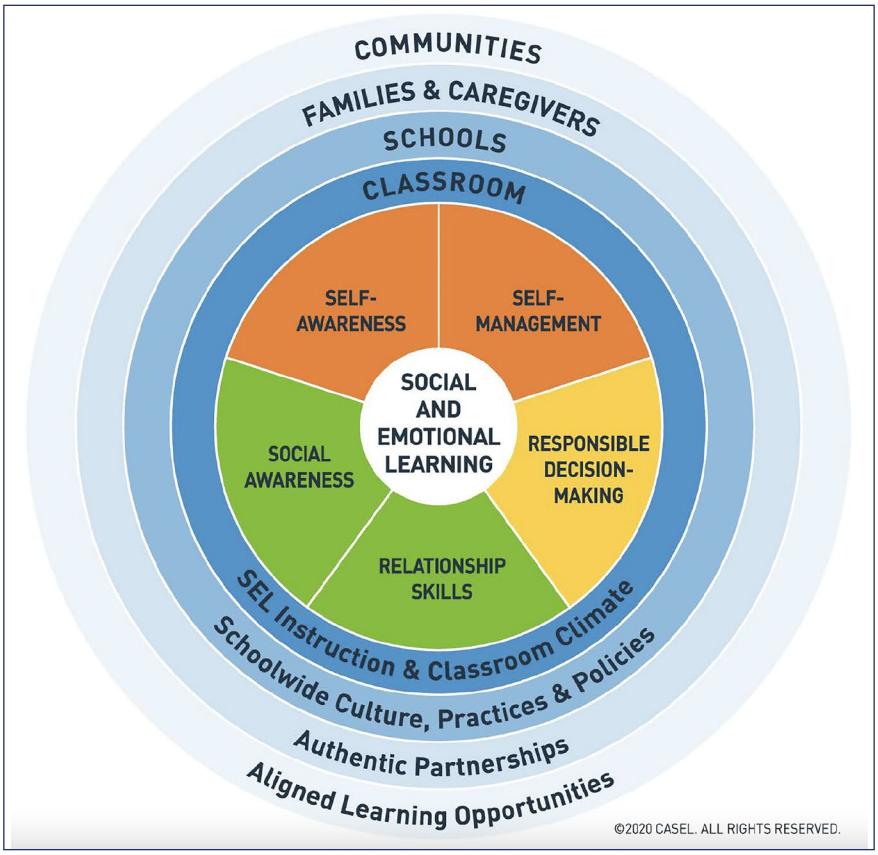

Figure 1.1. CASEL SEL Framework. Provided courtesy of CASEL © 2023. All rights reserved.

CAST Universal Design for Learning Framework

CAST is a learning organization committed to removing barriers to learning by helping educators and organizations apply insights from the learning sciences and leading-edge practices to educational design and implementation. The Universal Design for Learning Framework is time-tested for organizing and managing a culture shift for interventions that work for student growth.

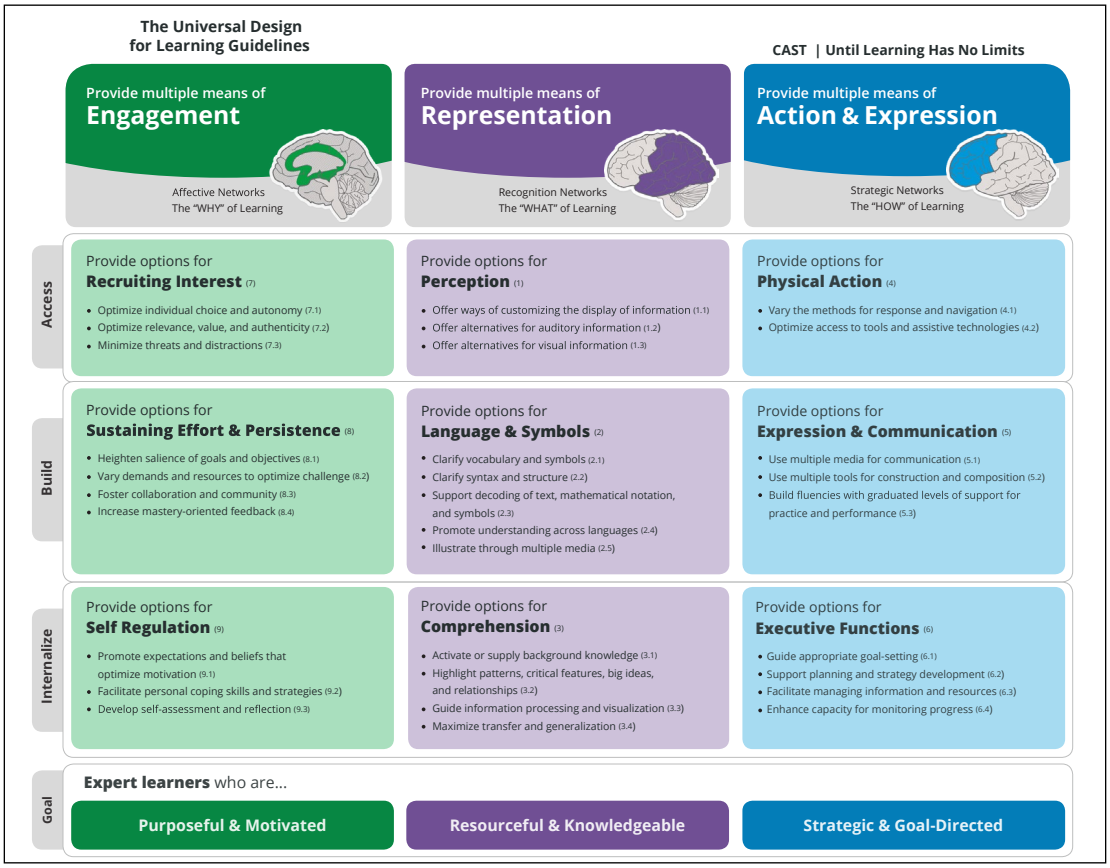

Figure 1.2. CAST Universal Design for Learning Framework. Provided courtesy of CAST (2018). Universal Design for Learning Guidelines version 2.2. Retrieved from **http://udlguidelines.cast.org**

ISTE Product Certification Framework: Seal of Alignment + Teacher Ready Projects

In June 2023, ISTE announced its new Product Certification Framework rebuilt to combine the **ISTE Seal**, which recognized edtech tools aligned to the **ISTE Standards** with a new consideration for teacher usability that prioritizes an edtech product's intuitiveness and efficacy for in-service teachers. The framework intends to serve the betterment of both parties, solution providers and educators, by providing indicators to consider for efficiently iterating products that solve problems.

To develop the framework, the ISTE Research team completed a suite of research activities including user experience studies and a literature review to thoroughly explore characteristics of edtech product usability. Covering both technical and pedagogical usability, the usability framework cites five dimensions including user interface and agency, learning design, digital pedagogy, inclusivity, and data and assessment. Below is an example of Dimension 4, Inclusivity.

Framework Indicators for Dimension 4: Inclusivity

4.1 Diverse Representation

The product features content and activities that reflect a diverse range of people and cultures as is reasonable given the purpose and content of the lesson.

LOOK FORS: (a) Examples include a wide variety of people in lay and professional situations; (b) examples are diverse without relying on stereotypes; (c) multiple diversity aspects include gender, race, ethnicity, ability, orientation, socio-economic backgrounds, religion, body type, immigration status, and/or nationality.

4.2 Empathy Opportunity

The product provides helpful cues to support the development of social skills such as empathy building and constructive communication when there are diverse perspectives.

LOOK FORS: (a) Content and activities encourage students to "put yourself in the shoes" of others; (b) content and activities facilitate perspective-taking ("windows") and self-reflection ("mirrors") to explore differences; (c) the product generally encourages an asset-based perspective (considering people's differences as strengths) rather than focusing on differences as deficits.

4.3 Accessibility

The product demonstrates that it meets many of the core principles of accessibility guidelines (e.g. from WCAG guidelines for web accessibility) at a minimum level so that content (including support videos) is accessible to a wide range of people with physical, learning, cognitive or other disabilities.

Another resource is finding a product's Accessibility Statement and, if provided, VPAT. A product's Accessibility Statement indicates to what degree a product complies with recognized web accessibility standards (such as WCAG). A product's VPAT, usually created by vendors to communicate accessibility features and compliance to buyers, is a standardized report detailing which web accessibility criteria a product meets.

LOOK FORS: (a) Closed captioning for audio and video (including support videos) is easy to find; (b) speed control for audio and video is available; (c) important functions (e.g. buttons) use high contrast design (e.g. white text on dark button background for light mode apps). One resource for educators is the **EALA Tech Tool Library**, a free library, which highlights product's accessibility statements and features.

4.4 Inclusive Awareness

The product provides reasonable opportunities for learners to build their awareness of issues related to inclusivity and equity, especially individual, structural, and cultural aspects of privilege, power, and oppression.

LOOK FORS: (a) Inclusion of the perspective of marginalized and oppressed people in narratives; (b) explicit discussion of oppressive "isms" and how power is used to control people and knowledge; (c) reflection activities about the importance of social context and power dynamics.

Technology should never be a goal unto itself, but when mindful educators fill their digital platforms with evidenced-based approaches like those framed above, the magic of learning and growth emerges for both student and teacher alike.

Any thoughtful adoption of resources begins with the same question, "What do our students need to know and be able to do?" Whether you call it backward design or something else, you know effective teaching and learning starts with this question. Some of these goals are based on state-level content standards. Others are a thoughtful fusion bringing together curriculum standards and local guidelines with professional standards, such as the **ISTE Standards for Students**[4] and **Educators**[5]. Whatever the standards, you know the best way to guide student learning pathways is by beginning with a clear destination in mind.

Once you've established these larger goals, you're able to identify what needs to be done to reach those goals through a system of formative and summative assessments. You're charting the pathways your students might take to show their mastery of identified skills and content. Oftentimes, this is where teachers begin to inventory the tools and resources at their disposal for supporting student learning.

In effective, thoughtful classrooms, it is only after educators identify learning goals, assess student needs and take stock of available resources that they begin to ask what technological solutions they might leverage to improve student learning. Just like when you plan a trip, you're unlikely to begin with the decision of what mode of transportation you'll be using before knowing where you're going, what experiences you are seeking along the way or the route you'd like to take. An airplane isn't going to satisfy your yearning for a road trip, and it would be an exorbitant cost to visit friends a few towns over. In this same vein, if an edtech solution doesn't address identified goals and needs, student learning can plummet while educator and student frustration skyrocket.

Identifying Your Edtech Needs

- What do you want students to know and be able to do?
- What do you need to do to help them master these key concepts?
- What effective tools and resources are already available?
- What are the needs you're looking to meet in the edtech marketplace?

