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# EdTech Essentials

**12 Strategies for  
Every Classroom  
in the Age of AI**



**2nd Edition**

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# EdTech Essentials

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# Introduction

## EdTech Essentials Every Teacher Should Consider in the Age of AI

When we think of “the essentials,” a few things come to mind, such as water, food, and shelter. Depending on whom you talk to, some might add Wi-Fi, a smartphone, or a favorite book to the list. Bringing it down to the basics, the Merriam-Webster Dictionary (n.d.) defines *essential* as follows:

- Of the utmost importance
- Something necessary, indispensable, or unavoidable

In today’s environment, the ability to use technology effectively has become an *essential*. New technology has changed how we communicate, navigate the world, and create content—and we know more change is inevitable.

In this new edition of *EdTech Essentials*, we will examine the EdTech skills and strategies that are essential for all students if we want to prepare them to succeed in the digital world of today and tomorrow. In particular, the widespread use and easy availability of generative artificial intelligence (AI) has shifted our conversation on what every educator and student must understand about educational technology.

To be clear, the presence of AI in our lives isn’t brand new. Many educators have used tools that employ adaptive AI to give students supporting resources as they answer review questions in an online tool,

or to adjust to a student's needs in response to a baseline assessment. Generative AI is different. This type of artificial intelligence generates content and can include images, videos, music, and text. Instead of searching for pre-existing content, like using a search engine, generative AI *creates* content by combining information from a variety of sources.

This updated edition of *EdTech Essentials* is designed to help educators meet the needs of students in this changing landscape. The new edition you're looking at is a response to the proliferation of EdTech tools that leverage generative AI, the quick access we all have to chatbots, and the clear need for educators and students to understand the implications of AI. In 2023, ASCD and ISTE published my quick reference guide *Using AI Chatbots to Enhance Planning and Instruction* (Burns, 2023g) (accessible via the QR code). It provides a basic overview of what's possible with AI. This new edition of *EdTech Essentials* goes beyond the productivity and workflow focus of the quick reference guide with two new chapters (“**Generate** Ideas and Resources with Artificial Intelligence” and “**Evaluate** Digital Content with an AI Mindset”) as well as a new appendix with suggested chatbot prompts to try. Throughout, I provide strategies that complement the original 10 essentials in this age of AI.



Using AI  
Chatbots

Although many children have access to digital tools both inside and outside school, the quality of those experiences can vary greatly. Some students may listen to podcasts at home and understand the nuances of navigating audio content. Others may have heard the term *artificial intelligence* while not knowing what it means to “evaluate content with an AI mindset.” (Having an AI mindset means understanding that content like images, text, or video might not be real but instead could have been generated with AI. We’ll unpack this concept further in subsequent chapters.) If we truly believe the role of education in society is to prepare all children for success beyond the classroom, students must participate in meaningful, robust EdTech experiences. These kinds of experiences are necessary for every classroom, and in this book I share relevant stories, ideas, and action items. You’ll find suggestions that are customizable for kindergarten through 12th grade, across all subject areas, and for classrooms with access to a variety of devices and programs.

## The 12 Essentials

With so many options in the EdTech space, focusing on the essentials is key. To help center our conversation on what truly matters, I have narrowed the list to 12 essential skills and strategies, highlighting the

roles of teachers and students in the age of AI. If you are familiar with my book *Tasks Before Apps: Designing Rigorous Learning in a Tech-Rich Classroom* (Burns, 2018), you know I firmly believe that with all things related to technology, *learning* must stay front and center, and digital tools should be used with intention.

I am often asked to speak on how to “make the most” of educational technology. Whether in a keynote presentation or in a casual conversation, I often bring it back to the worms—vermicomposting, to be more specific.

As a teacher in New York City, I started my career in a classroom with chalk, a chalkboard, and an overhead projector. Then iPads came on the scene, and I was lucky enough to pilot a one-to-one initiative with my 5th graders. So where do the worms come into play? In one corner of my classroom was a bright and shiny cart of new iPads, and in another was a bucket of worms—a compost bin, to be precise. There was no way we could ever drop a banana peel or an apple core into that iPad cart and expect anything good to come of it. But if we dropped these compostable items into our bin of worms, some serious change would take place. Both the cart and the bin had a purpose, and one wouldn’t replace the other.

The intentional balance between digital and offline experiences requires thoughtful planning and an awareness of what students truly need to understand about leveraging technology effectively. In this book, I share 12 essential EdTech strategies. You can incorporate these essentials into the learning experiences you design for students over the course of the school year. They are flexible enough to inject into the content-rich work you already have planned and can complement your standards-aligned instructional goals:

- **Navigate** online spaces effectively.
- **Curate** resources to support every student.
- **Generate** ideas and resources with artificial intelligence.
- **Evaluate** digital content with an AI mindset.
- **Explore** the world with students.
- **Collaborate** across digital spaces.
- **Create** multimodal artifacts of learning.
- **Assess** to check for understanding and pivot instruction.
- **Share** student creations in big and small ways.
- **Connect** students to authentic audiences.
- **Transfer** skills across digital spaces.
- **Plan** for tech-rich learning experiences.

