

Supporting Technology Integration for School Leaders

A text aligned with the Emporia State University graduate course, ED810

Howard Pitler

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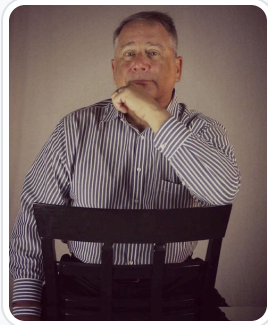
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Pitler, H. (2024). *Supporting Technology Integration for School Leaders: A text aligned with the Emporia State University graduate course, ED810, 1(1)*. EdTech Books. https://edtechbooks.org/integrating_technology



Howard Pitler

Emporia State University

Dr. Howard Pitler, Associate Professor I earned my Ed.D. from Wichita State University in Educational Administration. Before joining the ESU Department of School Leadership/Middle and Secondary Teacher Education in 2016, I was the Chief Program Officer with McREL International in Denver, CO. I began my teaching career in 1976 in Wichita, Kansas, USD 259 as a high school band and orchestra director. I became a building-level administrator at the elementary level and then the middle level, all in Wichita. I was named a National Distinguished Principal in 1997 and an Apple Distinguished Educator in 1998. I am the author of *Using Technology with Classroom Instruction that Works*, 2nd ed., *Classroom Instruction that Works*, 2nd ed., and *A Handbook for Classroom Instruction that Works*, 2nd ed, all published by ASCD. I have been married for 49 years and have two wonderful kids, both married to equally wonderful people. More importantly, I have three totally amazing and adorable grandsons, ages 10, 8, and 3. The older boys live near me in the Kansas City area and we enjoy volunteering in their school (pre-COVID) and attending various school and sports activities. The little one lives in Dallas and we try to see him at least once a month and FaceTime frequently. When I am not teaching you will find me and my wife riding our Harley. I am also an active volunteer for my congregation and serve as Vice President. I hope you enjoy this course and I look forward to getting to know you, as much as an online course permits.



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Introduction

Technology is just a tool, much like a chisel. In the untrained hand, the tool can poke holes in walls and even cause damage but in the hands of a skilled sculptor, the tool can create beautiful three-dimensional art. Educational technologies are tools that include a wide range of devices, applications, and websites that, when used appropriately, have the power to reinvent learning, engage learners, and foster creativity. Skilled teacher leaders hold the key to unlocking this enormous potential.



This Open Educational Resource (OER) textbook is written as the primary resource for a 3-hour graduate course delivered online by The Teachers College at Emporia State University. The course is designed to prepare school leaders (teachers, instructional coaches, administrators, etc.) for the integration and application of diverse educational technologies into classrooms and schools in ways that reflect a theoretical, research-based, and practical understanding of curriculum development and the effective uses of technology. The course explores practical ways to integrate technology into both teaching and learning and the critical importance of adequate training and professional development for successful integration. This intensive course is delivered completely online over a seven-week period using Canvas. Canvas is a web-based learning management system or LMS. It is used by learning institutions, educators, and students to access and manage online course learning materials and communicate skill development and learning achievement.

The topics covered each week also comprise the table of contents of this text. They are:

1. Looking in the Rearview Mirror
2. Device Possibilities and Resources
3. The SAMR Model and Higher Order Thinking Skills
4. The Flipped Classroom, Coding, Virtual Reality, and the PICRAT model
5. Using Technology to Differentiate Instruction
6. Digital Citizenship and Internet Safety
7. Pedagogical Implication - Taking Action and Moving Forward



There is no one ed tech initiative or tool that works in every situation because schools are unique entities and are part of unique communities. School leaders should focus on four potential uses of technology and find the right "keys" for their unique situation. Those potential uses are:

1. Scaling up quality instruction, such as through prerecorded quality lessons.
2. Facilitating differentiated instruction, through, for example, computer-adaptive learning and live one-on-one tutoring.
3. Expanding opportunities to practice.
4. Increasing learner engagement through videos and games.

The attached video produced by the Brookings Institution entitled, "REALIZING THE PROMISE: How can education technology improve learning for all?" discusses these potential uses and serves as an anticipatory set for the course. The creation of this book was partially funded by the Class Resource Affordability Initiative Grant (CRAIG) offered by Emporia State University.

Acknowledgments

Thank you to my colleagues Dr. Cecil Short and Dr. Amanda Lichteig from Emporia State University for their help and guidance in the creation of this Open Educational Resource (OER). This book is licensed under the Creative Commons licensing protocols. A Creative Commons license allows creators to maintain copyright ownership of their images while allowing others to use those images free of charge, subject to the terms of the relevant Creative Commons license. There are several types of Creative Commons licenses. They are designed to give content creators control over how their creative works are used.

Suggested citation

Pitler, H. (2024). Supporting Technology Integration for School Leaders. *Edtech Books*. Retrieved from https://edtechbooks.org/integrating_technology



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Chapter 1 - Looking In The Rearview Mirror

A Brief History of Education

Chapter Abstract

Chapter 1, titled "The Future of Educational Technology Integration," provides an insightful exploration into the evolving landscape of technology in education. The chapter offers a comprehensive overview of the current state of educational technology and provides foresight into its future implications. The chapter begins by examining the foundational concepts of educational technology, tracing its historical roots and evolution. It delves into the transformative impact technology has had on traditional teaching methodologies and how it continues to shape the learning experience for students and educators alike. Key themes addressed include the integration of emerging technologies, the influence of digital resources on pedagogy, and the role of technology in fostering collaboration and engagement. The author also explores challenges and considerations associated with the integration of technology in educational settings. Furthermore, the chapter outlines future trends and possibilities, considering the potential impact of artificial intelligence, virtual reality, and other cutting-edge technologies on education. The authors emphasize the importance of adaptability and a forward-thinking approach for educators to effectively leverage technology in the ever-changing landscape of education. The chapter sets the stage for subsequent discussions in the book, providing a comprehensive foundation for exploring the multifaceted dimensions of technology integration in education.