Only after considering student needs and goals, learning pathways and taking stock of what is currently available does it make sense to start asking what the marketplace has to offer regarding additional tools. Otherwise, technology becomes a solution in search of a problem.

The Value Add of ISTE Standards

Solutions designed with the ISTE Standards in mind are uniquely positioned to support the development of digital age learning skills, capacities and knowledge. They are quickly becoming the beacon by which curriculum and technology staff navigate the often complex world of selecting, evaluating and implementing edtech solutions.

Alignment with the ISTE Standards is different from alignment to content standards, such as **Next Generation Science Standards**[6] or state content-area standards. Whereas curriculum standards describe what content and

discipline-specific skills students need to learn, the ISTE Standards describe the way technology might help students and teachers address specific learning goals and amplify learning regardless of content area or grade level.

Alignment With Content-Area Standards

Alignment with content-area standards indicates that a solution:

- Covers targeted content.
- Addresses specific learning goals.
- Promotes accepted pedagogies and pedagogical approaches.

Alignment to the ISTE Standards

Alignment to the ISTE Standards communicates that a solution:

- Takes advantage of digital resources for instruction.
- Uses technology effectively and appropriately.
- Promotes digital age learning skills.
- Prepares students for digital age work and life.
- Encourages technology-powered pedagogy.

When districts and educators apply the ISTE Standards, they design technology selection, integration and application solutions based on pedagogical best practices and guide the adoption of digital resources based on global technology learning standards. One service ISTE provides to assist with this process is a list of solutions vetted and aligned to the ISTE Standards, bearing the ISTE Seal. The ISTE Seal recognizes excellence among edtech products and platforms. With this update to the product certification, the ISTE Seal examines not only the solution against ISTE Standards but also the user interface and pedagogical usability to ensure products and platforms are education-ready. The new seal allows for a wider range of edtech product evaluations to include assessment tools, curriculum, learning platforms—and eventually, professional development solutions.

While you still need to be sure they align to your specific goals and needs, it can be a good place to start. Read about the **ISTE Seal**[7] to learn more.

Understanding the ISTE Standards

The ISTE Standards map out a blueprint for re-engineering schools and classrooms to support digital age learning. Educators and education leaders worldwide can use them to create innovative learning environments no matter where they are on their tech integration journey. The standards include:

- **ISTE Standards for Students**
- **ISTE Standards for Educators**
- **ISTE Standards for Education Leaders**
- **ISTE Standards for Coaches**
- **ISTE Standards for CS Educators**
- **ISTE Computational Thinking Competencies for Educators**

Designing and Supporting Best Practices For All

Veteran educators know that the recent explosion in edtech spending does not directly correlate to growth in academic nor non-academic outcomes. However, gains in productivity and personalization yielded by more efficient tools may contribute to both the bandwidth and the interests-based approaches to real world learning models, projects and activities. The recent mainstream equity thrust has repositioned an educator's influence on developing entire learning communities that strategically and empathetically account for the needs of all learners as best as they are able. As SEL and mindfulness have entered the discussion alongside concerted efforts in DEI, so has conflict and controversy at the local level. Aside from politically-skewed interpretations of what social-emotional learning and mindfulness portend, what matters is educators and families alike are moving forward with an increased awareness of, and demand for whole-child supports in the school day and beyond.

The field needs to continue to make space for this trajectory that strives to include all young learners and their unique qualities, both intrinsic and extrinsic. Therefore this section strives to provide the plumbing to carry the content needed to achieve the unique outcomes on a local level that make for remarkable stories between educators and their students.

Equity Requires Accessibility for All in Learning

The most universal example of accessibility in practice very well may be a wheelchair ramp. Though ramps have been added to buildings before it was required, thoughtful design can accommodate such a legal requirement while eliminating the need for two separate ways to approach and enter a building. Modern edtech should be designed with the same sort of thoughtfulness towards a goal that all users have success with the solution with minimal friction in the user experience, and improve in accessibility over time with subsequent enhancements.

For educators, accessibility can be unintentionally undermined when we design instructional activities by combining different digital tools or blending "analog" activities. This is where technology integration frameworks can help thoughtful and inclusive design permeate in a manner that is realistic in accordance with a teacher expanding their

aptitude and capacity across lessons. Such frameworks support a balanced approach, allowing educators to both iteratively refine lessons based on field testing and incorporate the emergence of new approaches or solutions.

It is important to note that these frameworks focus on technology integration rather than explicitly addressing accessibility. However, when such frameworks are used to encourage specific consideration of how technology can enhance learning for all students, especially in consideration of those with disabilities or learning differences, accessibility becomes a driving factor in decision-making. We suggest one of the following for starting points.

The SAMR Model

For years now, **Dr. Ruben R. Puentedura's[8] SAMR Model[9]** has provided high-level guidance and a technique for moving through four degrees of technology adoption: substitution, augmentation, modification and redefinition (SAMR). While the model includes guidance that can help educators use edtech to accomplish traditional tasks, it is also a call to action for solutions at the modification and redefinition levels.

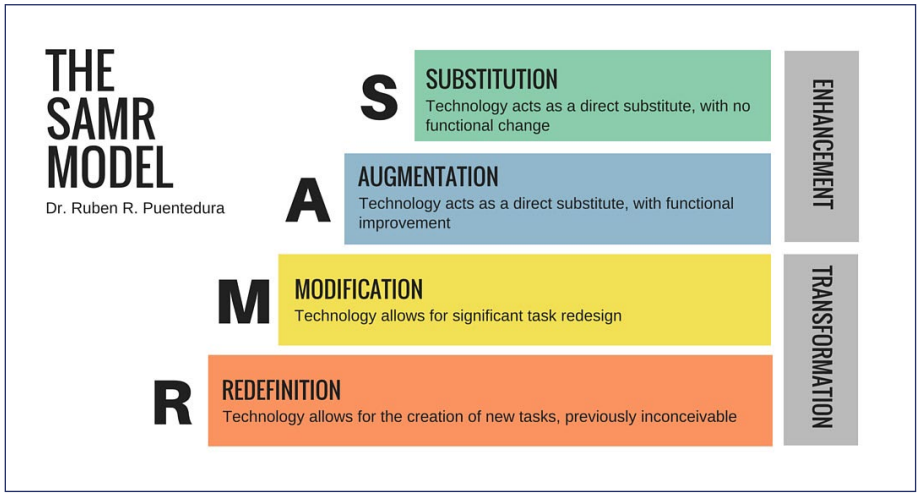

Figure 1.3. The SAMR Model. Image presented with permission by Creative Commons®

At these levels, technology is used in transformative ways to redesign or create new learning experiences. When this model for identifying how a product supports best practices and student learning is combined with content and ISTE Standards, they together provide a robust framework that raises the bar on both content and pedagogical requirements for any technological tools under consideration.

While the SAMR model does not specifically address accessibility, this model can be used to reflect on how technology can be leveraged to make teaching and learning materials more accessible and inclusive. For example, when thinking of *substitution* and accessibility, educators can consider not just how technology acts as a direct substitute for traditional materials, but how the substituted technology thus allows for customization or accommodations for all students, especially those with disabilities or learning differences.

TPACK

More technical than SAMR, the **TPACK** model, short for "Technological Pedagogical Content Knowledge" intends to make the instructional designer mindful of the intersection between three domains or areas. The premise is that more valuable learning takes place in the overlaps between at least two if not all three domains as seen in their diagram[10] below:

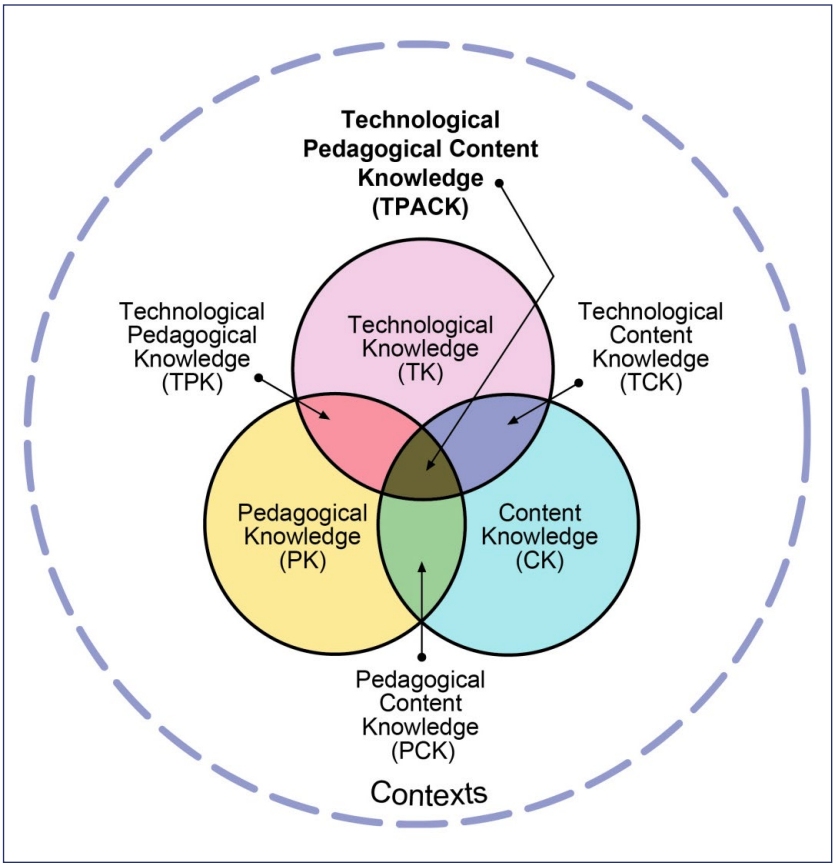

Figure 1.4. TPACK model. Image courtesy of **http://tpack.org**

The framework is pragmatic, with ample definitions for each overlap and what it means across content areas and developmental stages or grade levels. As such, TPACK promotes equity and inclusion during instructional design. Though the TPACK model does not explicitly address accessibility, this model can be used to consider how technology can be used to accommodate diverse learner needs and provide accessible, inclusive learning experiences. For example, when considering integration of accessibility within Technological Knowledge (TK), this may look like identifying and implementing assistive technology or accessibility features. More information can be found at the **TPACK website**.

The Technology Integration Matrix

The **Technology Integration Matrix**[11], or "TIM" may have the most humane sounding acronym, but it is by far the most technical of the three frameworks presented here. This framework developed by the **Florida Center for Instructional Technology** (FCIT) at the University of South Florida in 2006, is also the more mature of the three mentioned here.