Although each of these essentials could itself fill a book, I have chosen to cover each one in a chapter, focusing on its main components. My intent is to provide information and tips you can put into action right away, as well as ideas to consider for your future planning. Each chapter includes an overview of the skill or strategy being discussed: why it is essential, connections to research, classroom examples for all grade levels, websites and mobile apps to help build your EdTech tool belt, and guiding questions to use for your individual planning and reflection or when planning new learning experiences with colleagues.

## Connecting with the ISTE Standards

These 12 essentials also connect to the ISTE Standards. ISTE represents educators who are passionate about thoughtful technology integration, and I have learned much from attending and presenting at ISTE's Annual Conference for the past decade. The ISTE Standards "provide the competencies for learning, teaching and leading with technology, and are a comprehensive road map for the effective use of technology in schools worldwide. Grounded in learning science research and based on practitioner experience, the ISTE Standards ensure that using technology for learning creates high-impact, sustainable, scalable and equitable learning experiences for all learners." An overview of each section of the standards follows.

**ISTE Student Standards:** "Today's students must be prepared to thrive in an evolving technological landscape. The student section of the ISTE Standards is designed to empower student voice and ensure that learning is a student-driven process" (ISTE, 2016).

**ISTE Educator Standards:** "The educator section of the ISTE Standards provides a road map to helping students become empowered learners. These standards will deepen your practice, promote collaboration with peers, challenge you to rethink traditional approaches and help you prepare students to drive their own learning" (ISTE, 2017).

**ISTE Education Leader Standards:** "The education leaders section of the ISTE Standards supports the implementation of both the student and educator sections of ISTE Standards by targeting the knowledge and behaviors required for leaders to empower teachers and boost student learning. This section is focused on equity, digital citizenship, visioneering, team and systems building, continuous improvement and professional growth" (ISTE, 2018).

**ISTE Coaching Standards:** “The coaches section of the ISTE Standards illustrates the characteristics, activities, philosophies and mind-sets of today’s instructional technology coaches. Because coaches have a unique role as capacity builders and implementation experts, these standards guide coaches in ensuring that learning with technology is high impact, sustainable, scalable and equitable for all” (ISTE, 2020).

Throughout the book, you will find strategies and examples that relate to these standards at the indicator level. You can learn more about ISTE and the ISTE Standards at <https://iste.org/standards> (or scan the QR code).



ISTE  
Standards

## Resources to Support Your EdTech Journey

At the end of the book, you will find resources to help you design and implement learning experiences for students that take these essentials into account. Appendix A summarizes some of the big ideas from each chapter to help you prioritize how to address the EdTech essentials in your own learning environment. Appendix B provides forms to help you set goals, assess your progress, and build your EdTech tool belt. These forms are also available for download at <https://www.ascd.org/edtech-essentials-resources> (or scan the QR code). In the new Appendix C (“Monica’s Favorite Prompts to Use with Chatbots”), you’ll find a handful of prompts I encourage you to try out as you explore generative AI. Appendix D is a roundup of popular EdTech tools to complement the suggestions you find in each chapter. The list has been updated for this edition and reorganized by category or purpose of tool. Some of the tools listed are free, while some have a price tag; some are from companies I have worked closely with, and others are from companies that are new on the scene. In the new Appendix E, you’ll find an extensive collection of further resources—books, websites, learning opportunities, and more—that will help you extend your exploration into various EdTech topics, such as digital citizenship and AI. Finally, you’ll find a study guide to further your own exploration of the concepts in this book or to support a book club or learning community at your school. You can download a PDF version of the study guide at <https://classtechtips.com/studyguide> (or scan the QR code).



EdTech  
Essentials  
Resources



Study Guide

Whether you have been teaching for a few years or a few decades, you know every school year is different. In the same way you customize

learning experiences for each group of students you work with, you can take the ideas I share and make them your own. As an educator, you are the content expert, and you know your students (and colleagues) best. My role is to help make EdTech easier so you can integrate digital tools into your classrooms with intention while taking advantage of all EdTech has to offer.

**Follow along with my EdTech adventures:**

- Class Tech Tips Blog with weekly updates:  
[ClassTechTips.com/blog](https://ClassTechTips.com/blog)
- *Easy EdTech Podcast* with new episodes on Tuesdays:  
[ClassTechTips.com/podcast](https://ClassTechTips.com/podcast)
- Free Monday newsletter with a weekly EdTech roundup:  
[ClassTechTips.com/newsletter](https://ClassTechTips.com/newsletter)
- Search for @ClassTechTips on your favorite social media platform (including Instagram, Pinterest, and more).

# 1

## Navigate Online Spaces Effectively

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*handle, maneuver, operate, journey, transverse, pass, manage*

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Whether it is early in the morning or late at night, there is a good chance you have already navigated many online spaces in the few or many hours since you arose this morning. Did you scroll through a blog post or listen to a podcast episode? Did you open up a search engine to find an answer to a question? You and your students have likely clicked, saved, played, and shared across online spaces in the past 24 hours.

Given the prevalence of online activity in everyday life, students should know how to find what they are looking for and how to make the most of the information available to them online. This capability includes taking advantage of every feature within a website or mobile app, evaluating and synthesizing the seemingly endless amount of content available online, and tackling logistical challenges (like what button to press to find what they need) along the way.

