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Technology Essentials for the Classroom

Best Practices, Specific Strategies, and Top Tools

K12 Hub | Content Originally Developed by Learners Edge

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Introduction | The State of EdTech

Ask any educator around how technology has evolved during their time in the classroom and they'll have stories to tell. I can recall early in my tenure gathering students around the trusty overhead projector and marching the class down to the computer lab for their 30 min of fun. Later in my career, I remember the wide-eyed wonder of my third graders as I handed out Chromebooks that they could take home each night and call their own. The role of technology has rapidly shifted from novelty device to indispensible learning tool. Students used to simply play games like Oregon Trail or Number Munchers and now they're creating presentations and coding their own programs. Over the years, educators have worked to keep up with these shifts, finding ways to use this new and ever-evolving technology to engage learners and deliver educational content.

Whether fully prepared or not, the rapid emergence of the global COVID-19 pandemic forced districts to dive into the largely-uncharted waters of remote learning. This quick pivot to all things digital catapulted the use of educational technology to new heights.

Educational apps like Google Classroom, Newsela, and Nearpod saw their number of users increase 2-5 times from 2019 to 2021. (NYT, 2021)

Entire school systems switched to online learning almost overnight, changing in-person routines and paper/pencil tasks to digital, while still maintaining connection, engagement, and motivation among distanced learners. This sudden surge of technology adoption has led to new and innovative approaches to teaching and learning.

Educators have found that these new technologies can boost efficiency, opening up more time for instruction, they can engage and empower even the most reluctant students, and nurture collaboration, even from a distance.

This fresh focus on technology presents new challenges and opportunities for innovation as we continue to navigate the new landscape.

However, as educators continue to evolve their practice post-2020, a few essential questions remain unanswered: **What does high-quality tech integration look like? What strategies and best practices can I draw on that support learning with tech? Which digital tools align with these efforts?**

This ebook looks to answer these questions and provide educators with the guidance they need to nurture a learning first classroom, with intentional and seamless tech integration.

The number of laptops and tablets shipped to primary and secondary schools in the United States nearly doubled to 26.7 million in 2021, up from 14 million in 2019, according to data from Futuresource Consulting. (NYT, 2021)

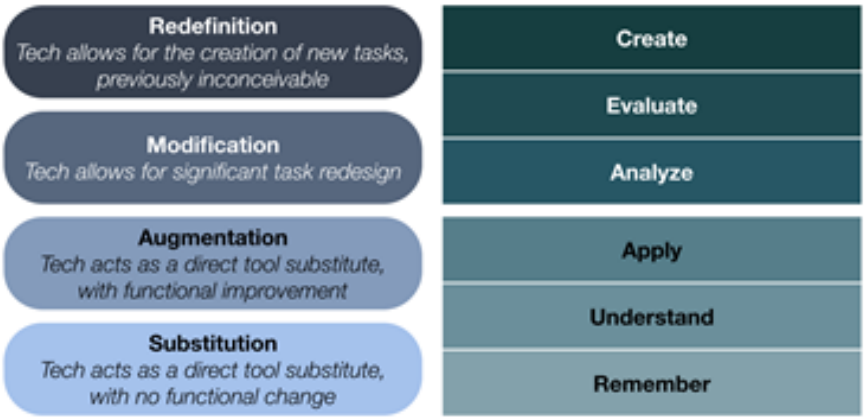
What does high-quality tech integration look like?

When we hone in on the meaning of tech integration, we are essentially referring to using technology in a way that improves the learning of content knowledge and the application of that content. With thoughtful integration, technology has the potential to both deliver content as well as support the application of that content in new and better ways. That said, research reminds us that technology alone can't create the conditions for student success, rather it's the instructional moves around the technology that lead to successful learning outcomes. **Technology then becomes a supportive bridge connecting learning objectives and student needs with opportunities for application, problem-solving, inquiry, and analysis.** When technology is integrated with learning at the forefront, powerful learning occurs.

> **TIP:** Most learners tune out after just **six minutes** of passive consumption of knowledge, so like high-quality teachers, high-quality platforms should break instructional content down into small, easily digestible chunks. That content can take a variety of forms—readings, videos, case studies, and graphics. But regardless of its format, the **content needs to be bite-sized.**

Over the past 2 decades, several frameworks have been developed with the intent to guide educators as they examine and implement technology, including SAMR, the Triple E Framework and the ISTE Standards. The overviews that follow can help you select one (or more) that supports your specific needs.