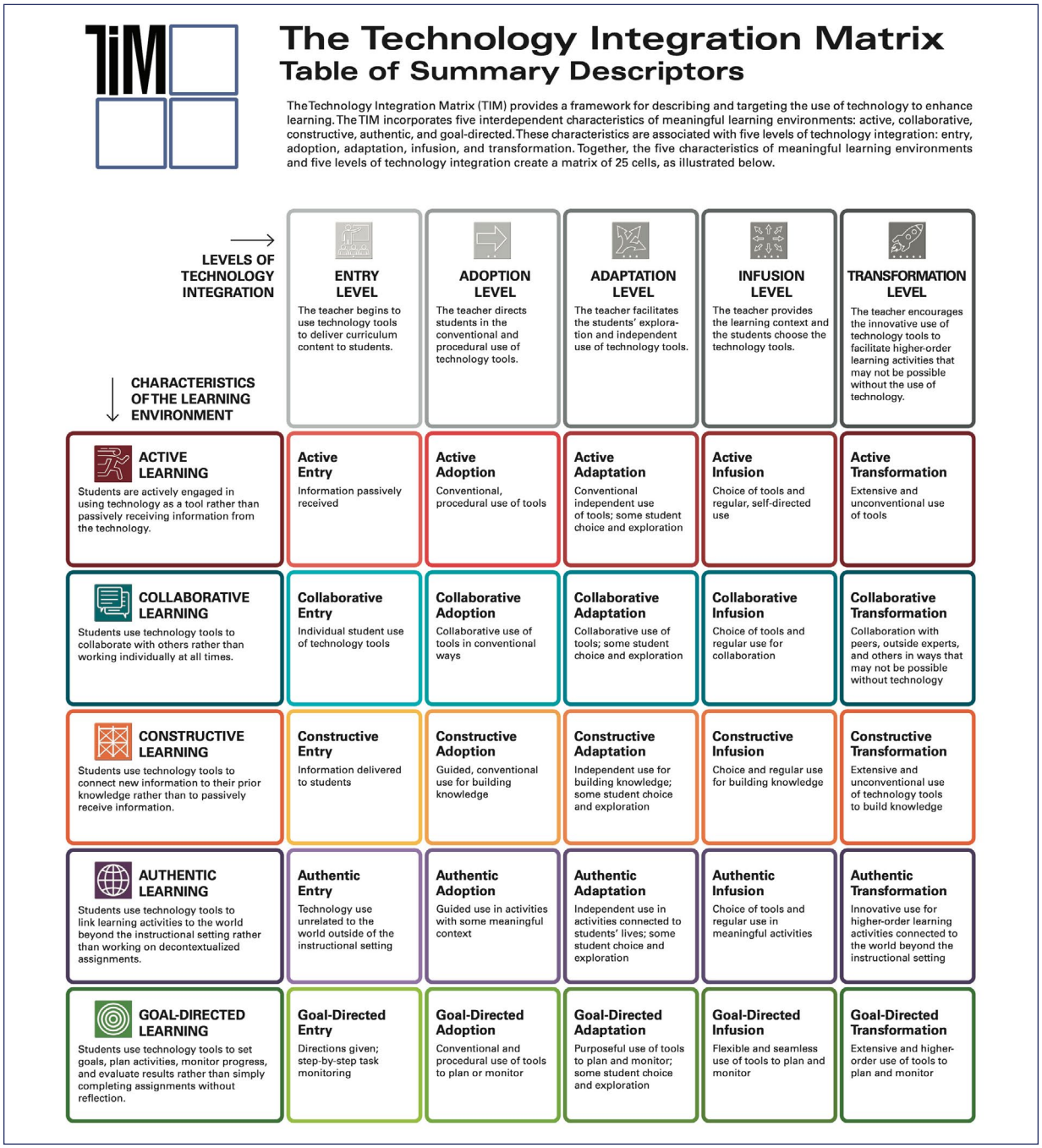

Figure 1.5. The Technology Integration Matrix. Image courtesy of The Florida Center for Instructional Technology. (2019, June 1). Technology Integration Matrix Table of Summary Descriptors. Retrieved from **https://fcit.usf.edu/matrix/matrix/**

The FCIT offers a vast array of resources and services for educators to evaluate and plan for increased levels of integration for pedagogical gains, from documentation and research through graphic organizers and templates.

Overall, while technology integration models like those above may not specifically address accessibility, by applying models thoughtfully and incorporating accessibility considerations, educators can enhance educational experiences of all learners.

Recommendations

Tremendous power exists in bringing district- and school-level stakeholders to the table to identify the goals, needs and possible challenges of technology deployments. Fortunately, there are roles each can play to increase the likelihood of successful partnerships:

Educators Can:

Develop statements of need. Few people in education systems have a better or more nuanced understanding of student needs than classroom educators and special education staff. By documenting those needs, teachers can paint a clearer picture for district-level staff.

Ask administrators in. By inviting administrators to join them for lessons highlighting identified needs, teachers can build bridges between district policy and practice.

Leaders Can:

Identify where teachers aren't and invite them. District-level leaders can look across regularly occurring meetings and adoption cycles and identify where teachers aren't part of the process. Where teachers are absent from the conversations, districts can ask, "How might we make this more inclusive?"

Visit classrooms. Many administrators used to be teachers. As such, they have memories of their own classrooms, but perhaps not clear pictures of the ins and outs of modern classrooms. By visiting classrooms and even co-teaching lessons, district leaders will gain a detailed understanding of those in their charge.

Educators and Leaders Can:

Examine available data to identify areas of need. While district leaders might bring summative data to the table to discuss student standard mastery, classroom educators can uncover data that provide more nuanced portrayals of student progress.

Develop a shared inventory of existing tools and resources. This inventory can identify available tools not necessarily known to all parties.

Design the process. While some components of procurement will be set by law or local policy, many aspects are in the hands of educators. By co-designing the negotiable pieces of procurement, district- and school-level educators can make sure the end process fits the needs of all stakeholders.

Map the curriculum. Mapping across grade-bands using the ISTE Standards or other pedagogical framework can help determine where digital solutions best fit the curriculum.

VOICES FROM THE FIELD

Educator Voice: This Is What Successful Edtech Vetting Looks Like

For years, Richmond Public Schools (RPS) in Richmond, Virginia has been developing and supporting a STEM and STEAM ecosystem for computational thinking, edtech integration, model making, programming and coding. A key component of the ecosystem was an edtech resource called **littleBits**, now owned by the education robotics company, Sphero. LittleBits puts the power of electronics into the hands of any teacher or student without having to build circuits from scratch.

RPS had stringent procurement guidelines for vetting new edtech and solution providers. To purchase a new tool such as littleBits, staff had to first make sure it was on the Virginia Department of Education's state-approved Perkins Grant equipment list[12]. Then they had to speak to a state specialist and submit a written request for approval. The written request needed to include the following:

1. A rationale for how littleBits would improve curriculum and instruction in classrooms, along with a timeline for procurement, delivery, teacher training, classroom implementation, embedded support (classroom visits) and data collection/reflection for planning interventions and next steps. The district operated on a calendar of four nine-week sessions, with new implementations tested early in the year in an after-school program or in a summer enrichment program. The district chose to roll out littleBits in a STEM camp that took place during summer school.
2. Evidence that littleBits was aligned to the state's academic standards and competencies[13]. The littleBits STEAM kits came with an educator's guide[14], 20 hours of curriculum[15], PowerPoint slides, videos, rubrics, invention documentation and alignment to the NGSS. This made it an easy sell to RPS.
3. A plan for sustained support and or professional development by the solution provider and the district IT department. It is important to note that typically the RPS school division would not procure edtech if departments within RPS—the IT department, for example—were unable to support it.
4. Evidence of student outcomes. Staff had to explain in detail how students would benefit. They even led a demonstration at a principals' meeting.
5. Approval by multiple supervisors. Both directors and assistant superintendents had to sign off on all new partnerships, edtech purchases and solution providers.

LittleBits worked well for the district from the beginning. In recent years, the tool has expanded its options to include game-based coding into electronics with the Code Kit[16], which includes all of the educational resources[17] an educator might need, from lesson plans to student handouts to information on how it was intended to address standards from the Computer Science Teachers Association, the Common Core and ISTE, as well as the Next Generation Science Standards.

Story courtesy of Richmond Public Schools.

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SECTION 2

Importance of Research and Evidence

How do we know what works and what doesn't, and in what context?

THE FIRST QUESTIONS CONSIDERED when adopting new classroom technologies tend to focus on usability, dependability and affordability. Is the technology easy to log into and use by a wide range of learners without extended explanations? Does it function 100 percent of the time? Is the cost justifiable and within budget? These are essential questions, and potential solutions must meet those criteria to be considered.

However, there are four additional questions, too often overlooked yet equally essential, that go beyond functionality and price:

- Does it work?
- For whom?
- Under what circumstances and in what context?
- How do we know?

If you are doing the hard work of identifying needs outlined in Section 1, it is incumbent on you and your team to design a procurement process that questions how well the tools and resources you select meet those needs. Research and evidence can reveal an edtech solution's full learning potential as well as its flaws. Fortunately, when the procurement process is a partnership within a school system, determining effectiveness becomes a lighter lift.

Considering Levels of Evidence

Among the provisions of the **Every Student Succeeds Act** (ESSA)[1], signed into law in 2015, is a requirement that all Title I schools (those with high numbers of students experiencing poverty) purchase evidence-based learning interventions based on redefined best practices. The law outlines[2] four levels of evidence and the Office of Educational Technology now offers a **variety of non-regulatory guidance** to support understanding and implementing satisfactory evidence-based solutions. Here are their four tiers of evidence:

Tier 4: Preliminary. Demonstrates a rationale based on high-quality research findings or positive evaluation that such activity, strategy or intervention is likely to improve student outcomes or relevant outcomes; and includes ongoing efforts to examine the effects of such activity, strategy or intervention.

Tier 3: Promising. Evidence from at least one well-designed and well-implemented correlational study with statistical controls for selection bias.

Tier 2: Moderate. Evidence from at least one well-designed and well-implemented quasi-experimental study.

Tier 1: Strong. Evidence from at least one well-designed and well-implemented experimental study.

When considering these tiers of evidence, educators should keep in mind two factors: validity and reliability. In the world of research, validity means asking whether a study actually measures what it says it's measuring. The more independent efficacy studies can attenuate the signal to noise ratio for end users, their need for efficient but thorough evaluation of their options, and the edtech company's track record for delivering on promises made to individual purchasing local education agencies, the better it is for both stewardship and innovation.

Reliability means asking whether research shows a consistent result. By ESSA standards, Tier 1 evidence is likely to be more valid than the other levels of evidence, and more than one piece of Tier 1 evidence would also show strong reliability. The ESSA guidance also advocates for a continuous improvement model. In such a model, as educators provide feedback on the tools they use, they help solution providers refine their products while also building a body of evidence that can propel effective solutions into a higher tier.

Terms and Definitions

Correlation study. Does not require a control group. Instead, any kind of group assignment is used to collect data, and correlational analyses are used to explore the relationship between predictors and outcomes.

Quasi-experimental study. Nonrandom assignment used to assign some people to an intervention and others to a nonintervention (control) group. Test of hypothesis.