Photo by Stan: <https://www.pexels.com/photo/car-side-mirror-showing-heavy-traffic-191842/>

Learning Objectives

After reading this chapter, learners will be able to:

1. Explain key vocabulary terms, theories, and resources relating to literacies and learning.
2. Describe the connection between topics and personal practice.
3. Summarize the course content of the chapter.

In order to anticipate what the future might hold it is important to take a glance in the rearview mirror and see where we have been. Dr. Peter Gray is a research professor at Boston College and the author of *Free to Learn* (Basic Books) and *Psychology* (Worth Publishers, a college textbook now in its 8th edition). With his permission, I am including excerpts from his article, [A Brief History of Education](#). If you wish to read the entire article, you will find it on the provided link to Psychology Today (Gray, 2008).

In the Beginning

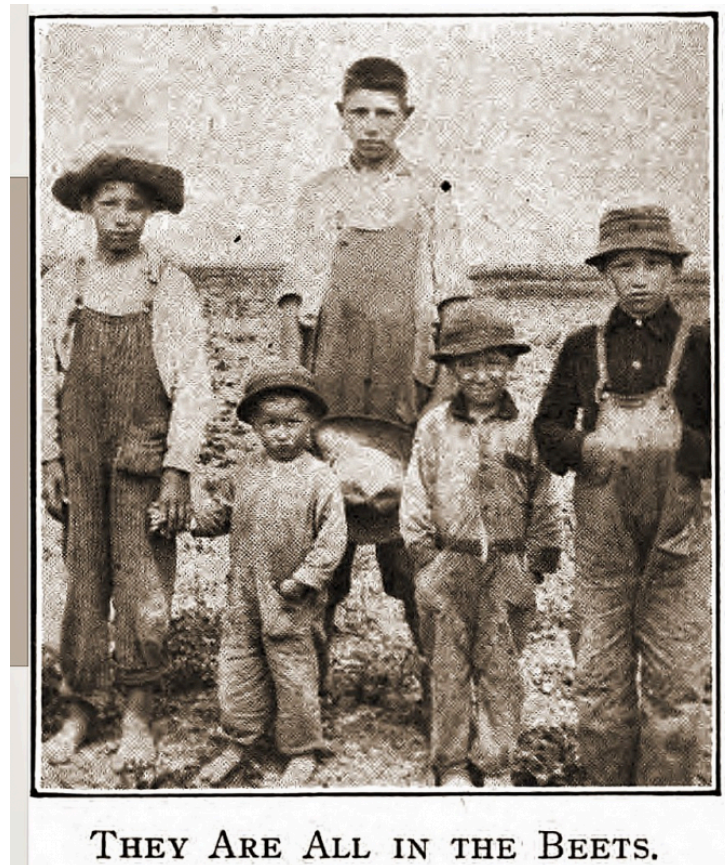
In the beginning, for hundreds of thousands of years, children educated themselves through self-directed play and exploration.

In relation to the biological history of our species, schools are very recent institutions. For hundreds of thousands of years, before the advent of agriculture, we lived as hunter-gatherers. In my August 2 posting, I summarized the evidence from anthropology that children in hunter-gatherer cultures learned what they needed to know to become effective adults through their own play and exploration. The strong drives in children to play and explore presumably came about, during our evolution as hunter-gatherers, to serve the needs of education. Adults in hunter-gatherer cultures allowed

children almost unlimited freedom to play and explore on their own because they recognized that those activities are children's natural ways of learning.

With the rise of agriculture, and later of industry, children became forced laborers. Play and exploration were suppressed. Willfulness, which had been a virtue, became a vice that had to be beaten out of children.

The invention of agriculture, beginning 10,000 years ago in some parts of the world and later in other parts, set in motion a whirlwind of change in people's ways of living. The hunter-gatherer way of life had been skill-intensive and knowledge-intensive, but not labor-intensive. To be effective hunters and gatherers, people had to acquire a vast knowledge of the plants and animals on which they depended and of the landscapes within which they foraged. They also had to develop great skills in crafting and using the tools of hunting and gathering. They had to be able to take initiative and be creative in finding food and tracking game. However, they did not have to work long hours; and the work they did was exciting, not dreary. Anthropologists have reported that the hunter-gatherer groups they studied did not distinguish between work and play—essentially all of life was understood as play.



Agriculture gradually changed all that. With agriculture, people could produce more food, which allowed them to have more children. Agriculture also allowed people (or forced people) to live in permanent dwellings, where their crops were planted, rather than live a nomadic life, and this in turn allowed people to accumulate property. But these changes occurred at a great cost in labor. While hunter-gatherers skillfully harvested what nature had grown, farmers had to plow, plant, cultivate, tend their flocks, and so on. Successful farming required long hours of relatively unskilled, repetitive labor, much of which could be done by children. With larger families, children had to work in the fields to help feed their younger siblings, or they had to work at home to help care for those siblings. Children's lives changed gradually from the free pursuit of their own interests to increasingly more time spent at work that was required to serve the rest of the family.

In the Middle Ages, lords and masters had no qualms about physically beating children into submission. For example, in one document from the late 14th or early 15th century, a French count advised that nobles' huntsmen should "choose a boy servant as young as seven or eight" and that "...this boy should be beaten until he has a proper dread of failing to carry out his master's orders." [1] The document went on to list a prodigious number of chores that the boy would perform daily and noted that he would sleep in a loft above the hounds at night in order to attend to the dogs' needs.