SAMR



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The SAMR framework, designed by Ruben Puentedura, lays out 4 tiers of increasingly sophisticated and transformational digital integration. The model guides educators towards tech integration that is purposeful and relevant, rather than simply new and exciting. SAMR shows educators the range of options in their tech toolbox and moves them to consider more transformative learning experiences (aligned with the upper levels of Bloom's Taxonomy -- Analyze, Evaluate, Create). The goal is not to "live" at the top tiers of the framework, but rather to pick and choose the right fit based on the lesson content and any curricular goals.

To better understand the SAMR model take a look at how this traditional paper/pencil project is transformed using the top levels of the framework:

GEOGRAPHY	
Original Assignment: Create an overview of a chosen regional location using written content and printed graphic images on poster paper.	
Substitution:	Use presentation software (like Powerpoint or Google Slides) to construct a presentation (text and images) providing information about a selected locale.
Augmentation:	Incorporate interactive multimedia – audio, video, hyperlinks – in the presentation to give more depth and provide a more engaging presentation.
Modification:	Create a digital travel video (using iMovie or Screencastify) that incorporates multimedia and student-created video.
Redefinition:	Explore the locale in 3D with Google Earth; seek out and include interviews with people who have visited the locale; create an interactive Google Earth project with added multimedia elements that is shared with an audience.

Additional Resources:

- A Powerful Model for Understanding Good Tech Integration
- SAMR + Bloom's: Example Verbs and Activities
- Google Earth Tutorial: Intro to Creation Tools

Triple E Framework

Liz Kolb (author of Learning First, Technology Second) researched and developed the Triple E Framework to help teachers better navigate the technology implementation process. Her framework, which puts learning goals in the spotlight, has 3 components: Engagement, Enhancement, and Extension. Kolb's research indicates that technology should help students meet learning goals in ways that wouldn't be possible without digital tools and that it should encourage active learning through creation, problem-solving, and collaboration. The Triple E Framework places learning goals at the center, offering teachers methods for evaluating technology resources that play a supporting role. The model is both a framework and practical measurement tool that:

- Integrates current research on effective teaching and learning strategies;
- Focuses on how the technology impacts the learner;
- Is user friendly;
- Evaluates both lesson plans and tech tools; and
- Examines pedagogical strategies in tandem with the use of tech tools.

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The following questions act as a lens through which you can evaluate any tech tool or lesson plan before implementation.

Triple E Framework

		Instructional Strategies
Extend Learning	Does the technology create opportunities for students to **learn outside** of their typical school day?	Turn & Talk
	Does the technology create a bridge between school learning and **everyday life** experiences?	Co-Use
	Does the technology allow students to **build skills**, that they can use in their everyday lives?	Gradual Release
Enhance Learning	Does the technology tool aid students in developing or demonstrating a more **sophisticated understanding** of the content?	Interactive Modeling
	Does the technology **create scaffolds** to make it easier to understand concepts or ideas?	I do, We do, You do
	Does the technology create paths for students to demonstrate their understanding of the learning goals in a way that they **could not do with traditional tools**?	Predicting
		Questioning
		Share-aloud
Engage Learning	Does the technology allow students to **focus on the task** of the assignment or activity with less distraction?	Think, Pair and Share
	Does the technology **motivate** students to start the learning process?	Guided Practice
		Software Tour
	Does the technology cause a shift in the behavior of the students, where they move from passive to **active social learners (co-use or co-engagement)?**	Switcherchoo
		Visible Thinking Routines
		Monitoring

Download this image

To assess a lesson of your own, visit the Planning Tools page for downloadable rubrics, planning templates, and observation tools.