Experimental study. Random assignment used to assign some people to an intervention and others to a nonintervention (control) group. Test of hypothesis.

Reliability. Can your study replicate the same result time after time? If so, reliability is good.

Selection bias. Can bias result from an imperfect, nonrandom assignment of individuals to groups? If so, selection measures must be taken to avoid bias.

Validity. Do your measures actually measure what you think they're measuring? If so, validity is good.

While ESSA requires that Title I schools purchase evidence-based interventions with their Title I dollars, it does not specify which sources of research are acceptable or recommended. Studies show that districts and educators evaluating edtech struggle to find reliable research about those tools. As discussed in the introduction, results from a recent survey sponsored by ISTE and the EdTech Evidence Exchange revealed that the vast majority of educators rely heavily on general web searches or peer recommendations to find information about a solution's potential for impact rather than rigorous high-quality research.

What transpired between solution providers and end users during the pandemic is worth further commentary given how dynamically the relationship accelerated. Free software licenses through the end of the outgoing school year and even into the new one was the new standard for edtech. Whether purely altruistic or not, **Natasha Singer of the New York Times** reported[3] a full year into the pandemic that it was working exponentially well for some of the best known brands in edtech. Singer wrote from her research that schools and districts that elected to make use of tools new to their

users continued on with those solution providers, fortified by ESSER or EANS funds. This means that schools purchased licenses with for-profit edtech companies in reaction to the uncertainty of the moment, and perhaps lock in multi-year contracts without confidence the solution had efficacy and thus value for the per-student rate the solution provider annually charges the district.

Based on the Education Research Perspectives Study sponsored by ISTE and Jefferson Education Exchange (JEX). More than 1,100 educators, district staff, school administrators and technology leaders from all 50 states were surveyed.

The survey also found that despite frequent use of provider-published research as a basis for decision-making, a large majority of educators didn't hold this research in high confidence, citing that they didn't necessarily believe that providers were well-equipped to conduct reliable edtech research.

While many more solution providers need to commit to investing in rigorous research when developing their solutions and to collect reliable evidence of its effectiveness, research should be as unbiased as possible in order to best serve both the edtech provider and the purchasing end users. Until this becomes the norm, educators are rightful to be wary. While the vast majority of provider claims of effectiveness are well intended conjecture for their carefully designed products, they typically lack the neutrality of independent and longitudinal research and results apply to limited contexts that may not match your school or classroom.

Types of Evidence to Consider

Context matters. What might work in one school or classroom might not work in yours. This places a significant responsibility on those involved with procurement decisions. You will need to consider two important aspects of any evidence you come across that supports the effectiveness of a given solution. First, you must ask how reliable the evidence is, meaning how rigorously and objectively it was collected and whether those collecting it are credible, unbiased sources. If the evidence passes this test, you must then consider whether the context in which the evidence was collected is similar enough to your own context that you are likely to see similar results. The **Mathematica Center for Improving Research Evidence**[4] has identified four main types of evidence[5]. While each type plays a role in the evaluation of an edtech resource, each varies in its ability to provide reliable, actionable information. It is essential

that those involved in the purchase process be able to distinguish evidence levels of different quality, reliability and credibility.

When considering evidence, you are likely to be coming from one of two perspectives: either looking back asking, "What evidence already exists?" or looking ahead asking, "How can we collect the evidence we need?"

ANECDOTAL: IMPRESSIONS FROM USERS' EXPERIENCES		
Strengths	**Weaknesses**	**Common Sources**
• Flexible with potential for deep insights • Can provide information on specific contexts and details on how/where a solution was implemented	• Weakest form of evidence • Based on an individual's impressions • Cannot provide generalized findings	• Blog posts • Testimonials • Promotional videos • Reflections
DESCRIPTIVE: MEASURES OF OUTCOME OVER TIME		
Strengths	**Weaknesses**	**Common Sources**
• Provides basic descriptions on potential impact • Common and easy to find in marketing materials and news articles	• Leaves out information about critical factors that may have influenced the outcome (e.g. teachers, classroom, curriculum, etc.) • Does not provide comparison group outcomes	• White papers • Pre/post examination summaries
CORRELATIONAL: COMPARISONS OF USERS AND NON-USERS		
Strengths	**Weaknesses**	**Common Sources**
• Identifies a relationship between use of a solution vs. no-use • Provides comparison group outcomes	• Does not demonstrate directional causality • Cannot be used as conclusive results	• White papers • Comparison charts • Independent researcher reports
CAUSAL: ACCURATE MEASURES OF EFFECTIVENESS		
Strengths	**Weaknesses**	**Common Sources**
• Limits solution as single variable • Only reliable method for demonstrating true effectiveness	• Difficult and expensive to conduct	• Research journals • Summaries or peer reviewed articles • Independent researcher reports

Created based on information from Understanding Types of Evidence: A Guide for Educators, published by the Mathematica Center for Improving Research Evidence (https://bit.ly/2tNzDAv).

Looking Back

In considering practices and implementations of technology with track records of improving learning, you have a few possible points of entry. One good starting point is the **What Works Clearinghouse (WWC) Practice Guides**[6]

that are built upon vast bodies of applied research around key areas of instruction and present them as succinct, evidence-based recommendations for teaching and learning. WWC is an initiative of the **Institute of Education Sciences** (IES) at the **U.S. Department of Education** (ED), charged with reviewing existing research on programs, products and practices in education, including but not limited to edtech. You can find additional evidence by exploring databases such as **ERIC**[7], a searchable online library of education research and information sponsored by the Institute of Education Sciences at ED.

Other online search starting points include **scholar.google.com** and databases available through university, school and local public libraries. While they might not curate research in the same ways as ED's resources, these methods can sometimes provide more recent and varied types of research beyond academic journals. You may want to consider teaming up with a researcher or a research librarian at a local university to assist you with these searches.

It is important to read any research with a critical eye. Ask yourself:

- When was the research done? Is it out of date?
- Who conducted the research and who funded it? Did the researcher or funder have a vested interest in a particular outcome?
- What is the sample size and who does it represent? How similar or different are the participants to those you plan to work with?
- What is the methodology? What type of evidence is provided? Where does it fall on the ESSA tiers?
- Are there outliers in the data, and are they addressed in the interpretation?

Looking Ahead

Reviewing research and familiarizing yourself with proven practices can give a sense of what to look for as you consider the ever-changing marketplace of available edtech. Ideally, strong evidence would be published about every effective solution. However, the edtech landscape changes so quickly that the best solution may not yet have amassed a significant amount of published research to support its claims. This requires educators and district leaders to consider how to review the newest and most promising tools without the benefit of multiyear formal research studies.

While the experiences and opinions of peers aren't the most rigorous sources of evidence, educator reviews can serve as a useful preliminary indication of a solution's potential when collected with a consistent framework taking into account context and usage details.

The **EdSurge Product Index**[8], a revision of the former ISTE Edtech Advisor, collects feedback from ISTE members and presents the database through an intuitive user interface that quickly and easily allows educators to find solutions, and winnow down options for their own evaluation. Also, **LearnPlatform**, now owned by **Instructure**, offers evidence-based solutions for school districts entering the market with particular needs and research support for member solution providers to calibrate marketing claims with efficacy evidence. Lastly, the **EdTech Evidence Exchange**[9] collects and displays information from educators about their district context and edtech tool use. In doing so, educators and school leaders can learn from the experiences of others using edtech in schools or districts like their own, and make evidence-based decisions about the tools that are likely to be the best fit for their instructional contexts.

If schools and districts are to move beyond the limitations of peer referrals and an often-limited set of solution-specific outcomes data, they will need to take on new responsibilities to conduct rigorous, systematic evaluations themselves.

Some districts partner with researchers at local institutions to do this. Others use digital tools to help them conduct their own research as they pilot or use digital tools day to day.

For example, the **EdTech Rapid Cycle Evaluation (RCE) Coach**[10] developed by **Mathematica Policy Research** in partnership with **SRI International** and funded by the **Office of Educational Technology of the U.S. Department of Education**, provides a free web-based platform and resource to help educators and their districts plan and execute rapid-cycle evaluations of a solution. The RCE Coach provides educators with resources to learn about rapid-cycle evaluations, tools to help design and implement an RCE, and a platform for keeping track of the status and outcomes for successful RCE trials.

LeanLab also offers a research framework and approach which emphasizes the co-creation of research objectives, methodologies, data collection, and dissemination among researchers, educators, and technology developers. Their work is premised on the belief that when power is shared in the research and development of innovative products, these solutions have the potential to be liberating approaches to education.

Conducting a Pilot Study

Pilot studies are savvy, research-driven approaches to building the case for or against the broader adoption of a new technology tool in classrooms and schools. From the grassroots perspective, pilot studies can help early adopters build a body of evidence for approval of a new tool or resource or jumpstart the procurement process for wider adoption. From the system level, partnering with teachers to engage in pilot studies can determine validity and reliability of a resource under consideration without making a school or district wide commitment to something that might not be an effective answer to identified needs. A well-designed pilot can provide data that can be used to evaluate, select and implement edtech with confidence that it will meet desired goals.

LeanLab's **Codesign Product Research** work matches innovative edtech companies with aligned school partners to conduct product development and evaluation research.

Digital Promise's Edtech Pilot Framework[11] describes a comprehensive eight-step process for running successful pilots. The framework also provides tools and resources for pilot design and implementation, analyzing and collecting data and negotiating purchases. Also included are study briefs synthesizing findings from multiple pilots of popular edtech products. EdTech solution providers are often eager to partner with schools looking to test out their products in school settings. Data from those implementations can guide product improvements, while positive findings help them build the evidence base for their product.

Digital Promise Edtech Pilot Framework

Step 1. Identify Need

Step 2. Discover and select

Step 3. Plan

Step 4. Train and implement

Step 5. Collect data

Step 6. Analyze and decide

Step 7. Negotiate and purchase

Step 8. Summarize and share

*Created based on information from **https://edtech.digitalpromise.org**.*

Recommendations

Overall, it's important to consider the type and amount of research needed in the context of the edtech resource and how it will be used. For example, research needs for a free tool that will be used a couple of days per year are vastly different from research needed for a comprehensive reading program that will be used every day. That said, even free tools need to comply with student privacy laws and district data sharing agreements, so every edtech resource needs to be systematically vetted.

Educators Can:

Ask to pilot a resource rather than adopt it. District leaders are often wary of approving something new for classroom use. Driven by their responsibility to prevent the ineffective use of resources and knowing the propensity for tools adopted in one classroom to spread widely, they are more likely to deny an outright request for adoption. By seeking permission to pilot a tool first, you'll be assisting them in building a body of evidence of effectiveness and setting clear goals and parameters around the use of the new tool.

Contribute reviews and evidence. By publishing your results and reviews to online platforms, you are engaging in the kind of responsible digital citizenship you're hoping to find when you look for reviews of technology tools.