It may seem that the children in our lives can pick up a device and immediately find a popular YouTube channel or viral video on TikTok. However, we know access to devices—and quality experiences with technology—can vary greatly. All students need to be able to **navigate** online spaces effectively. In this chapter, we examine what navigating online spaces entails, why it is important, and how we can set up learning experiences to help students cultivate this essential skill.

## Why Is This Essential?

Whether we are traversing the subway system in New York City or driving a car above ground, navigation skills are critical when we enter any new or familiar physical space. The same holds true when students move around an online space.

In this book, I use *online spaces* as an all-encompassing term to describe the content and communication channels students can access online. Online spaces can include websites with articles and blog posts, video platforms with clips and tutorials, and mobile apps on a smartphone or tablet that present information to students in multimedia formats. These spaces have evolved over time, and the company names and user interfaces might have changed, too.

There are more spaces to consume online content than ever before. Names such as YouTube, TikTok, and Spotify have entered the lexicon of anyone with access to a digital device. People watch more than one billion hours of video on YouTube each day (YouTube, n.d.); TikTok users spend an average of almost an hour viewing content each day (Mohsin, 2020); and Spotify hosts more than five million podcast titles (Spotify, n.d.)—including my *Easy EdTech Podcast* and plenty of narrative and informational content designed for students, educators, and the market at large.

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ISTE Student Standard Indicator 1.1.d, Technology Operations, states, “Students understand the fundamental concepts of technology operations; demonstrate the ability to choose, use and troubleshoot current technologies; and are able to transfer their knowledge to explore emerging technologies.”

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Navigating online spaces effectively is clearly an essential skill. Moreover, it is directly tied to media literacy and is a component of media literacy education. The National Association for Media Literacy Education (NAMLE) defines *media literacy education* in terms of the skills and knowledge a student needs to “access, analyze, evaluate, create, and act” using all forms of communication. It defines *media* as “digital media, computers, video games, radio, television, mobile media, print, and communication technologies that we have not even dreamed of yet” (NAMLE, n.d.).



When and how you introduce navigational skills—and the opportunities you provide to students to put them into action—will vary across grade levels and subject areas. However, one thing is certain: students of all ages should have ample opportunity to practice navigational skills.

## Exploring Digital Features

*Consumers* are not just part of the food chain or the supply chain—even if we feel like we’re devouring content with the ferocity of an apex predator. As much as I love an example using sharks or dinosaurs, in this chapter, the all-encompassing term *consumer* includes people (like you, me, and our students) who read, view, and listen to content in online spaces.

As consumers of online content, students will come across key features—text, links, images, audio, and video—regardless of the device in their hand or on their desk. Later in the chapter, we discuss how to model navigating online spaces with these features in mind. For now, let’s consider when they might appear on a student’s screen.

### Text

Text in an online space can be paragraphs in a news article or chapters in an ebook that mirror the text students consume in print materials. Students might also find text in shorter form, such as a caption on a photograph, a summary of a podcast episode, or a list of recommended resources that accompanies a tutorial video. This text could include an option to tap on a word and see a definition or hear how it is pronounced. A word, phrase, or sentence might be underlined to indicate it is linked to another piece of content.

### Links

Links appear throughout online spaces and connect students to content hosted on a separate page. A link could take users to another resource created by the same organization or publication, such as when an online magazine mentions an event and provides

#### Embedded Items

Online spaces are full of interactive items that give users access to extra content. A web designer or an app developer might insert an interactive item to connect a reader to other content relevant to the topic. The goal of this embedded item, sometimes called a widget, is to add value, make a connection, or provide additional information. For example, in an online newspaper article about an event in Cairo, you might find an embedded item for Google Maps where a reader can tap and explore a map of Cairo as a way to extend the reading experience. In addition to interactive maps, examples of embedded items include the following:

- Video clips from a player like YouTube or Vimeo
- Timers or countdown clocks to promote an event
- Slideshows of pictures for viewers to scroll through
- Forms to collect information or a widget for adding comments

a link to one of its own articles covering that event. A link could also take readers to another website chosen by the creator of the original resource. When you are navigating an online space, it may be unclear how well a piece of linked content is vetted, so you may need to review the quality and authority of that secondary source.

## Images

Photographs and illustrations appear throughout online spaces, whether students are scrolling through Instagram or opening up a Wikipedia entry. Similar to the pictures in a textbook or another piece

of informational text, both the visual on the page and the accompanying caption provide information. In the same way students learn about using pictures when reading a book, students who navigate online spaces view images as sources of potentially valuable information. Artificial intelligence tools can generate photorealistic images that depict a notable figure or well-known space inaccurately. Some of these images may have clear disclosures stating that the image was made with the help of AI, and others may have no attribution.

### Microblogging

In online spaces such as Instagram, where images are the core content on the page, captions can hold more value than they do when accompanying pictures in traditional text-based forms of content like newspaper articles. The term *microblogging* is often associated with lengthy captions found in social media posts that provide a narrative or detailed information on a subject.

## Audio

Audio content can appear in short and long form as both a free and a paid resource. Podcasts are generally available for free through a podcast player (like Apple Podcasts, Google Podcasts, or Spotify). You might listen to podcasts through a player embedded on the website of the podcast host or company behind a podcast. Audio content can include ebooks that readers access on a web browser or through a device like an ereader or tablet (e.g., Kindle). You might also encounter audio content on a web page, such as an audio recording accompanying an article that gives you the option to press play and hear content read aloud.