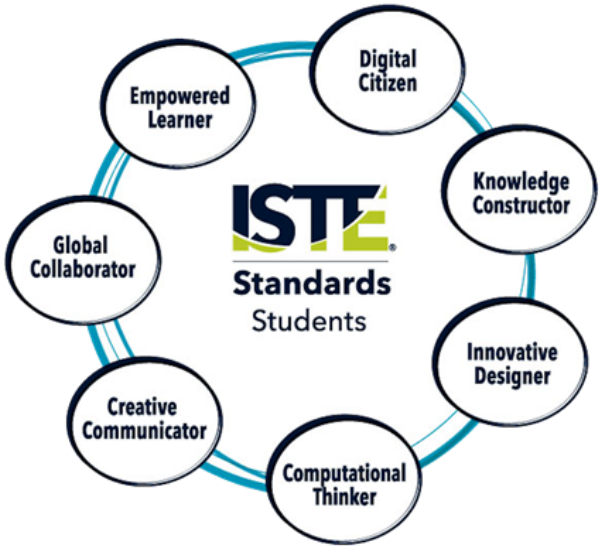
Additional Resources:

- Video Introduction to the Triple E Framework
- tripleeframework.com

ISTE Standards

While technology tools can certainly engage, enhance and extend, don't forget the focus of any tech integration should always be on deeper, more connected learning for students. The International Society for Technology in Education (ISTE) provides a framework of 7 standards that work to strengthen learning and ensure students are prepared to thrive in an ever-changing digital world.
With an emphasis on empowered learning, each standard supports students as they learn to:

- Set goals and make choices about their learning;
- Ask and find answers to challenging questions; and
- Become important contributing members of our global community.



Visit the ISTE page to view all of the ISTE Standards for Students and watch video demonstrations of each.

Additional Resources:

- ISTE Youtube Channel
- Refresh Your Teaching with the ISTE Standards for Students

> "Technology is not the most important factor in creating a twenty-first-century classroom; teachers are. The power of the teacher comes from the opportunities she creates for students to learn how to learn, solve problems, and apply learning in meaningful ways."
>
> --Katie Martin (Learner-Centered Innovation: Spark Curiosity, Ignite Passion and Unleash Genius)

Technology integration frameworks are essential tools to effectively support educators through the implementation process. As you approach technology integration in your own teaching, you can use the guidelines to convey the value of your decisions and guide you in selecting tools and strategies that will be beneficial for your students.

What instructional best practices and digital tools can I utilize to support learning with tech?

> *"When you spend time using digital tools with digital natives, it doesn't take long to see that they don't really need you to show them which buttons to click - they can figure out a lot of that on their own. What they need is to be guided in reflecting on their thinking and learning processes, creating quality content, and sharing their learning in powerful and appropriate ways."*
>
> -Sam Neal (Source)

As with any high-quality lesson planning, technology integration should begin with the end in mind, including:

- Clear content standards and objectives to drive your lessons
- Just right instructional strategies that meet the needs of students
- Opportunities for students to master desired content, concepts, and processes
- Supportive tech tools will best serve the goals and strategies chosen

When teaching and learning remain at the center of the learning design process; and when technology plays a supportive role to tried-and-true instructional strategies, increased student learning is sure to be a result. The following sections are a round-up of our top instructional strategies and supportive digital tools that complement.

Keep it Creative

For many years, teachers were considered the focal point of the classroom, creating and delivering lesson activities that dazzled their students. This created more passive users of technology, focused mostly on consumption (Think: video games, drill and practice activities, and digital texts). But research on creativity has prompted a shift in this dynamic, advocating students take a more active role in discovering, exploring, collaborating, problem-solving, and creating with supportive technology.

Take a moment to think about the balance of passive vs. creative technology usage in your classroom (and in your student's lives outside of school):

- How might you encourage more active use of technology?
- Through which concepts, skills or routines can you embed opportunities for discovery, exploration, and creation?

These top digital tools will help you infuse a bit of creation and imagination into your classroom routine:

> "... research on creativity has prompted a shift in this dynamic, advocating students take a more active role in discovering, exploring, collaborating, problem-solving, and creating with supportive technology. "

Create visual representations with Canva

Canva is a free digital tool that offers a scaffold for your students to reach new heights with their creative expression in all content areas. With the easy-to-use templates and drag-and-drop features, Canva becomes a digital playground for design thinking. Students of all ages (elementary to secondary) can build, edit, revise and share creations that look polished and professional.

Craft digital stories with Adobe

The web-based tools available through Adobe Spark enable students to create beautiful multimedia presentations-- Posts (graphic images), Videos (high-quality videos), and Pages (dynamic webpages). Students can transform creative writing assignments, informative reports, and reflection activities with Adobe's free and easy fill-in-the-blank templates.