Educators and Leaders Can:

Agree to quality research and evidence. Building school- and district-level consensus of what levels of research and evidence are necessary before implementing a new technology tool or resource sets standards of practice and can help limit the spread of ineffective tools. Keep in mind the usefulness of setting such standards for classrooms, schools, school levels and districts.

Come to the conversation equipped with research. Whether you are a teacher advocating for a new online service or a district administrator urging the use of adopted curricular resources, you are much more likely to shift the thinking of your audience by consulting resources before making your case.

Schools and Districts Can:

Make space and allow for pilot programs. Avoid creating barriers to innovation that push teachers underground in their adoption of new tools and resources by making sure that the policies are rigorous enough to protect all stakeholders and ensure proper use of scarce funds but expansive enough to keep up with the rapid pace of edtech deployment, improvement and adoption.

Evaluate nimbleness in meeting technology needs. If your school or district policies and procedures aren't built to accommodate a world where users can download and deploy applications from marketplaces in a matter of moments, they are not nimble enough to maintain teacher buy-in. When educators have to wait for many weeks or months for classroom apps to be approved, they are tempted to work around the system instead of working in it. By revising these policies and procedures, you encourage transparent teacher practices and increase your ability to understand what's working for students and why.

Conduct pilots in multiple contexts at the same time. If a single classroom is the extent of your district pilot, you'll likely face an uphill battle in shifting the practice of teachers who feel like their context is so different as to make the pilot's results irrelevant. By conducting pilots across classrooms and schools in multiple contexts, you build the reliability and validity of the solution you're advocating for as well as create a cohort of coaches and ambassadors if you move to wider adoption.

VOICES FROM THE FIELD

Educator Voice: Leveraging Data to Improve Edtech Use

In a subject like math, where each concept builds upon the last and students get their light bulb moments at different paces, keeping all learners engaged is often a struggle. So when educators at Lipman Middle School[12] discovered a website that promised to advance student achievement through adaptive math lessons presented as animated games, adventures and challenges, they decided to give it a try.

The only problem was they couldn't tell whether they were using the tool effectively.

The Brisbane, California school wanted to know whether the money it spent on the math education program DreamBox[13] was resulting in effective use of the software—and if not, how could the math program improve its technology usage to maximize its edtech dollars?

The math department turned to LearnPlatform for help. The edtech management system integrates data from multiple sources, such as educator feedback, product usage and student achievement data, to provide an evidence-based analysis of a tool's effectiveness and ROI. Using the resulting reports and dashboards, the math department hoped to analyze DreamBox use alongside student growth and share the findings with teachers to help them reflect on how effectively they use the program.

"I wanted to make sure that the time students were spending in an application was effective and having a positive impact on achievement," says Principal Jolene Heckerman. "LearnPlatform offered a way to analyze this."

The middle school found that although there were multiple pockets of growth related to the amount of use, the strongest positive relationship between product use and achievement growth fell among students who completed fewer lessons per week than the vendor recommended number. The discovery spurred teachers to seek professional learning about the program and how it could better fit into their instructional practices. It also resulted in recommended changes to instructional time and curriculum design.

As a result, teachers committed to using Dreambox on a consistent basis, ultimately improving student outcomes and helping the school achieve a higher ROI on its edtech spending.

"It was helpful to see the differing degrees of implementation among my teachers and the corresponding effect on student achievement," Heckerman says. "Teachers who gave students adequate time in the program saw higher levels of progress and achievement."

Another big takeaway: "The report also clearly showed how it was not cost-effective to purchase the program for inconsistent implementation."

Repurposed with permission, from a LearnPlatform case study.

NOTES

1 "Every Student Succeeds Act (ESSA) | U.S. Department of Education". **https://www.ed.gov/essa?src=rn**

2 "Using Evidence to Support EdTech Adoption in Schools". **https://tech.ed.gov/evidence/**

3 "Learning Apps Have Boomed in the Pandemic. Now Comes the Real Test", Natasha Singer, New York Times. **https://www.nytimes.com/2021/03/17/technology/learning-apps-students.html**

4 "Reviewing and Using Evidence to Support Policy and Program Decisions". **https://www.mathematica.org/case-studies/reviewing-and-using-evidence-to-support-policy-and-program-decisions**

5 Four main types of evidence.

6 WWC | Practice Guides. **https://ies.ed.gov/ncee/wwc/practiceguides**

7 ERIC | Education Resources Information Center. **https://eric.ed.gov/?**

8 EdSurge Product Index. **https://index.edsurge.com**

9 EdTech Evidence Exchange. https://edtechevidence.org

10 e2i Coach (Evidence to Insights Coach) | Mathematica. **https://www.mathematica.org/solutions/e2i-coach**

11 "Edtech Pilot Framework - A process to help run successful ed-tech pilots". Digital Promise. **https://edtech.digitalpromise.org**

12 "Lipman Middle School Case Study," LearnPlatform. **https:// static1.squarespace.com/static/56339016e4b095e84e825b9c/t/599ce108893fc09434e519c4/1503453451649/**

13 DreamBox Learning. **https://www.dreambox.com/k-8-math-lessons**

SECTION 3

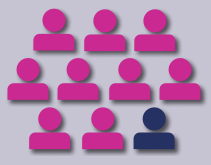
Data Interoperability and Student Privacy

How do solutions collect, share and secure student learning data?

WHETHER YOU ARE A CLASSROOM TEACHER making the case for the district approval of a new reading or math application or a school or district administrator working to increase the use of new online curricular resources, interoperability matters to you.

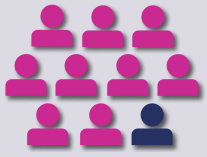
In this guide, the term interoperability refers to the seamless, secure and controlled exchange of data between systems and applications[1]. According to survey data from Project Unicorn, a nonprofit aimed at improving data interoperability in education, 88 percent of districts and 67 percent of educators report data interoperability as a major concern impacting procurement decisions and a solution's effectiveness. These districts and educators report that their focus on the need for interoperability is driven by the desire to find new ways to engage students and the role that having access to data can play in identifying how to personalize learning for individual students. This underscores the need for greater interoperable solutions.

DATA INTEROPERABILITY: WHY IT MATTERS



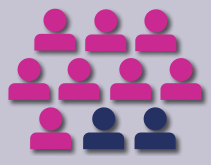
88%

of districts say that interoperability is a concern that influences procurement decisions[2].



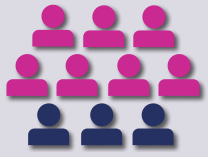
93%

of teachers use digital tools[3].



78%

of educators believe that data can validate where their students are and where they can go.



67%

of teachers are not fully satisfied with the effectiveness of the data and tools they have access to on a regular basis[4].

Based on information from https://www.projectunicorn.org/state-of-the-sector

Without interoperability, districts and educators bear the financial and productivity burden of manually performing tasks that applications can do automatically. Without the seamless integration and sharing of data across solutions, educators may be forced to:

- Manually enter student roster and other information into each tool separately.
- Keep track of multiple usernames and passwords.
- Log in to multiple dashboards to retrieve reports and access student learning data.
- Manually export and synthesize data across solutions to get a big picture view of student learning.
- Put their students at risk because of insufficient privacy and security protections for student data.
- Lose time gathering data that could help learners progress faster while enabling families and teachers to better support student growth.

Impact of Data Interoperability on Productivity

While the primary goal of data interoperability is to help educators more efficiently build a body of evidence and effectively use it to transform learning, it can also have a positive impact on educator productivity. Seamless data exchange between applications and course management systems can save educators countless hours on administrative tasks that can be used instead to create new learning opportunities for students and innovate around teaching and classroom practices.

Interoperability also makes it easier for districts to verify and monitor that an edtech tool has sufficient privacy and security protections. Rather than idiosyncratic laundry lists of interoperability requirements, districts are requiring solution providers to support data interoperability standards to be considered in procurement processes. Data standards are the rules by which data are described and recorded. These standards are necessary to share, exchange and understand data. Support for these standards by an edtech resource typically ensures that it will share data with other edtech resources that support the same standards. Examples of data standards bodies include:

- **Ed-Fi Alliance** provides interoperability standards and services for data sharing among educational solutions with resources for schools and districts to get started.
- **1EdTech** is a member community that provides a suite of interoperability standards and specifications for data sharing across solutions and devices.
- The **Common Education Data Standards** (CEDS) provides general information about interoperability and data sharing across the education sector.
- **Access For Learning** (A4L) provides specifications in their **Schools Interoperability Framework** (SIF) for how data should be shared among educational solutions.

For educators, interoperability means knowing which standards your district requires or supports when requesting a tool or resource for classroom use—even if it's only your classroom. Doing the homework of verifying interoperability on the front end means increasing the likelihood of district support should you and your colleagues seek wider approval or adoption of a specific technology further down the road. For many technology options, alignment to given data standards can be found under the support or privacy sections of their district website. If the standards aren't readily apparent, a quick message through the contact section will often do the trick.

Related technical assistance organizations and resources include:

- **Project Unicorn**, which supports solution providers[5] and school systems[6] that pledge their commitment to increasing secure access, privacy and data interoperability in their organization, provides a **list of 10 questions**[7] to ask solution providers before any purchase decisions are made. By asking these questions, you will gain a good understanding of how a particular solution prioritizes and follows data interoperability and privacy standards.
- **Common Sense Education Privacy Evaluation** initiative strives to bring transparency to data privacy issues and provides teachers with resources to help make more informed decisions around edtech.
- **Data Quality Campaign** leads advocacy efforts around the use of student data to improve learning.

Improving Privacy and Security

In addition to solving interoperability challenges, implementing data standards also improves the privacy and security of an edtech tool. This trifecta of benefits comes at a time when data interoperability, student data privacy and security concerns are at an all-time high. Given the mix of formally district-approved and non-district approved adopted edtech resources in use in classrooms around the world, ensuring student privacy and data security is now the responsibility of educators at all levels.

It's essential that educators keep student data private. This is a requirement of federal and state laws governing schools and data sharing for minors. Even while protecting the privacy of student data, schools can still allow controlled, secure access by trusted individuals when doing so helps students learn and helps educators do their jobs better. Though surveys prior to the pandemic show most parents support the collection and usage of student data by educators and administrators, implications for data privacy are currently in flux as the edtech landscape accommodates the advent of large language models along with other examples of machine learning and artificial intelligence. A strong majority of parents support the collection and use of addresses and phone numbers, health records, participation in school lunch/breakfast programs and criminal records. However, parents have varying levels of comfort with who has access to the data including edtech providers or the organizations behind key technology frameworks.

Getting data privacy and security wrong can mean catastrophe for the school and solution provider, frustrated families and possibly running afoul of state or federal law; getting it right can mean a secure and interoperable data ecosystem that helps educators and parents better understand a student's needs and successes. For this to work, student performance data needs to flow securely from edtech systems back to the school and from the school to other systems that allow that data to be analyzed and made available for teachers and families to use to understand and improve student learning. This must be done in a way that protects student privacy.