## Video

Although you and I might remember the days of rolling a television cart into a classroom, the amount of video students consume and the way they access this content have changed greatly in the last few

decades. Video content is available on multiple platforms, and Google's search engine even includes the option to respond to a search query with a list of videos instead of a list of websites. You can find videos embedded in websites in addition to native video platforms like YouTube and Vimeo. Video content extends beyond these hosting sites and into social spaces such as Instagram, TikTok, and Facebook, where it is often posted with captions and links.

## Guiding Students' Online Search Experiences

Text, links, images, audio, and video are some of the key content types and features students will come across in online spaces. Navigating online spaces to search for information applies to all subject areas. For example, students might look for the exact date of a historical event as they create a timeline in a social studies classroom or seek contact information for a professor at a local university so they can send a question related to a chemistry experiment. Let's explore how you can create, support, and extend learning experiences that involve searching online. We'll start by examining traditional keyword searches and finish with tips for searching for information using prompts with chatbots and generative AI.

### Keyword Searches

To create keyword search-related learning experiences for students, first identify what information you would like them to collect. This could include information related to a simple question with a correct/incorrect answer or something more complex and open-ended. Although at times you will want students to search more broadly, such as when you want them to explore a large topic and choose a subtopic to research, in this case we are talking about setting a narrow purpose so that students go off on a specific mission.

As you create online search experiences, you might work together as a whole class or have students search independently or with a partner.

### Ensuring Accessibility

Navigating online spaces may present specific challenges for students who require additional support using digital tools. To make sure you are creating equitable spaces for students, review the needs of your students with accessibility in mind. You may want to explore these three resources that provide product-specific information on how to best support all learners:

- Immersive Reader from Microsoft: <https://www.microsoft.com/en-us/education/products/learning-tools>
- Chromebook Accessibility Overview: <https://edu.google.com/why-google/accessibility/chromebooks-accessibility>
- Apple Accessibility Overview: <https://www.apple.com/accessibility>

To establish a clear purpose for online searches, you can use the following statements in your planning and in your discussion with students:

- Today we will investigate . . .
- We might use keyword search terms such as . . .
- We will collect our findings by . . .

### We don't know what we don't know

Our intentions when searching online can vary from finding a quick answer to a question to researching a complex topic. *Simple* searches

are useful in many instances, but sometimes you will want students to go off on a *deep-dive* search to identify a question or topic they would like to explore further. In the same way that “we don’t know what we don’t know,” your students can benefit from searches that provide context for future learning experiences and research opportunities.

In a 1st grade classroom, you might share QR codes students can scan to access links to a few short video clips. They can watch the clips to help them decide which animal they would like to research before reading an informational text or starting a social studies unit on an area of the world where an endangered species lives. In a high school classroom, you might send students off with a big idea such as “climate change” and then allow time for them to search broadly. Students can gather ideas on subtopics to investigate with more purpose during a unit on persuasive writing or environmental science. Here are some examples of *simple* searches and *deep-dive* searches:

- 1st grade—*Simple*: How much rain fell last summer? *Deep dive*: Why does it rain more in one state than in another?
- 4th grade—*Simple*: What year did Arizona become a state? *Deep dive*: Why did Arizona gain statehood after the 13 colonies?

#### Introducing Chatbot Queries to Students

Traditional keyword searches are just one way students can locate information in online spaces. Although chatbot tools like ChatGPT are not, at the time of publication, compliant with the Children's Online Privacy Protection Act of 1998 (COPPA)—which “imposes certain requirements on operators of websites or online services directed to children under 13 years of age, and on operators of other websites or online services that have actual knowledge that they are collecting personal information online from a child under 13 years of age”—this type of technology is bound to increase in popularity. Even if you do not plan to have students open up a chatbot themselves, you might demonstrate how this technology works. To illustrate, you might share the results of a keyword search (e.g., “red fruits”) and the output of a chatbot (e.g., “Make a list of red fruits”) for students to compare and contrast. Alternatively, you might share the output of a chatbot (e.g., “Explain the difference between fruits and vegetables”) and ask students to find sources to support these findings.

- 11th grade—*Simple*: What country is Jane Austen from? *Deep dive*: What factors in Jane Austen’s life influenced the themes of her novels? (Burns, 2018, p. 50)

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ISTE Educator Standard Indicator 2.6.a, Foster Student Ownership of Learning, asks educators to “Foster a culture where students take ownership of their learning goals and outcomes in both independent and group settings.” As you work to support students’ navigation of digital spaces, you can offer resources such as graphic organizers and model strategies with a think aloud that help students build independence in online spaces.

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## Support

In addition to setting a clear purpose and modeling, you can provide other supports to help students stay on task. Working with a partner, periodic check-ins, and turn-and-talks can help students stay accountable during an online learning experience. Other options include engaging in a whole-group discussion in the middle of a lesson or adding an exit ticket or share-out at the end of a lesson allowing students to post an update on their progress.