With the rise of industry and of a new bourgeoisie class, feudalism gradually subsided, but this did not immediately improve the lives of most children. Business owners, like landowners, needed laborers and could profit by extracting as much work from them as possible with as little compensation as possible. Everyone knows of the exploitation that followed and still exists in many parts of the world. People, including young children, worked most of their waking hours, seven days a week, in beastly conditions, just to survive. The labor of children was moved from fields, where there had at least been sunshine, fresh air, and some opportunities to play, into dark, crowded, dirty factories. In England, overseers of the poor commonly farmed out paupers' children to factories, where they were treated as slaves. Many thousands of them died each year of diseases, starvation, and exhaustion. Not until the 19th century did England pass laws limiting child labor.

In sum, for several thousand years after the advent of agriculture, the education of children was, to a considerable degree, a matter of squashing their willfulness in order to make them good laborers. A good child was an obedient child, who suppressed his or her urge to play and explore and dutifully carried out the orders of adult masters.

For various reasons, some religious and some secular, the idea of universal, compulsory education arose and gradually spread. Education was understood as inculcation.

As industry progressed and became somewhat more automated, the need for child labor declined in some parts of the world. The idea began to spread that childhood should be a time for learning, and schools for children were developed as places of learning. The idea and practice of universal, compulsory public education developed gradually in Europe, from the early 16th century on into the 19th. It was an idea that had many supporters, who all had their own agendas concerning the lessons that children should learn.



["Woman teaches classroom, while the students in the right background write on the chalkboard"](#) by [Boston Public Library](#) is licensed under [CC BY 2.0](#).

Employers in industry saw schooling as a way to create better workers. To them, the most crucial lessons were punctuality, following directions, tolerance for long hours of tedious work, and a minimal ability to read and write. From their point of view (though they may not have put it this way), the duller the subjects taught in schools the better.

So, everyone involved in the founding and support of schools had a clear view of what lessons children should learn in school. Quite correctly, nobody believed that children left to their own devices, even in a rich setting for learning, would all learn just exactly the lessons that they (the adults) deemed to be so important. All of them saw schooling as inculcation, the implanting of certain truths and ways of thinking into children's minds. The only known method of inculcation, then as well as now, is forced repetition and testing for the memory of what was repeated.

With the rise of schooling, people began to think of learning as children's work. The same power-assertive methods that had been used to make children work in fields and factories were quite naturally transferred to the classroom.



Photo by Stephen Paris: <https://www.pexels.com/photo/brown-wooden-desk-table-752395/>

Repetition and memorization of lessons is tedious work for children, whose instincts urge them constantly to play freely and explore the world on their own. Just as children did not adapt readily to laboring in fields and factories, they did not adapt readily to schooling. This was no surprise to the adults involved. By this point in history, the idea that children's own willfulness had any value was pretty well forgotten. Everyone assumed that to make children learn in school the children's willfulness would have to be beaten out of them. Punishments of all sorts were understood as intrinsic to the educational process. In some schools children were permitted certain periods of play (recess), to allow them to let off steam; but play was not considered to be a vehicle of learning. In the classroom, play was the enemy of learning.

In his book, *A History of Education: a social interpretation*, James Mulhern writes:



Angry Teacher and Boy by [j4p4n](#)

"The brute force methods long used to keep children on task on the farm or in the factory were transported into schools to make children learn. Some of the underpaid, ill-prepared schoolmasters were clearly sadistic. One master in Germany kept records of the punishments he meted out in 51 years of teaching, a partial list of which included: "911,527 blows with a rod, 124,010 blows with a cane, 20,989 taps with a ruler, 136,715 blows with the hand, 10,235 blows to the mouth, 7,905 boxes on the ear, and 1,118,800 blows on the head"[6]. Clearly, that master was proud of all the educating he had done (p. 383).

In recent times, the methods of schooling have become less harsh, but basic assumptions have not changed. Learning continues to be defined as children's work, and power-assertive means are used to make children do that work.

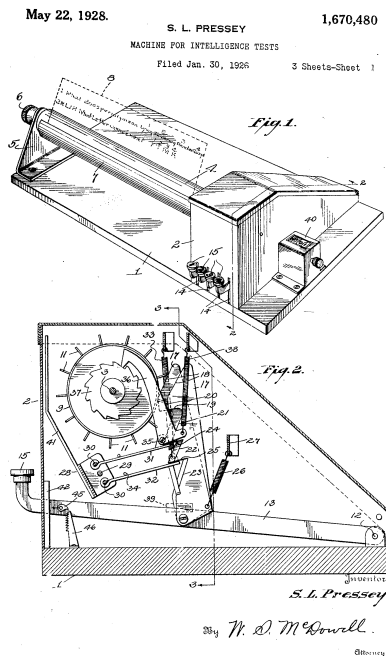
In the 19th and 20th centuries, public schooling gradually evolved toward what we all recognize today as conventional schooling. The methods of discipline became more humane, or at least less corporal; the lessons became more secular; the curriculum expanded, as knowledge expanded, to include an ever-growing list of subjects; and the number of hours, days, and years of compulsory schooling increased continuously. School gradually replaced fieldwork, factory work, and domestic chores as the child's primary job. Just as adults put in their eight-hour day at their place of employment, children today put in their six-hour day at school, plus another hour or more of homework, and often more hours of lessons outside of school. Over time, children's lives have become increasingly defined and structured by the school curriculum. Children now are almost universally identified by their grade in school, much as adults are identified by their job or career.

Schools today are much less harsh than they were, but certain premises about the nature of learning remain unchanged: Learning is hard work; it is something that children must be forced to do, not something that will happen naturally through children's self-chosen activities.