To help educators strike the right balance between interoperability and security, some nonprofits have created guidelines for assessing a solution's compliance. **Common Sense Education**[8] evaluates popular edtech tools based on their ability to meet legal privacy requirements and best practices, and provides easy-to-understand ratings of privacy alignment. Additionally, the **Consortium for School Networking** (CoSN)[9] provide easy-to-follow guides[10] for considering how edtech tools follow the various privacy policies and address the most pressing topics for today's edtech leaders, which works in accord with the research and reporting offered by advocacy organizations mentioned throughout this guide such as:

- The **Center for Democratic Technology**
- The **Data Quality Campaign**
- The **Future of Privacy Forum** and their **Student Privacy Compass**
- The **Student Data Privacy Consortium**

Districts are emphasizing and prioritizing solutions that meet the various federal, state and local privacy laws such as:

- **Child's Internet Protection Act** (CIPA)
- **Child's Online Privacy Protection Act** (COPPA)
- **Family Educational Rights and Privacy Act** (FERPA)
- **General Data Protection Regulation** (GDPR)

Recommendations

Whether advocating a grassroots classroom approach to edtech adoption or making the case for systemwide use, data interoperability, security and privacy are relevant and necessary to each stakeholder in the procurement of education technology. Since the last publication of this guide, ISTE has released a redeveloped resource, The **EdSurge Product Index**.

The EdSurge Product Index highlights key information on student data privacy, interoperability, accessibility, and digital pedagogy by pulling together market indicators and validators/badges (e.g., 1Edtech, CommonSense Media, iKeepSafe, Digital Promise, and Project Unicorn). The following suggestions to frontline educators can be applied to the Index as well as any other sources intended to improve procurement decisions when vetting edtech solutions.

Educators Can:

Conduct data checks whenever considering a new tool. From apps for mobile devices to online platforms and services, anytime you consider using a new tool, check the "about us" and "privacy" sections of their documentation to make sure it meets your school's or district's standards. If you're unsure of those standards, check with your technology department.

Ask for the data you need. Helping your school and district better understand what data you need in order to meet your students' needs can mean the difference between getting a spreadsheet of scores and an interactive dashboard with attendance, assessments and other information for more complete understanding.

Educators and Leaders Can:

Ask questions regarding data security, privacy and interoperability. Regardless of one's role in the procurement process, considering these issues and conducting some quick research at the outset will help avoid headaches and frustrations down the road.

Build a shared understanding of thorough and complete bodies of evidence of student learning. While school and district leaders will have specific questions regarding students' learning progress, classroom teachers and school leaders will approach data with different perspectives and questions. Partnering to ask,

"What kind of picture do we want and need our student data to tell?" will mean building toward interoperability that works for everyone.

As part of the **Access for Learning**[11] (A4L) organization, the **Student Data Privacy Consortium**[12] (SDPC) is a unique collaborative of schools, districts, regional entities, territories, state agencies, policymakers, trade organizations, and marketplace providers. The SDPC created the National Data Privacy Agreement (NDPA), which provides common contract language that follows industry and regulatory standards and saves time in contract negotiations between education agencies and solution providers. At the time of this publication, SDPC data privacy agreements are in place in 36 states and 4 countries and have saved education over $40 million in legal fees. Learn more: **privacy.a4l.org**

Schools and Districts Can:

Ask what educators need and build a plan to help families understand how data are used. Including all stakeholders when assessing data needs and explaining how those data are handled deepens trust and understanding. These conversations will require time and careful attention but will be worth it.

Clearly communicate data security, privacy and interoperability requirements for your system. By working with educators across the district to jointly develop and clearly communicate your data expectations, you're bringing educators into the process and establishing a system that provides incentives for them to seek permission rather than forgiveness.

VOICES FROM THE FIELD

Educator Voice: Decoding Edtech Privacy Policies

Teachers put a lot of time into choosing edtech tools, getting the software installed, setting up classroom accounts and preparing lesson plans. But do they know what happens to their students' data once they log in?

Middle school teacher Colleen Carter-Skiles wanted to find out. She decided to review the privacy policies for three platforms she uses with her students on a daily basis:

- **Belouga**[13], which allows students to interact with peers all over the world.
- **PenPal Schools**[14], a global project-based learning community.
- **Duolingo**[15], a language learning site.

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"Evaluating the privacy policies, terms of service or legal sections of educational technology software is something the majority of us would prefer to skip," says Carter-Skiles, who teaches middle school modern language for Lincoln County R-3 School District in Troy, Missouri. "Nevertheless, it's important that we read and understand them, because buried in the legalese is what we are consenting to let happen when our students click 'log in.'"

In August 2018, Carter-Skiles dove in, comparing the three policies in an attempt to determine what types of information each app collected and how the data could be used. Ultimately, she wondered, did their policies align with the **Children Online Privacy Protection Act** (COPPA), which governs the use of student data?

She discovered that while some edtech tools have specific privacy policies in place for student users, others may appear to extend only general protections to general users.

"The policies of Belouga and PenPal Schools had two sections: one for educators (schools, districts and teachers) and one for students," she says. "Due to federal and state laws, the information is handled differently for each and the policies are separate to make that clear to readers."

For her review, she focused on the student sections of the policies. Both platforms, designed for use by minors, appeared to meet legal data privacy requirements. Belouga's privacy policy specifically referenced its alignment with COPPA. Even though PenPal Schools policy did not mention COPPA by name, its policy also aligned with the law. Both policies stated that use of the site means the teacher or school gives consent for the student to use the platform with the permission of parents or guardians. No other personal information except students' basic login information would be collected or shared with anyone—including third parties.

The policies did state that the platforms "may offer third-party products or services on the websites that directly relate to educational content," with links to the third parties whose own independent privacy policies would take effect upon clicking the link. Since she's never seen a student click any of the links in three years of using the site, she wasn't too concerned.

"In Belouga and PenPal Schools, as students interact with each other, they can volunteer more identifying information than is necessary to log in into the site," Carter-Skiles says. "For the safety of the students, communication can be monitored by teachers and the community with a feature built into the platform. This allows educators to make sure that students are not giving out usernames, passwords, home addresses, telephone numbers or any other identifying information."

Duolingo's privacy policy, on the other hand, looked a bit different. The website, which serves general users while providing a special Duolingo for Schools platform for educational use, allows students to log in to the general platform with their Google account information, then use a teacher-supplied class code and link to access Duolingo for Schools.

"I did not find a privacy policy specific to the Schools platform, and the majority of the policy did not apply to the Schools platform," she says. Instead, she found only a single section that appeared to address general users.

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"However, when a student enters Duolingo for Schools, the teacher is able to take control of the privacy settings of the students' account. The teacher has the option of turning off the students' ability to create a social profile, join the forums, join or create a club, or access the events page. When these features are enabled, a student can interact with others on Duolingo without the teacher monitoring the interaction. For example, a student can create a club and share the code with others to join. Other Duolingo users can also join the club."

So, what did she learn from the exercise, and what changes will she make in her use of these three tools?

"Based on their privacy policies, I will continue to use all three platforms in my class on a regular basis," she says. "However, while I am confident that my students' privacy is protected with Belouga and PenPalSchools, for Duolingo I will take a more proactive approach for protecting student privacy."

For Belouga and PenPalSchools, she plans to continue obtaining parental consent for student usage by:

- Informing parents that students are using the platforms.
- Giving parents the opportunity to view the privacy policies themselves.
- Allowing them to opt out for their students.

With Duolingo for Schools, she plans on taking some extra privacy measures, such as:

- Allowing students to create accounts on the platform using only the school's Google accounts.
- Disabling the clubs, forums, events and social profile features.

"This will prevent students from interacting with anyone through Duolingo for Schools without my direct supervision," she says.

Repurposed with permission from a post25[16] published September 7, 2018.

NOTES

1 "Data Interoperability in K–12 Education," Project Unicorn, **https://www.projectunicorn.org/what-is-interoperability**

2 "Teachers Know Best: Making Data Work for Teachers and Students," Bill & Melinda Gates Foundation, **https://bit.ly/3NEI6C0**

3 "TheStateofDataInteroperabilityinPublicEducation," Digital Promise, https://digitalpromise.org/wp-content/uploads/2017/08/DataInteroperability_Final.pdf

4 "Education Post: 2015 Parent Attitudes Survey," Education Post, https://docplayer.net/19946904-Education-post-2015-parent-attitudes-survey.html

5 Edtech Vendor Pledge, ProjectUnicorn, **https://www.projunicorn.org/vendor-pledge**

6 District, School and NetworkPledge, ProjectUnicorn. **https://www.projunicorn.org/district-school-network-pledge**

7 "10 Questions for Edtech Vendors: Know Before You Buy," Project Unicorn. **https://bit.ly/3CEWALW**

8 Common Sense Education. **https://www.commonsense.org/education**

9 Consortium of School Networking. **https://cosn.org**

10 Toolkits & Playbooks | CoSN. **https://www.cosn.org/tools-resources/toolkits**/

11 Access 4 Learning Community. **https://home.a4l.org**

12 Student Data Privacy Consortium (SDPC). **https://privacy.a4l.org**

13 Belouga | Learn about the world, with the world! **https://belouga.org**

14 PenPal Schools - A Global Project Based Learning Community. **https://www.penpalschools.com**

15 Duolingo—The world's best way to learn a language. **https://www.duolingo.com**

16 Colleen Carter-Skiles, "Student Privacy and Digital Learning Platforms," CSI: Connections, Strategy, Instruction (blog), September 7, 2018, **https://bit.ly/3qRrCh5**

SECTION 4

Challenges of Implementation, Use and Ongoing Support

Do we have the right people, policies and resources in place?

EACH OF THE PIECES of the decision-making process outlined here is just that—a piece. Sustainable, systemic and effective procurement partnerships between school/district leadership and educators require their own type of infrastructure for support. Understanding needs, recognizing opportunities for professional learning and building clear channels of communication between all parties are the bulk of the work. In addition to the recommendations in the prior sections above, assessing your system's conditions essential for success and building educator capacity for understanding student needs and effective implementation can better ensure successful procurement, rollout, implementation and evaluation. Two recent pieces of work support education leaders in this pursuit, detailed below.

The EdTech Genome Project

The EdTech Evidence Exchange[1] identified a list of contextual variables through the collaborators contributing to the multi-year research and development of The **EdTech Genome Project**[2]. The project team, with participants from over 100 learning organizations, settled on 10 specific contextual variables that impact the return on investment in edtech solutions.

The final report from the group offers comprehensive definitions of these variables as well as guidance for how to evaluate readiness, implement with integrity and monitor efficacy with provided measurement instruments.