Establishing clear expectations and modeling for students will also set them up for success as they practice navigating online spaces. Although we all know how easy it is to get distracted in online spaces—I have many tabs open on my Chrome browser right now—setting and sharing a clear purpose for time spent online will help students stay on track. When modeling for students, you might “think aloud” to demonstrate what you are thinking as you move through an online space, saying something like “This link looks interesting, but it is not going to help me find the answer to my question” or “I love videos like this, and maybe I’ll watch it later, but right now, it is not going to help me accomplish my goal.”

### What Is a “Think Aloud”?

Molly Ness, author of *Think Big with Think Alouds, Grades K-5* (2018b), describes this tactic as a powerful comprehension strategy. In an article written for *We Are Teachers*, she comments on the observations of a teacher conducting a reading lesson and explains how “throughout her read-aloud, this teacher will stop to ask questions, make observations, and think deeply about the story” (Ness, 2018a). The same process can happen as students listen to their teachers share their thinking while they tackle a math problem, examine a primary source document, or decide if a YouTube video comes from a trusted source. For example, you might “think aloud” while searching for information as you model for students which decisions you make as you look for an answer to a question.

There are tools that help students focus on a single task and help them avoid distractions when working online. You can model one of these tools for students to try when working independently, or share them with your class to help everyone stay focused on a task:

- Brain.fm: music you can stream on any device designed to help listeners focus
- Flora: an app and Chrome extension where users set an amount of time to focus on a task and watch a plant grow if they avoid distractions
- Calm: a platform to access music designed to improve focus on a task

Here are a few other things you can do to support your students' keyword searches:

- Share keyword search strategies, such as using a phrase instead of a complete sentence or question.
- Brainstorm potential keywords and search terms with students before sending them off to work independently or with a partner.
- Post common search queries for your topic so students do not have to worry about spelling errors, which can lead to unhelpful results or frustration.
- If the results of their search queries are not helping them find useful information on the topic, remind students to check for misspellings, or encourage them to try a new keyword or phrase.
- Inform students about voice-to-text search options, which are available on many websites and mobile apps, and model how to conduct a voice-to-text search and how to address any errors with the dictation technology. *Note: these tools will often require students to grant the tool permission to use their device's microphone.*
- Introduce students to advanced search options to help them find a specific type of result or file. For example, Google and YouTube have advanced search options to let users search for content published in the last few months or the previous year. Advanced search features are often hidden next to the search bar; look for the word *Filters* or *Tools* to help you refine your searches.

## Extend

The amount of time you allocate for students to navigate online spaces will depend on the task. To extend these experiences and provide more

opportunities for exploration, you can have students participate in activities such as a “scavenger hunt” that asks them to find the answers to a series of questions. If you find yourself in a teachable moment where a student asks a question you cannot answer yourself, you might ask the class to search for the answer to the question. Although you might not pause your planned instruction that very moment, you can revisit the question to model an online search or ask students to find the answer later.

### Finding Answers with Chatbots

The widespread adoption of generative artificial intelligence has shifted the way we think about traditional searches. Instead of hearing someone use *Google* as a verb when they say, “Let’s Google the answer . . .”, you might now hear someone say, “I asked ChatGPT to find the answer.” In Chapter 3, we’ll examine strategies educators can use to generate instructional content with the help of chatbot technology, and in Chapter 4, we’ll look at ways to support students as they evaluate content created with generative AI. For the purpose of this chapter, it is essential for students to understand how to navigate online searches when chatbots present a viable option for locating information.

As mentioned previously, popular chatbot technology like ChatGPT, Claude, and Gemini are not designed for students to use in a school setting at this time. Keeping this in mind, you might model strategies for conducting queries with a chatbot in preparation for a time when students will navigate these tools independently inside a classroom setting or out of the classroom with a family member’s support. You can customize the following four activities for your group of students, changing the subject matter and discussion goals as needed:

- *Compare and contrast:* have students review the results you received from a traditional keyword search and the results of your

### A Search Activity

You might not expect Instagram to be a source for inspiration, but if you follow educators on this social media platform, you will find many who share ideas and tips with their followers. I first came across this activity from fellow Apple Distinguished Educator Larry Reiff while scrolling through Instagram. To help students practice using online tools, he shares prompts that require them to think critically and combine information from various sources to find the answer. For example, he gave them this challenge: “Add up all of the digits of the zip code for the town where the physicist who directed the Manhattan Project received his undergraduate degree.” Students have to work backward and search for smaller pieces of information to help them build toward the answer.

### Primary Sources in a Digital World

We often think of the phrase *primary source* as describing something such as an artifact in a museum. Although primary sources can be tangible—for example, a letter or an entry in a journal you can hold in your hand—many are digital. Email correspondence, blog posts, and *vlogs* (blog entries in video format) fall into this category, too.



chatbot query, comparing and contrasting the results. Ask them to share their thoughts in a graphic organizer or turn-and-talk to a partner.

- *Provide feedback:* share the output from a chatbot and have students provide feedback on the response. They can write down what important information is missing or what they would have expected to see based on the query.
- *Fact-check:* provide the output of a query for students to fact-check. They can practice their keyword searches to “fact-check” the results and evaluate whether the response produced by the chatbot is accurate.
- *Rewrite the prompt:* share with students your intended output, the actual output from the chatbot, and the prompt you used. Ask them to rewrite the prompt to better align with your intended output to help you receive a stronger response.