Enter Technology

Between 1910 and 1912 Thomas Edison was working to expand his motion picture industry into education. He envisioned an end to textbooks, with instruction provided through video. Edison said, "If I were a school teacher, I would put lazy pupils to studying bees and ants. They would soon learn to be diligent" (Edison Foundation, 2019). While Edison may have been on the right track regarding the power of visual and nonlinguistic learning, his passive learning approach never caught on.

In his "History of Teaching Machines" (1988), historian of psychology Ludy Benjamin writes, "A teaching machine is an automatic or self-controlling device that (a) presents a unit of information, (b) provides some means for the learner to r



respond to the information, and (c) provides feedback about the correctness of the learner's responses."

As such some scholars have credited Ohio State University psychology professor Sidney Pressey, who displayed a "machine for intelligence testing" at the 1924 meeting of the American Psychological Association, as "the first" to build a teaching machine.

Looking through early patents in this area we see a variety of devices. Some were teaching machines like Pressey's, some were specifically testing machines, and some were toys.

Apple Changes Everything

The education technology landscape changed dramatically in the early 1980s with the Apple IIe. Steve Jobs, the co-founder



"Old Apple Logo Web 2.0" by [Alistair Israel](#) is licensed under [CC BY-NC 2.0](#).

of Apple Computers, didn't have very much formal education beyond high school, but he saw his first computer at Hewlett-Packard he immediately saw its potential. "I thought if there was just one computer in every school, some of the kids would find it. It will change their lives," he said in a 1995 interview at the Computerworld Smithsonian Awards Program (Marrow, 1995). In May, 1983, Apple Computer, Inc. announced a program called Kids Can't Wait (KCW). The idea behind KCW was to donate a computer to every school in America. Political leaders in California were the first to work with Apple to make this happen. They agreed to give Apple (and any other company) a tax break for the donations. Soon after that, computers began arriving in schools throughout the state.

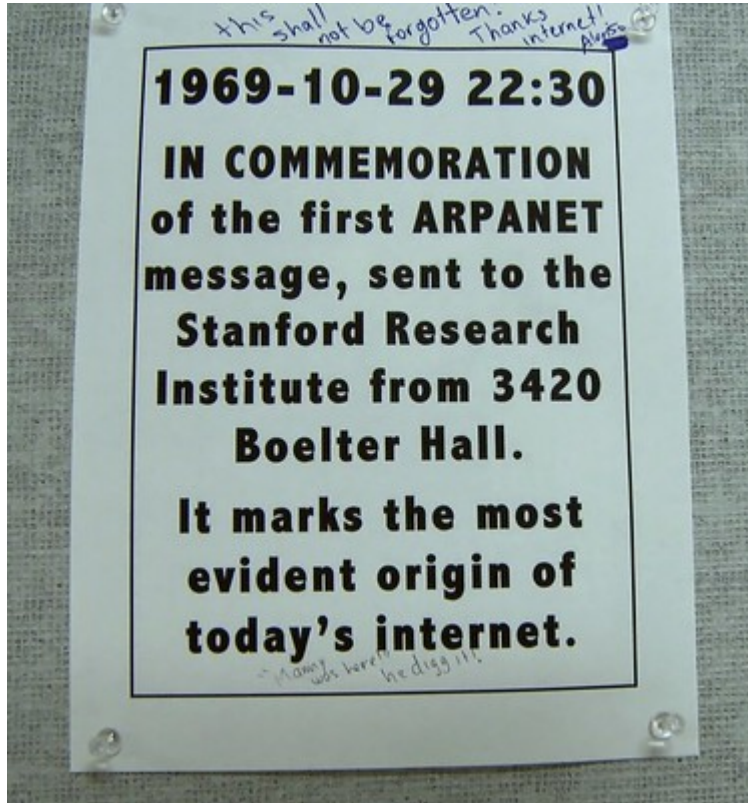
John Couch, Apple, Inc's First Vice President of Education reflects on Apple's journey in his book, *Rewiring Education: How Technology Can Unlock Every Student's Potential* (Couch, 2018). While getting computers into classrooms was a huge initiative in itself, Steve Jobs and the leadership at Apple knew they needed to do more if they wanted to make the impact they envisioned. They didn't just want to give students computers, they wanted to help teachers and students to transform teaching and learning. In order to do that, they needed data. In 1985 Apple launched the Apple Classroom of Tomorrow (ACOT) research study. Over the next 10 years, they worked with school districts throughout the US and also the National Science Foundation (NSF) to study how the everyday use of technology might impact teaching and learning. They also established Apple Development Centers where they could test different technologies and curricula (Couch, 2018). The authors of the ACOT study wrote, "In ACOT classrooms, technology is viewed as a tool for learning and a medium for



["Little Karl with Apple II Plus"](#) by [bigboxcar](#) is licensed under [CC BY-NC-SA 2.0](#).

thinking, collaborating, and communicating." When technology was used in a variety of ways within a classroom, it significantly increased "the potential for learning, especially when it is used to support collaboration, information access, and the expression and representation of students' thoughts and ideas." Today we see this as just common sense, but back in 1985, this was a radical and innovative idea. This research was used as the foundation for technology integration over the next decade. In fact, when I started my first technology integration elementary school in 1988 I presented parts of the ACOT study to my school board as justification for the creation of Wichita's first technology magnet school.

The Internet Arrives



["First Internet Message Arpanet UCLA"](#)

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By the early 2000s the world of technology in schools had changed. While the original KCW model provided free-standing and networked computers to classrooms, the Internet began to erode the very walls of the classrooms. Now teachers and students could collaborate in real-time with others throughout the world. My elementary students in Wichita, KS had made friends with a class in Israel in 1988. When the Palestinian Intifada began I remember some of my students hurrying to the classroom when they got off the buses to make sure their friends were ok. That's when I really understood the power of building relationships through technology.