Leveraging the ISTE Essential Conditions

Likewise, based upon quality research and aligned to each set of standards, the ISTE Essential Conditions provide a framework for educators and their schools and districts to understand the elements necessary to implement and leverage technology for learning effectively.

The **ISTE Essential Conditions** are divided into three categories each outlining specific considerations that need to be addressed: people, policies and resources. They highlight the roles both districts and educators play in creating favorable conditions for the use of technology to support learning. School and district responsibilities in building the Essential Conditions include:

- Ensuring that there is a systematic plan in place for the use of digital learning resources that focuses on student-centered teaching and learning practices.
- Having policies in place to ensure equitable access to the digital resources, as well as financial plans, accountability measures, incentive structures and other policies to support the use of technology throughout the school or district.
- Empowering educators to take part in the decision-making process and soliciting regular feedback from educators about how things are working (or not).
- Ensuring that educators get sufficient training, support and time to plan and use technology in their classrooms.

Districts that have established true procurement partnerships also have educators working to realize the Essential Conditions by:

- Contributing to the development of a shared edtech vision in their school/district.
- Advocating and requesting ongoing professional learning opportunities to ensure that they are effectively leveraging available solutions.
- Making sure digital curriculum resources align with and support digital age learning and complement standards and student learning goals.
- Getting support both in learning how to use a solution and in knowing how to apply it to their classrooms.
- Making sure they know how to get technical help without significant lags–do they know who to ask and what the process is for getting support?
- Providing ongoing feedback to support the continual assessment and evaluation of digital solutions.
- Maintaining an open relationship and ongoing communication with parents about what's happening in the classroom.

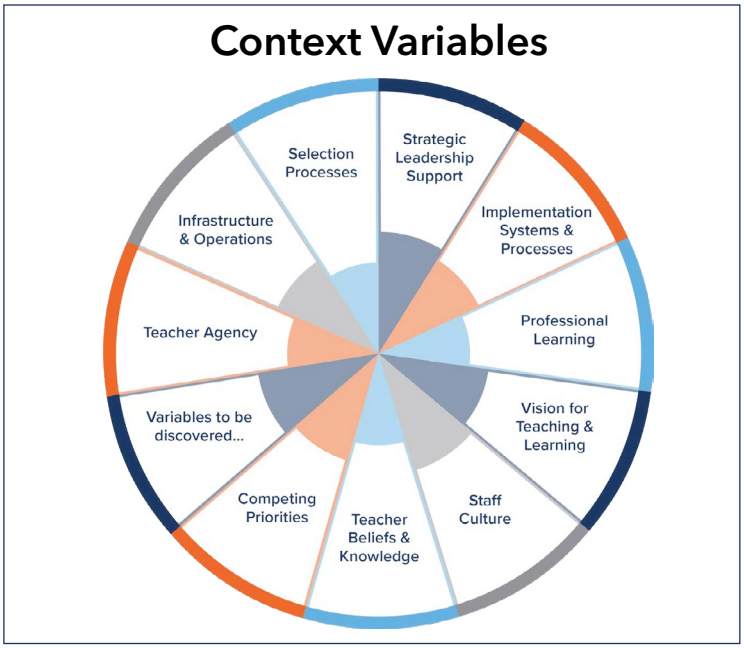

Figure 4.1. The Edtech Genome Project. Source: The EdTech Evidence Exchange.

ISTE Essential Conditions

- Shared Vision
- Implementation Planning
- Equitable Access
- Prepared Educators
- Skilled and Sufficient Technical Support
- High Quality Learning Activities and Content
- Ongoing Evaluation

Source: iste.org/standards/essential-conditions

District-Level Levers for Success

Because educators are responsible for integrating new learning resources into their practice, curriculum and learning environments, they have a unique understanding and perspective on what's important during the implementation phase. Moreover, they will have many questions. Before a new resource is deployed, budget for and ensure educators have access to ongoing, quality training and technical support. Consider the development of professional learning opportunities as a chance for partnership building. Rather than leaving classes and workshops to prepackaged, external professional development or building a standard-issue district slideshow, engage educators—early adopters and more reluctant users—in building the kinds of professional learning they wish they could attend. In addition, plan how you'll capture and share implementation success stories.

Without easy-to-use and responsive communication channels, technology implementations are much more likely to fail. Think of this as an extension and expansion of the conversations among all stakeholders during the tool identification and selection phase. A solution may be too complex or might otherwise not be a good fit for some classroom environments. Teachers might find that the tool isn't flexible enough to integrate successfully with existing content and resources. Without feedback channels, school and district leaders are unlikely to know a new effort is failing until after educators have made up their minds.

Even with the best planning, district leaders will face recalcitrant users who feel certain that edtech can't improve learning. Being open to questions, building supportive relationships between reluctant users and their successful peers, identifying the specific frustrations faced by individual teachers and thinking through how these new tools might ease their struggles can all help shift thinking and reduce resistance.

Many of the issues that cause edtech implementations to fail are out of an educator's purview, such as infrastructure or network incompatibilities, lack of bandwidth and holes in privacy or security. Educators who understand the value of a particular solution can help address the concerns of reluctant colleagues by championing edtech tools and demonstrating their value.

Educator-Level Levers for Success

Educator voices are invaluable to school and district edtech procurement and implementation efforts. Educators looking to play a larger role in edtech procurement should consider two key words for approaching the process—"how might." "How might I join in the selection of the new technology announced for every math classroom?" or "How might we make a clearer pathway for approval of teacher-discovered mobile apps?" A key phrase in many design-thinking protocols, asking how might assumes good will and opens your audience to the possibility of a new way of doing things.

In addition, coming to the conversation with evidence of need and potential solutions sets a positive tone. By running small-scale, classroom-level, sanctioned pilots, teachers can demonstrate the power of innovative tools and practices to improve student learning. Organizing or joining professional study teams or learning networks and sharing your learning with district leaders can also light the path for success.

Recommendations

Educators and district leaders bring unique perspectives to the edtech procurement process. Both groups also have key roles to play in leveraging those perspectives to ensure success and necessary refinement in implementations.

Educators Can:

Do their homework. Coming to the process prepared with research and examples from practical experience will amplify their voices.

Share success. Risk aversion is a natural and understandable tendency for district leaders responsible for sometimes hundreds of thousands of students. By demonstrating the tangible success of a tool or practice, you lower perceived risk and open the possibility for other innovative tools and approaches.

Leaders Can:

Listen to educator needs. Design processes and systems that make room for educators to pilot solutions of interest and ensure solutions meet stakeholder needs.

Co-design professional learning. Inviting educators to participate in the development of professional learning experiences will promote buy-in and improve quality.

Build space for feedback and act on it. Implementation is only the first step. Develop procedures for collecting, reviewing and responding to educator feedback. Technology deployments should be iterative processes.

Educators and Leaders Can:

Consult the Essential Conditions. You aren't the first educators or districts to consider technology to support student learning. Using and incorporating the language and ideas of the ISTE Essential Conditions as you examine your capacity to support change means learning from those who have come before you and avoiding common pitfalls.

Come to the process ready to listen. School and district leaders can see at scale. Educators can see specifics. By coming to procurement processes ready to hear and question those serving in different roles, all stakeholders will better identify specific needs and identify appropriate edtech solutions.

Own the partnerships. For district leaders, having educators involved in procurement might seem unorthodox or even unnecessary. For educators, their inclusion might seem like agreeing to a new dictionary of jargon. If all parties take time to identify why and how procurement partnerships can lead to better outcomes for students, some of these shifts will feel more natural.

VOICES FROM THE FIELD

Educator Voice: Educators Help Align Edtech Purchases with School's Mission

The leadership of Brebeuf Jesuit Preparatory School in Indianapolis had already started questioning some of their school's technology choices before the pandemic and had solid footing for navigating the unique changes wrought by COVID's shutting down schools globally.

JD Ferries-Rowe, former CIO turned Vice President for Campus Operations of the private college preparatory school serving nearly 800 students on the northside of Indianapolis, was well-poised for avoiding this pitfall. Before the pandemic, the school had modified its simple and inclusive method for piloting, evaluating and implementing edtech to empower their educators to play a larger role. They consider edtech purchases from late spring through early summer, with a rolling consideration during the rest of the school year based on cost and impact on student learning. Department leaders and administrators evaluate the school's technology needs in the context of the school's Jesuit mission as well as individualized student needs.

Ferries-Rowe said, "At the heart of Jesuit education is that you educate best in a strong, trusted relationship with someone. Our job is to maximize real-world learning experiences.. Everything we purchase has to increase or optimize relationships, experience, and reflection." He continued, saying the pandemic validated and galvanized their mission-centric approach to edtech procurement by universally elevating values that were in alignment with their Ignatian-Jesuit philosophy. Doing this as a team made decisions much easier–especially as their planning focused on how to emerge from the pandemic without forsaking the values that were reprioritized during those months: mental health and self care, learning together in safe spaces, the need for engagement impacting their instructional design.

Ferries-Rowe shared proudly how they thrived through the past three school years in accordance with their values. "Emotional withdrawal were real issues that had changed across the student body. Staff noticed how students returning to the classroom were even less comfortable in difficult conversations and social experiences." So, Ferries-Rowe and his team launched the "TAKE A BREAK" messaging

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campaign to make students more cognizant of the screen time they were logging. They bought phone holsters for the front of classrooms and public spaces to reinforce the value of the school day and for students to function away from their phones. Ferries-Rowe said this takeaway continues to the present at Brebeuf:

> If you're not reflecting, you're not learning; learning happens when one reflects and if you retreat into your phone to watch YouTube, Netflix, or scroll through social media you are not present in the moment enough to reflect and thus learn new concepts and material.

Now, the learning community is currently considering dedicated phone-free zones in buildings to reinforce what research says about the intersection between student personal device usage, mental health, and its impact upon educational outcomes.

These cultural shifts are less about specific technologies and more about maturing perspectives on the ways they impact collaboration for both students and teachers, academic and non-academic. But it's impacting how they go to market looking for new solutions to specific problems. Each year, educators help perform annual reviews to assess the impact of edtech resources used in classrooms to ensure they remain effective and continue to align with the school's mission. Their expanded involvement in the procurement process has helped Brebeuf make more mindful technology choices, Ferries-Rowe says. In addition to serving on the edtech recommendation committee, educators play an active role in requesting software for evaluation, piloting new tools, and evaluating their impact on students. A standardized scope of consideration for pilots asks the educator to evaluate the tool's impact on the classroom in a number of key areas, including:

- Does the software provide a new experience over current tools or learning opportunities?
- Does the tool conform to mission-specific pedagogical goals (for example, increased opportunities for hand-on experience, deeper cognitive reflection, or for increased opportunity to practice communication, informative or persuasive skills)?
- Does the tool meet an industry or higher education expectation of mastery?