There are a few factors that make a keyword search different from using a chatbot to find answers to a question. A keyword search can provide a quick answer to a simple question with only one correct response (e.g., “year Declaration of Independence signed”). Or it can provide a list of resources a student can use when researching a topic (e.g., “How to join the Space Force”). A chatbot will respond to a query in a format it thinks will be helpful, like a list, or in a format you ask for, like a table. It will respond to deep-dive questions by synthesizing information from a variety of sources. Some chatbots provide a link to the source material for their response, whereas others do not. As we’ll explore more in Chapters 3 and 4, the output of a chatbot may be inaccurate or biased. Students—and educators—who use a chatbot to search for information need to take these factors into consideration when reviewing responses in the same way they review the recommended resources from a search engine like Google or Bing.

Figure 1.1 shows some specific examples at various grade levels.

## Organizing Information

Students encounter a lot of information as they navigate online spaces. There may be times when they are diligently collecting information for a research project, and other times when they simply want to keep track of links to a video, podcast episode, or blog post to revisit at a later date.



FIGURE 1.1

**Cross-Curricular Examples of Keyword Searches and Chatbot Prompts**

Prompt	Grade Level			
	Early Elementary	Upper Elementary	Middle School	High School
Today we will investigate . . .	What types of food a polar bear eats.	How the winter weather is different in Minnesota and Alabama.	The life and works of Sandra Cisneros.	Different methods for solving quadratic equations.
We might use search terms such as . . .	“Polar bear diet.” “Foods polar bears eat.”	“Minnesota weather in January.” “Average temperatures in Alabama.”	“Sandra Cisneros biography.” “Sandra Cisneros books.”	“Ways to solve quadratic equations.” “Strategies for solving quadratic equations.”
[A teacher might submit a prompt to a chatbot such as . . .]	“Make a list of foods a polar bear eats.” “Compare and contrast what a polar bear eats and what a human eats on a given day.”	“Make a table with the average precipitation and temperature for the last 10 years for Minnesota and Alabama.” “Write a paragraph that describes the way the weather in Minnesota and Alabama is most similar in the winter months.”	“Provide a list of Sandra Cisneros publications with available sales numbers.” “Make a list of interview questions for the author Sandra Cisneros.”	“Explain the steps to solve this problem [add specific problem].” “Make a list of scenarios where someone would use a quadratic equation.”
We will organize our findings by . . .	Sharing what we are learning via video on our class Seesaw page.	Adding the information to a Google Doc.	Creating a mind map with color-coded information based on different categories.	Sharing the video tutorial we find most useful in our class discussion forum.

Although some students, especially in middle or high school, may have a system for remembering where they found information, teaching students strategies for organizing information is an important part of helping them learn how to navigate online spaces effectively.

In the past, we might have used spiral notebooks or index cards to organize information when researching a topic. Organizing links,

annotations, notes, and files using digital tools is very different from physically moving index cards to place notes into categories, or highlighting and color-coding research in a physical notebook. Digital tools enable students to organize information in myriad ways. They can keep track of their notes and ideas by typing or using *voice-to-text* (as well as some video recording options) into popular spaces like Google Docs. Students can also add links by *copy-and-pasting* URLs to websites they have visited to a space like Microsoft OneNote. If students have a file to add to their notes, they can also copy-and-paste a link to that file (such as a Google Drive or Dropbox link) or upload the file itself to a folder.

Strategies for organizing digital notes include graphic organizers, interactive documents, and journaling. Let's take a brief look at each of these three categories.

## Graphic Organizers

A graphic organizer is a visual representation of information. Students can organize information visually using a premade or static graphic organizer, using a dynamic or customizable graphic organizer, or in a blank space where they use a variety of elements to organize information in any way they choose, like a mind map. Modeling, providing support, and offering examples are important steps in helping students get started. Using an open-ended tool—one that is not task-specific and can be used for various purposes—is a great choice. Let's explore three types of graphic organizers:

- A **static graphic organizer** is similar to a PDF of a worksheet where students can make annotations using digital tools but are working within specific constraints. This is a great way to take a traditional resource and add a digital layer. Students can add text boxes, draw in a space, or even record voice notes. By accessing a static graphic organizer in a digital space (instead of printing it out on a piece of paper), your goal should be to leverage digital features that increase access and engagement for students. *Envision: A PDF added to a space like Seesaw for 2nd graders to have the option to record voice notes or add text boxes as they compare and contrast the characters from a story.*
- A **dynamic graphic organizer** provides a baseline or template for students that they can use as is or customize. This is a great way to give students support and flexibility at the same time. *Envision:*

*Providing students access to a tool like Book Creator with their built-in timeline graphic organizers. Students can move, delete, and add elements on the premade page to customize the graphic organizer and make it their own.*

- A **mind map** is a type of graphic organizer where students can add shapes, lines, and arrows to organize information. Mind maps use some of the same principles of traditional graphic organizers but provide more flexibility for organization. This can make them a more versatile option than a one-size-fits-all approach, but the blank space may feel intimidating to students who crave more structure. Students will benefit from seeing examples and receiving feedback on how to use such a space. *Envision: Students use a space like FigJam or Google Drawings to organize information for a research project. They add links and images alongside traditional color-coding and text.*