With the advent of the internet and the rise in mobile devices and personal computing becoming more affordable Apple saw the need to update the ACOT research. They launched the "Apple Classrooms of Tomorrow - Today" (ACOT²) research. While the original ACT study looked at the impact technology had on teaching and learning, the ACOT² research focused on what do to and how to do it. The ACOT² researchers were trying to create a "specific action plan that would ensure the new digital generation of students would receive the type of education they needed to learn and stay in school" (Couch, 2018, p.82). One of the findings of the research highlighted the importance of hands-on, constructivist learning. Rather than relying



["College of DuPage Engineering Club Hosts STEM Learning Event for Homeschoolers 2018 4"](#) by [COD Newsroom](#) is licensed under [CC BY 2.0](#).

on instruction manuals and scripted instruction, educators need to move to an active learning environment. Couch (2018) writes, "Thomas Edison's educational film invention failed over a hundred years ago because he didn't listen to John Dewey's constructivist views on the importance of hands-on learning. At Apple, we wanted to learn from that mistake and ensure that our innovations had the chance to make a real impact on kids" (p. 82-83).

That was a look in the rearview mirror. In the next chapter, we look the potential of all of these mobile devices and the possibilities and resources available to educators as they strive to meet the challenge laid out in the ACOT2 research - to "ensure the new digital generation of students would receive the type of education they needed to learn and stay in school" (Couch, 2018, p.82).

Application:



["AD at Student Voices Discussion 20 August 2012"](#) by [US Department of Education](#) is licensed under [CC BY 2.0](#).

In 7-10 sentences, discuss how you see some aspect of the readings already occurring (in your classroom, school, or district) and identify at least one area where you could improve in these areas. *Be sure to include what your primary stakeholders (students, staff, parents) would say about the current degree of technology integration in your



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https://edtechbooks.org/integrating_technology/chapter_1_the_future.

Chapter 2 - Device Possibilities and Resources

Chapter Abstract

This chapter explores frameworks and resources for a more constructivist approach. Addressing the concerns of already overwhelmed classroom teachers, the chapter highlights valuable resources for effective technology integration. The chapter begins by emphasizing the importance of finding reputable sources for technology integration guidance. Teacher bloggers, such as Jennifer Gonzales of Cult of Pedagogy and George Couros, provide rich content and insights into technology integration and innovation in education. Jennifer Gonzales's annual recommendations for Ed Tech tools offer practical suggestions for educators looking to enhance their teaching practices. The American Association of School Librarians (AASL) is introduced as another valuable resource, presenting the Best Digital Tools for Teaching and Learning annually. These tools align with AASL's National School Library Standards and support qualities such as innovation, collaboration, and user-friendliness. The chapter encourages educators to question whether they are using technology for its own sake and emphasizes putting learning first. It references John Hattie's "Visible Learning" and introduces Howard Pitler's "Using Technology with Classroom Instruction that Works," which builds on effective instructional strategies and incorporates technology categories. Furthermore, the chapter introduces TechBestPractice.net, a resource supporting McREL research and the UTCITW framework. The UTCITW framework links technology tools to nine categories of instructional strategies identified in "Classroom Instruction that Works, 2nd ed." When technology tools are effectively integrated, they can extend learning by providing access to primary source material, methods for data collection, global collaboration opportunities, and authentic assessment. The chapter also delves into the importance of selecting the right apps, offering a Great App Checklist from "Mobile Learning: A Handbook for Developers, Educators, and Learners" by McQuillen. This checklist guides educators in determining the appropriateness of an app, addressing factors such as curricular alignment, pedagogical framework, privacy, and accessibility.



Image by [Gerd Altmann](#) from [Pixabay](#)

Learning Objectives

After reading this chapter, learners will be able to:

1. Explain key vocabulary terms, theories, and resources relating to ubiquitous experiences.
2. Describe the connection between chapter topics and personal practice.
3. Summarize the course content of the chapter.

If we truly intend to meet the challenge laid out in the ACOT² research, that of ensuring the new digital generation of students receives the type of education they needed to learn and stay in school, what are some of the frameworks and resources available to move to a more constructivist approach? Equally important, where can classroom teachers who already have not a full plate, but an overflowing plate of responsibilities and requirements find the best of the best? Fortunately, there are some really great resources to make the job less formidable. In this chapter, I will focus on the resources available to you.

Finding Resources

One way to simplify the process of finding the best of the best is to find a few good teacher bloggers who focus on technology integration. Let's start with Jennifer Gonzales. Jennifer is the author of [The Teacher's Guide to Tech](#) and the creator of [Cult of Pedagogy](#), a website for teachers. I could write a dozen or so pages trying to explain the depth of The Teacher's Guide, but one advantage of an ebook is I can just embed a video. Watch this short YouTube introduction to the guide.

If that didn't get you excited about the possibilities technology integration provides, let's try this. Subscribe to Ms. Gonzales's blog, [The Cult of Pedagogy](#). When you go to that link you will notice that she also has a series of videos, podcasts, and tips. I could seriously stop here and tell you to spend the next few weeks of our time together and explore Jennifer's vast resources and then create a video synopsis as a final project. I could, but of course, I won't. Ms. Gonzales annually highlights apps to try in the coming year. Take a look at [6 Ed Tech Tools to Try in 2023](#).

Another fantastic blog to follow is by George Couros. George is the author of *The Innovator's Mindset* (Dave Burgess Consulting, Incorporated, 2015). If you browse through the myriad of topics found on his [blog](#), I am sure you will find something that is a perfect fit for where you are in your teaching and learning journey. I mentioned *The Innovator's Mindset* (Couros, 2014) and I do recommend checking out that book, but you will also find a summary of each chapter on his blog page. This book focuses on innovation and not just technology innovation. For example, Chapter 4 of the book is entitled "Relationships, Relationships, Relationships." Learners I have worked with in previous classes will know that I believe that relationships are the foundation of what we do in education. Here is a peek at the discussion questions from that chapter.