If you don't have educators involved in evaluating alignment of edtech with a school's mission, it's likely that edtech purchases will fulfill the mission only by happenstance. With educators involved, we're continually asking, 'Is there a better way to do this?'

Together, the Brebeuf community elevated the learning experience for all, first by more shrewd evaluation and piloting of solutions, and then by approaching their practice with mindfulness. The school now has a waiting list for enrollment, and continues to invest and expand their campus and offerings for the community.

Shared with permission from Brebeuf Jesuit Preparatory School.

NOTES

1 The EdTech Evidence Exchange. **https://edtechevidence.org**

2 The EdTech Genome Project. **https://edtechevidence.org/AboutUs/TheGenomeProject/**

SECTION 5

Educators as Purchasing Partners

What questions should we be asking, and how do we bring everyone to the table?

WHEN DEVELOPING AN EDTECH PROCUREMENT PROCESS, the goal is to build a responsive, sustainable system that ensures student needs are met. No matter your job title, you have a role to play in the edtech procurement process. By reimagining procurement and bringing all stakeholders into partnership, schools and districts will be better positioned to ensure that classroom technology meets student needs. You have the ability to change learning.

Guiding Questions

The questions below are catalysts to help schools and districts reimagine and refine edtech procurement processes. Make note of the prominent role that questions of data interoperability, safety and privacy play in the "When Talking to Vendors" section. This is by design. A no or uncertain answer to any of these key questions should give your team pause and lead to follow-up conversations before other, less imperative questions are considered.

When Evaluating Current Procurement Practices

1. How do we ensure our procurement practices include educator voice?
2. What are our guidelines regarding the acquisition of edtech solutions outside of the school or district wide process? Can we co-design formal or informal protocols to offer clarity and guidance?
3. How might we systematize the evaluation of solutions and apps and share lists of approved resources?

Before the Purchase

1. What problem are we trying to solve?
2. Who should be included in the purchasing process?
3. What will success look like?
4. Are these needs already being met by existing resources?
5. What are our standards for data interoperability, safety and security?

When Talking to Solution Providers

1. What standards for data interoperability, safety and security does this solution adhere to?
2. What student data is collected? Is personally identifiable information collected?
3. How is student data and information used, disclosed and protected? Does the provider share student data with any other entity?
4. How does the solution let you import, export or synchronize information? What types of information and in what format?
5. If your district or school decided not to continue with the solution provider, what would happen to student data
6. Has the provider signed the **Project Unicorn Vendor Pledge** and/or received **Project Unicorn Vendor Interoperability Certification**?
7. Does the student have to login to use the solution?
    a. What information about the student is collected?
    b. Who has access to the information?
    c. Where is the information stored? How is it protected?
    d. Are we allowed to audit the privacy and security of student data?
8. In the event of a data breach, will our district be informed in a timely manner? How would the solution provider help with communications about a breach to affected students and their parents?
9. Which student learning goals is the tool designed to meet? What documentation or research do we have to verify that the solution will help us meet these goals?
10. Does the solution address an identified need and complement our curriculum?

When Making a Purchasing Decision

1. Does the solution meet our requirements for interoperability and data privacy and security?
2. Does the solution meet our definition of success?
3. Is the solution simply automating something in our classrooms or is it making something possible that would be impossible without technology?
4. Does the solution augment the teaching and learning process, or just replicate it in a digital environment?
5. Does the solution put users (educators and students) first?
    a. Is it engaging and motivating?
    b. Is it free of gender, racial, ethnic and cultural biases?
    c. Is it accessible to all students regardless of their learning differences?
    d. Do students like it?

When Piloting

1. Does the solution actually adhere to promised interoperability standards and pledges of data privacy and security?
2. What is required to implement a solution in the classroom and at scale?
3. What features/capabilities of the solution make it easy to learn and use for both students and educators?
4. What features/capabilities ensure that students of all abilities have access to it?
5. What happens if the solution is not feasible to implement?
6. How will we support educators in their use/implementation?
7. How will we manage the solution? Will the district or school manage it remotely, or do educators manage it in the classroom?
8. What barriers will need to be addressed before a more expansive implementation?
9. Is the district planning a staged rollout or will everyone get it at the same time?

After Implementation

1. Is the solution moving us toward our definition of success?
2. What learning are we gaining from implementation at scale?
3. How might we improve communication between users and the school or district?
4. What are unexpected educator and system needs, and how might we meet them?
5. What ongoing professional learning is necessary to improve success?
6. What is the roadmap for improving or extending/enhancing the solution over the next two to three years?

VOICES FROM THE FIELD

District Voice: Making the Procurement Process Work for Teachers

Protecting student data online can be difficult in a district with 8,500-plus students—especially when teachers can easily find free apps, bypassing the official procurement process and potentially putting students' privacy at risk.

But Sun Prairie Area School District in Wisconsin didn't want to tighten the reins and risk discouraging teachers from using edtech. Instead, district leaders developed a teacher-friendly procurement process that makes finding, vetting and implementing new tools as fast and painless as possible.

CONTINUED

District leadership valued building consensus over top-down procurement decisions. Their 48-hour approval process aims to take the hard work of vetting software off teachers' plates without limiting their freedom to choose the tools that work best for them.

Educators seeking new technology can start by consulting a database of pre-vetted edtech tools, rated based on alignment with both child data privacy laws and the district's instructional vision. Each entry includes notes about what the software does, how it can be used in the classroom and the appropriate age level. Leadership has been actively working on integrating the ISTE Standards into the database so teachers can see at a glance which standards each tool can help them meet.

Every app falls into one of four categories:

1. Tools the district approves, supports, pays for and will train teachers to use.
2. Tools that are approved and can be freely used on an independent basis.
3. Tools that are approved with stipulations, such as age or parental permission requirements.
4. Tools that are not approved because they don't align with the district's vision or data privacy policy.

Teachers who choose a pre-vetted app from the approved list can start using it right away, without any further action needed. Those who have a specific tool in mind that hasn't yet been vetted can submit a request form that asks questions such as:

- How does the tool connect to the curriculum?
- Will students be consumers or producers when using it?
- How easy is it to learn and use?
- What are some of the things they plan on doing with it?

As the staff vets each new app, they add it to the database. Where possible, she also attempts to connect educators with colleagues who are using similar tools in the classroom.

Since the district's vetting process is optional, not everyone uses it yet. But as teachers become increasingly aware of the importance of meeting data privacy laws, many are grateful to let the technology department handle the legwork.

Shared with permission from Sun Prairie Area School District.

Resources

Common Education Data Standards (CEDS) (ceds.ed.gov) provides general information about interoperability and data sharing across the education sector.

Common Sense Education (www.commonsense.org/education) is a searchable library of edtech tools based on price, grade level, subject, device and other key criteria.

Common Sense Education Privacy Evaluation Initiative (www.commonsense.org/education/privacy) strives to bring transparency to data privacy issues and provides teachers with resources to help make more informed decisions around edtech.

Consortium for School Networking (CoSN) (cosn.org) is a leading professional association for district and school technology leaders that provides an easy to follow guide for vetting how edtech tools follow the various privacy policies.

Data Quality Campaign (dataqualitycampaign.org) is a comprehensive eight-step process for running successful pilots. The framework also provides tools and resources for pilot design and implementation, analyzing and collecting data, and negotiating purchases.

Digital Promise (digitalpromise.org) is an organization that works with education leaders, researchers and technology developers dedicated to improving learning opportunities for all and helping to close the Digital Learning Gap.

Ed-Fi Alliance (www.ed-fi.org) provides interoperability standards and services for data sharing between educational solutions with user-friendly resources for schools and districts to get started.

EdSurge Product Index (index.edsurge.com/) is a searchable database which allows educators to compare learning technology products to find the perfect fit.

EdTech Evidence Exchange (edtechevidence.org) helps educators make better informed decisions about education technology through research, advocacy and various programs, publications and resource development.

ERIC (eric.ed.gov) is a searchable online library of education research and information sponsored by the Institute of Education Sciences at ED.

Every Student Succeeds Act (ESSA) (www.ed.gov/essa) requires all Title I schools (schools with high numbers of students experiencing poverty) to purchase evidence-based learning interventions based on redefined best practices.

Future Ready Schools (futureready.org) and the Future Ready School Framework (dashboard.futurereadyschools.org/framework). This project out of the Alliance for Excellent Education provides school leaders with resources created by leading practitioners and support for implementing learning with technology. Among the resources is a comprehensive and systematic approach to implementing digital transformations.

IMS Global Learning Consortium (www.imsglobal.org) is a member community that provides a suite of interoperability standards and specifications for data sharing across solutions and devices.

ISTE Essential Conditions (www.iste.org/standards/essential-conditions) is a collection of 14 critical elements necessary to effectively leverage technology for learning. ISTE also provides a free diagnostic tool (https://www.iste.org/standards/lead-transform/diagnostic-tool) that can help districts assess their alignment with the 14 conditions.

ISTE Seal of Alignment (www.iste.org/standards/seal-of-alignment) provides trusted data on how edtech products align to the various ISTE Standards. Products and services submitted to the program undergo a rigorous review by a panel of standards experts and are evaluated based on the extent to which they build the skills embodied in the ISTE Standards.

The ISTE Standards (www.iste.org/standards) offer a framework for students, educators, education leaders and coaches to amplify and transform digital age learning, teaching and leading.

LearnPlatform (https://learnplatform.com) is an edtech management platform that helps districts and organizations manage their edtech and get real insight on what's working and what's not.

Mathematica Center for Improving Research Evidence (https://cire.mathematica-mpr.com) produces resources to support the design and implementation of scientific research and evaluation approaches in education. Their mission is to build capacity to understand and use evidence, plan rigorous and relevant evaluations and improve research methods and standards.

Project Unicorn (www.projunicorn.org) works with educators and vendors to promote the importance of interoperability. Project Unicorn supports vendors (www.projunicorn.org/vendor-pledge) and districts (www.projunicorn.org/district-school-network-pledge) that pledge their commitment to increasing secure access, privacy and data interoperability in their products.

Project Unicorn's Ten Questions for Edtech Vendors (www.projectunicorn.org/resources/10-questions-for-edtech-vendors) is a list of questions to ask vendors before making procurement decisions.

Rapid Cycle Evaluation (RCE) Coach (https://tech.ed.gov/rce/) is a free web-based platform and resource to help educators and their districts plan and execute rapid-cycle evaluations of a solution.

SAMR Model (www.edutopia.org/article/powerful-model-understanding-good-tech-integration/) is a framework for moving through the four levels of technology integration: substitution, augmentation, modification and redefinition (SAMR).

Schools Interoperability Framework (SIF) (www.a4l.org/page/SIFSpecifications) provides specifications on how data should be shared between educational solutions.

What Works Clearinghouse (WWC) Practice Guides (https://ies.ed.gov/ncee/wwc/PracticeGuides) are publications that summarize research and evidence around key issues and areas of instruction.

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