## Interactive Documents

Unlike organizing notes on a sheet of paper or in a notebook, an interactive document enables students to connect information from multiple places and make it accessible by clicking on a link. Students can add notes along with any resources they have found and quickly reorganize information with a copy-and-paste. One benefit of interactive documents is the option to share with multiple users for collaboration, commenting, and feedback. This type of document might include *hyperlinks*, which connect users to a different document or to a specific place within the document they are currently using. Here are some examples of tools you can use for interactive documents:

- Microsoft Word
- Google Docs
- Canva Docs
- Pages

### Definitions

*Open-ended tool:* a versatile digital tool that is not limited to one prescribed use

*Hyperlink:* a link that connects two documents or parts of a document; often used in documents with a table of contents or multiple elements

### Reading Online Text

Pam Allyn and I (Allyn & Burns, 2021) wrote a quick reference guide titled *Engaging Students in Reading All Types of Text* (scan the QR code). This guide includes tips for extending reading experiences and ways to help students interact with online text.



*Engaging  
Students in  
Reading All  
Types of Text*

Pam was also a guest on my (2023h) *Easy EdTech Podcast* (to listen, scan the QR code).



*Easy EdTech  
Podcast: 235*

### How to Help Students Become Tech-Savvy

Dr. Cassidy Puckett (2022) shares five learning habits for students in her book *Redefining Geek: Bias and the Five Hidden Habits of Tech-Savvy Teens*. These include the technology-specific habits of *design logic* and *efficiencies*. Puckett describes *design logic* as a habit that “focuses more centrally on the learning process, the changing nature of technological tools, and what the learner brings to the table” (p. 89). The habit of *efficiencies* includes “awareness that software and hardware often (but not always) have shorter ways of accomplishing tasks . . . thinking about how to find these shorter pathways to make work and learning faster . . . [and] the behavior of trying out and practicing these efficient ways of accomplishing tasks” (p. 96). Both these habits connect to the essential skill of navigating digital spaces effectively. Cassidy was also a guest on my (2022d) *Easy EdTech Podcast* (to listen, scan the QR code).



Easy EdTech  
Podcast: 168

## Journaling

Digital journals provide multiple ways for students to build upon their learning over time. They are similar to a traditional journal but are equipped with a variety of tools students can use to add an update, including capabilities such as voice-to-text, audio and video recording, and insertion of links. Journaling with digital tools provides more access points for students, enabling them to choose how to interact with content and how they would like to share their learning experiences. Digital journals can also make it easier for teachers to check on a student’s progress, a topic we will explore further in our discussion of assessment in Chapter 8. Here are some examples of tools you can use for journaling:

- Seesaw
- Book Creator
- Adobe Express
- Google Slides

## Synthesizing Information

Students can create a variety of products to share what they have learned, from book trailers to interactive science reports. We will explore this topic of student creations in more detail in Chapter 7. For now, let’s consider how creating something requires students to take information they have gathered

from different places and pull it all together—to synthesize. What does this look like in online spaces?

In an early-elementary classroom, students may watch a video and hear a book about ocean creatures read aloud. Then they may make a list or draw a picture of all the things they now know about sharks. Students can make an audio recording of their digital list or snap a picture of their illustration using a digital journaling tool and record their voice to explain their thinking.

In an upper-elementary classroom, students may read a selection of online encyclopedia entries and watch a short documentary on the

Dust Bowl. Then they may create a mind map, independently or with a partner, using an online whiteboard space to explain the who, what, when, where, why, and how of the event. Using color-coding and links to additional resources, students can organize everything they have learned into one space.

In a middle school classroom, students may research the effect wearing a seatbelt has on injuries caused by a car accident. They may interview a local emergency room doctor via Zoom or Google Meet, watch a series of public service announcements posted on YouTube, and review data collected by a safety organization and posted to its public website. Students can then create an interactive document to organize the information they have collected (and the associated links to additional information) into different categories.

In a high school classroom, students may create an interactive document to organize their research on a topic related to a community action project. They can create a table with their research findings in Microsoft Word or Google Docs and add their own thinking in a column beside their research. Students can insert links within the document to create a table of contents and record audio notes as they gather information and address lingering questions. By leaving comments in the document or tagging other classmates to ask for feedback or suggestions, students can use this space to work collaboratively, as well.

## Addressing Logistics

To navigate online spaces effectively and use the strategies shared in this chapter, students need basic computing skills. These strategies are sometimes taught in isolation in a computer lab or technology class. However, there are moments throughout the school day when you can model a strategy or teach it explicitly in the context of your curriculum and content-area goals.

### Using Shortcuts as You Navigate Digital Spaces

One navigational strategy already present in many educators' practice is the use of keyboard shortcuts (also referred to as *hotkeys*). For example, you might use shortcuts to copy and paste by selecting the text you want to copy and pressing Ctrl+C on your keyboard. Then you instinctively place your cursor where you want to paste the copied text and press Ctrl+V. Once keyboard shortcuts become part of your everyday practice, they can save you lots of time. For example, they are helpful for efficiently inserting links, notes, or additional content in interactive documents and opening or closing tabs so you can move from one part of your screen to another. They can also help students quickly annotate their work. If you are using a program or online tool frequently with students, you can introduce these shortcuts to help them understand how there are faster, more efficient ways to navigate digital spaces.