Discussion Questions:

1. How do you build relationships with individuals in your district, school, or classroom?
2. How do you empower others to take risks? Examples?
3. How do you create opportunities for your school community to have learning driven by their personal interests?

Another great resource repository comes from the American Association of School Librarians (AASL). Every year the



year's [Best Digital Tools for Teaching and Learning](#). These tools should foster the qualities of:

- Innovation/Creativity
- Active Participation
- Collaboration
- User Friendly
- Encourages Exploration
- Information/Reference.

They should also address at least one of the AASL's National School Library Standards six Shared Foundations:

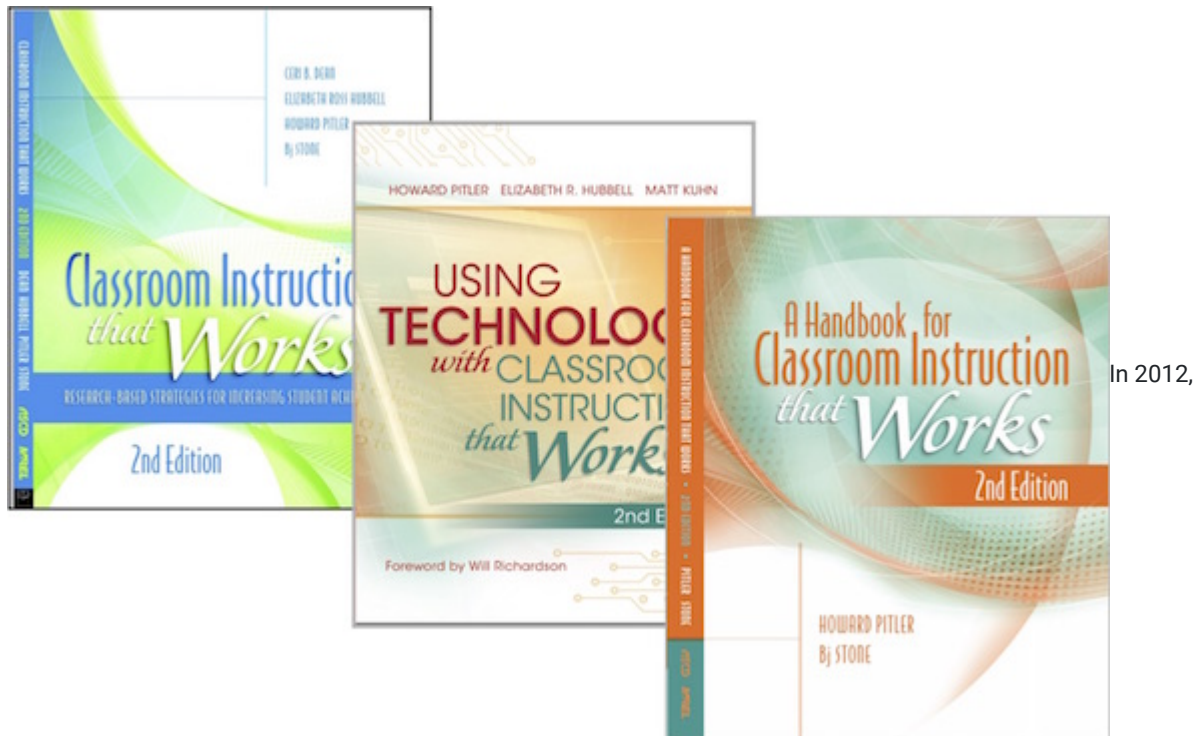
- Inquire
- Include
- Collaborate
- Curate
- Explore
- Engage

If you are beginning to see a connection between these sets of resources and the findings from the ACOT² research you are absolutely right.

Integrating Technology

Are you using technology for “technology's sake?” How do you know?

In John Hattie’s “[Visible Learning](#)” (2018), he updates his extensive meta-analysis on what best practice strategies have the most impact on learning. As we think about the integration of technology, it is important that we put learning first.

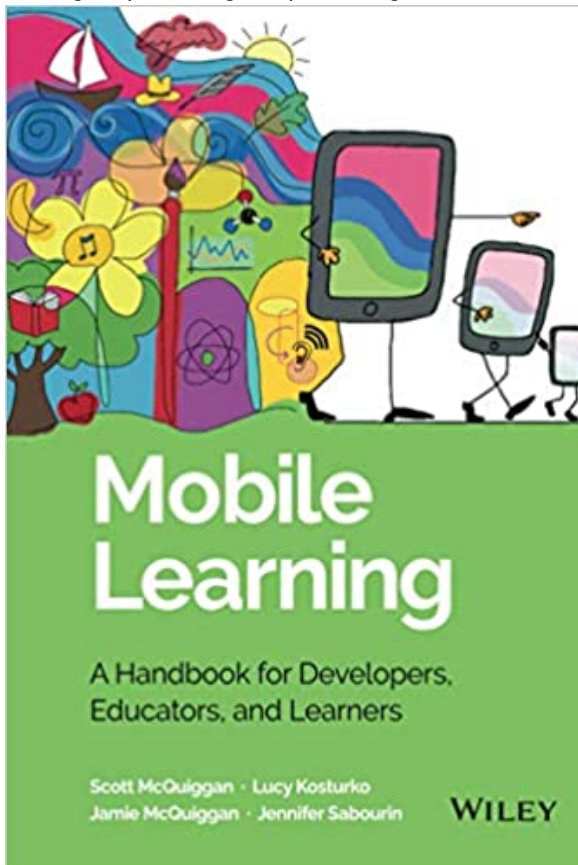


Howard Pitler, Matt Kuhn and Elizabeth Ross with McREL International (Pitler, Kuhn, & Ross, 2012) released, “*Using Technology with Classroom Instruction that Works*” 2nd ed (UTCITW). Building on the research on effective classroom instructional strategies outlined in *Classroom Instruction that Works, 2nd ed*, (Dean, Hubble, Pitler & Stone, 2012) The authors took the research further and introduced technology categories. Janice Harding and Jennifer Parker created **Note: as of 10.26.23 the link to this resource is not available. The authors have changed domains. As soon as they give me the new link I will post it.** “TechBestPractice.net” to support the McREL research and the UTCITW

framework. When you get to the TechBestPractice page, click on the links on the left navigation panel to see resources specifically linked to the nine categories of instructional strategies identified in *Classroom Instruction that Works, 2nd ed.* (Dean, Hubble, Pitler & Stone, 2012).