Create 3D spaces with CoSpacesEDU

Immerse your students in the world of virtual reality with CoSpacesEDU, an online platform where students of all ages can build 3D scenarios, animate them with code, and explore in virtual or augmented reality. Students can start off with simple designs, then add complexity and challenge with block-style coding.

Get Connected

According to a recent survey from LinkedIn, collaboration and communication are among the top skills actively sought out by employers. Time spent strengthening these skills is time well spent! ISTE's Ed Tech Standards indicate that students should learn to communicate clearly and collaborate effectively using various platforms, formats, and with digital media.

How often do you provide opportunities for students to practice collaboration and communication skills with peers? As you review the digital tools below, consider ways in which you might prepare students for success with collaborative work. For example,

- Clearly define group goals;
- Discuss what quality collaboration/communication looks, feels, and sounds like;
- Explore decision-making skills and conflict-management techniques; and
- Encourage accountability through role assignments and self-assessment

Below you'll find 2 of our favorite digital tools for facilitating social connection, communication, and collaboration in your classroom:

Boost digital communication with Flipgrid
Get students talking with Flipgrid's video response platform! As teachers post video prompts, students respond with their own video responses adding fun effects, stickers, and emojis. Flipgrid is engaging, fun, and ensures all learners get the opportunity to be seen and heard. And if that isn't enough, Flipgrid now has a feature (Flipgrid AR) that allows teachers to download a unique QR code for each video response. The QR code acts as a trigger image so when scanned with the Flipgrid app, the video content comes to life and jumps off the screen!

Encourage easy collaboration with Jamboard
Make group work a snap with Google's whiteboard tool, Jamboard. Students can add sticky notes, images, and hand-drawn elements to a shared set of pages. As with other Google apps, Jamboards are easy to share and help facilitate a real-time collaborative experience.

Focus on Feedback

Tech tools can play a pivotal role in helping teachers and students monitor learning in a way that traditional methods fall short. Technology can help streamline the feedback loop, allowing everyone to work smarter, not harder!

As you reflect on your teaching, ask yourself how feedback is positioned in your class.

- Do you focus your feedback on final, summative work?
- Are students a part of the feedback process?
- Do students receive feedback in a timely manner?
- Are there opportunities for students to revise and move closer to learning targets?

If your feedback cycle is lacking, don't sweat it! With the addition of some simple tools you can help improve the process.

Give Video Feedback with Screencastify
Screencasting has quickly become a favorite method for providing timely and specific feedback to students. With Screencastify teachers can narrate a video recording of their computer screen with a student's document open. This allows for targeted feedback on specific elements of the student's work. This is also a great option for students to narrate self-reflection or give peer feedback.

Give Audio Feedback with Mote
Mote is another innovative way to deliver feedback using your voice! Mote's digital messaging system requires just a few clicks to set up and is easily integrated into the products you already know and love, like Google Docs, Classroom, and Slides.

Conclusion

Whether you're just beginning the ed-tech journey or have been walking this path for some time, it's important to ground any technology integration efforts with best practices that can increase engagement and academic outcomes in your diverse classroom. As you move to incorporate new digital tools and online learning strategies, enlist the help of a framework to guide both evaluation and implementation. By starting with the end in mind, you can be sure that any tech you choose is aligned to the outcomes you've laid out for your students. Additionally, work to incorporate opportunities for students to communicate effectively, show their creative side, and collaborate as a team. Work smarter (not harder) with technologies that can support more timely and specific feedback.

Taking these proactive steps will help fortify you as the technology in your classroom (and the world) continues to evolve and shift. Embrace the inevitable change and find ways to be proactive, intentional, and innovative!

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MEET THE AUTHOR

Marcee Harris is a 20-year veteran educator known for her love of technology! As a Professional Learning Specialist with Learners Edge, Marcee strives to develop professional learning opportunities that inspire creativity and innovative application of new strategies and tools. She is a Google-certified educator and has worked to redesign the Learners Edge technology catalog to ensure alignment with research-based best practices and tech standards. Marcee holds a B.A. in Sociology and Elementary Ed. from the University of St. Thomas and M.A. in Education from the St. Mary's University, Twin Cities.

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