How can you find out which shortcuts are available for popular tools?

- Find the FAQ page on the website of your favorite tool.
- Search for "keyboard shortcuts for [name of tool]" in a search engine like Google.
- Ask colleagues to share their favorite keyboard shortcut at the start of your next faculty meeting.

There are a variety of schools of thought on direct keyboarding instruction. I often compare the situation to the need to understand times tables in order to complete complex math problems quickly and efficiently. We may reach a point in the future where voice-to-text replaces the need for keyboarding, but as the second edition of *EdTech Essentials* goes to press, we are still not there. Ignoring the need for keyboard practice would be impractical, and just like the example of teaching students times tables, there are different ways to get there. You may want to explore a comprehensive keyboarding program aligned to the needs of your students.

Some students can pick up a new device and instantly sense how to use every feature and find every button. However, we know this is not the case for all students, and even those who have ample experience with digital tools might not understand the specific classroom use you have in mind. Alongside keyboarding instruction, helping students understand how to use trackpads, touchscreens, and cameras is necessary for their success in navigating online spaces. In Chapter 11, we will discuss helping students develop skills in areas such as problem solving and troubleshooting that will transfer across devices and platforms. When introducing or reviewing device features with students, modeling and reminding them of how to maneuver within a particular device is absolutely necessary.

## Final Thoughts

Similar to the way you might teach vocabulary words in context, you can introduce essential EdTech strategies like *navigate* within the content taught across grade levels and subject areas. Instead of planning to teach a lesson with a teaching point such as “Students will be able to click on a link” or “Students will be able to take pictures with their tablet,” incorporate these essential EdTech experiences into content you are already teaching. Demonstrating how navigating online spaces is not an isolated activity but an integral part of interacting with technology in general can reinforce the skills you want students to build.

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## About the Author



**Dr. Monica Burns** is a curriculum and EdTech consultant, Apple Distinguished Educator, and founder of ClassTechTips.com. As a classroom teacher in New York City, Monica used digital tools to create an engaging, differentiated learning experience to meet the unique needs of her students. Monica started her blog, ClassTechTips.com, in 2012 to help make EdTech easier for fellow educators and launched the *Easy EdTech Podcast* and her membership site, the Easy EdTech Club, to support educators who want to simplify and streamline technology integration.

Since starting ClassTechTips.com, Monica has led workshops and webinars, and provided keynote presentations to teachers, instructional coaches, administrators, and tech enthusiasts at numerous national and international conferences, including SXSW EDU, ISTE, FETC, and EduTECH. Monica is the author of *Tasks Before Apps: Designing Rigorous Learning in a Tech-Rich Classroom* and four ASCD quick reference guides, including *Using AI Chatbots to Enhance Planning and Instruction* and *Classroom Technology Tips*, among other publications. She can be reached at [monica@classtechtips.com](mailto:monica@classtechtips.com) and on social media at @ClassTechTips.

## **Related Resources: Educational Technology**

At the time of publication, the following resources were available (ASCD stock numbers in parentheses).

*Classroom Technology Tips* (Quick Reference Guide) by Monica Burns (#QRG120045)

*Demonstrating Student Mastery with Digital Badges and Portfolios* by David Niguidula (#119026)

*Distance Learning Essentials* (Quick Reference Guide) by Monica Burns (#QRG120097)

*The eCoaching Continuum for Educators: Using Technology to Enrich Professional Development and Improve Student Outcomes* by Marcia Rock (#117048)

*Engaging Students in Reading All Types of Text* (Quick Reference Guide) by Pam Allyn and Monica Burns (#QRG121059)

*Five Myths About Classroom Technology: How do we integrate digital tools to truly enhance learning?* (ASCD Arias) by Matt Renwick (#SF115069)

*Flip Your Classroom: Reach Every Student in Every Class Every Day, Revised Edition* by Jonathan Bergmann and Aaron Sams (#323067) (copublished with ISTE)

*Flipping the Learning* (Quick Reference Guide) by Jonathan Bergmann (#QRG118053)

*Increasing Engagement in Online Learning* (Quick Reference Guide) by Stephanie Smith Budhai and Laura McLaughlin (#QRG121063)

*The Mastery Learning Handbook: A Competency-Based Approach to Student Achievement* by Jonathan Bergmann (#122038)

*Principles and Practices for Effective Blended Learning* (Quick Reference Guide) by Kristina Doubet and Eric M. Carbaugh (#QRG121056)

*Summarization in Any Subject: 60 Innovative, Tech-Infused Strategies for Deeper Student Learning, 2nd Edition* by Rick Wormeli and Dedra Stafford (#118048)

*Tasks Before Apps: Designing Rigorous Learning in a Tech-Rich Classroom* by Monica Burns (#118019)

*Using AI Chatbots to Enhance Planning and Instruction* (Quick Reference Guide) by Monica Burns (#QRG123066)

For up-to-date information about ASCD resources, go to [www.ascd.org](http://www.ascd.org). You can search the complete archives of *Educational Leadership* at [www.ascd.org/el](http://www.ascd.org/el). To contact us, send an email to [member@ascd.org](mailto:member@ascd.org) or call 1-800-933-2723 or 703-578-9600.