When technology tools are effectively integrated into the curriculum, they can extend learning in powerful ways. These tools can provide students and teachers with:

- access to up-to-date primary source material
- methods of collecting/recording data
- ways to collaborate with students, teachers and experts around the world
- opportunities for expressing understanding via multimedia
- learning that is relevant and assessment that is authentic
- training for publishing and presenting their new knowledge (Parker & Harding, 2022).



Selecting the Right Apps

[The Great App Checklist found in Appendix B](#) of *Mobile Learning: A Handbook for Developers, Educators, and Learners* by McQuiggan (2015) presents a series of questions to help determine the appropriateness of an app. The checklist is designed to be used in sequential order, going through the purpose, curricular alignment, pedagogical framework (more on that in the next chapter), personalization, sharing and access of work, ease of use, privacy, app citizenship, and accessibility. This checklist will prove invaluable to technology and curriculum directors across all grade levels.

The Great App Checklist helps educators and districts try to determine the right apps for their learners. Alyson Klein, the Assistant Editor of EdWeek addresses this in her article, [The Number of Ed-Tech Tools Districts Use Has Almost Tripled. That's a Problem](#). She writes, "These numbers [of educational apps] should prompt district leaders to ask not just what ed tech is being used in their schools or how often it's getting used, but also whether it is safe, equitable, and positively impacting learning,"

In the next Chapter, you will explore three current models of technology integration that shape digital age teaching and learning:

1. SAMR
2. TPACK
3. PICRAT

We do love our acronyms in education.

Application:

Pick **2 of the prompts** below and respond to them in 7-10 sentences total.

- How many resources or links (and which ones) have you &/or your students/staff worked with before?
- Are there some in particular that you would like to explore? Why do those interest you?
- What could you and your students/staff do with these resources in your classroom/building?
- Seek out someone you respect for their views on--or use of--technology: what do they use and in what way(s)?



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Chapter 3: Models, Methods, and Modalities



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Learning Objectives

After reading this chapter learners will be able to:

1. Explain key vocabulary terms, theories, and resources relating to redefining learning with devices and complex cognition.
2. Classify a series of taxonomies within a single graphic.
3. Summarize course content and student contributions for the week.

The previous chapters discussed important research looking into the impact of technology on teaching and learning and also provided scores of vetted apps and websites to help educators integrate technology into the classroom to enhance instruction. In this chapter, we will look at three models that can guide educators in the intentional use of those apps and websites. The British statistician George Box was quoted as saying, "All models are wrong, but some are useful" (Box, 1976). The key to using the models we will discuss is to determine what you are trying to accomplish and

then select the model best designed to get you there. While there are other good models to aid in technology integration, these three will easily meet the needs of most educators. They are:

1. Substitution, Augmentation, Modification, and Redefinition - SAMR
2. Technological Pedagogical Content Knowledge - TPACK
3. Passive, Interactive, Creative - Replaces, Amplifies, Transforms - PICRAT

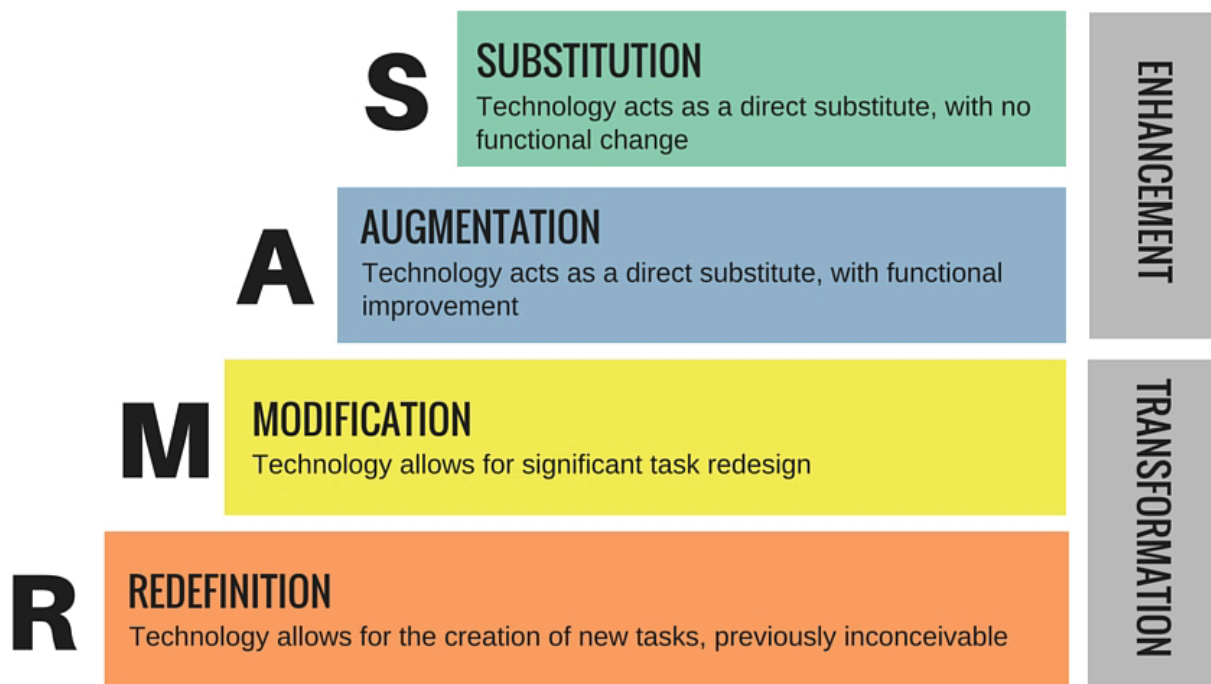
We will look at each model briefly.

The SAMR Model

The SAMR model was created by Dr. Ruben Puentedura. Dr. Puentedura created the SAMR model to show the impact of technology on teaching and learning. The model moves from the basic level of substitution to the transformative level of redefinition (See Fig 3.1)

Figure 3.1

SAMR Model Illustrated



At this point, let's listen to Dr. Puentedura explain the SAMR model.

The SAMR model is essentially a planning tool to help educators determine how they are using technology in their instruction.

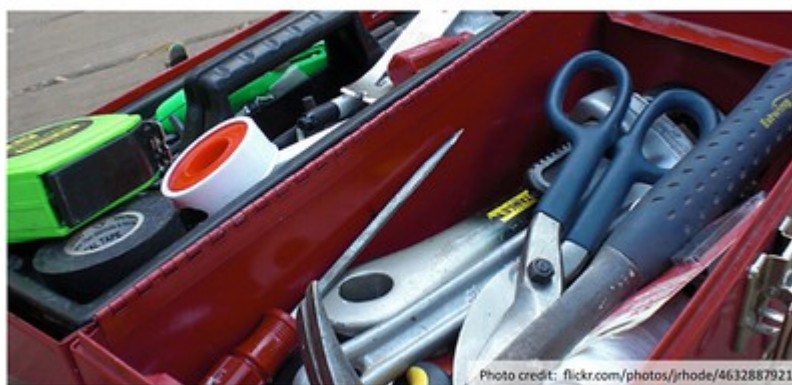
Substitution is the simplest stage in which educators use technology as a direct substitute for traditional practices. An example might be having learners type their notes rather than hand write them or do an online quiz rather than the same quiz on paper. The task remains the same.

Augmentation adds something to the learning process. It is more than just convenience. Examples include the student giving an oral presentation and augmenting it with Prezi or PowerPoint, independently researching something on the internet instead of relying on teacher-provided resources, and gamifying the curriculum content and allowing students to track their own progress. Some popular gamification cite include Minecraft Education Edition, Classroom DoJo, and DuoLingo

Modification is used to design interactive and dynamic tasks that go beyond the limitations of a traditional classroom. For example, learners might create a podcast to share on the classroom website, create a video presentation to try to persuade the principal to increase the length of recess, or use online resources including audio and video tools to gain greater insight into the motivations of a particular literary character.

Redefinition is the most sophisticated level. At this level, the learner uses technology to create entirely new learning possibilities that wouldn't be possible without technology. Some examples of redefinition are having the learners work collaboratively with learners in other schools or even countries to investigate climate change at the local level and compare findings, having learners publish their writing on collaborative websites and open them to peer review and the broader community, and exploring a locale using Google Earth and create a video presentation of that location, including interviews with people who live there or have visited there.

Why Technology?



If the only tool you have is a hammer, you tend to see every problem as a nail. – Abraham Maslow

"[Why Technology?](#)" by [jrhode](#) is licensed under [CC BY-NC-SA 2.0](#).

Always remember that technology integration isn't about using technology for technology's sake. Ask yourself these questions:

- What am I trying to achieve with technology?
- How will this make a difference in student learning?
- Is technology really necessary to meet my objective?
- How much time do I have to invest in this unit?
- Do I have the necessary technology resources?

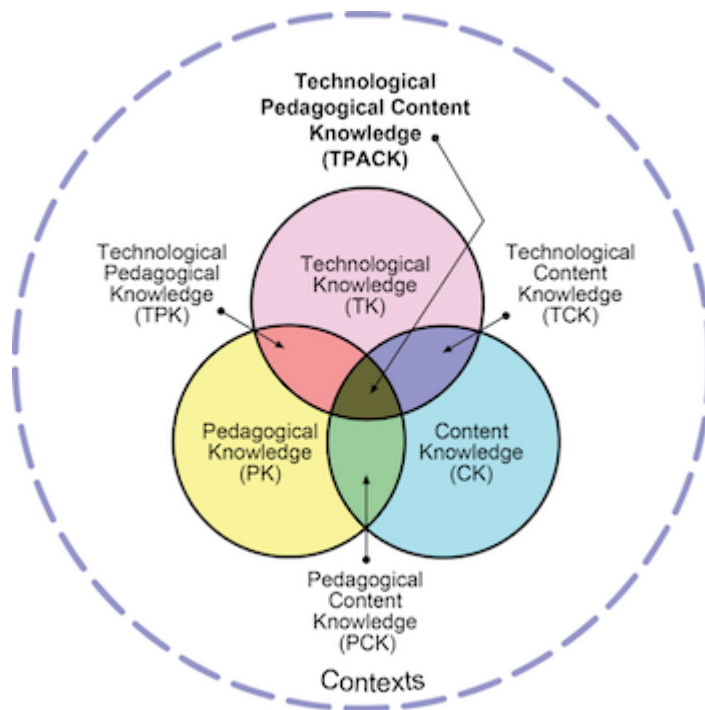
These questions will help you to determine which level of the SAMR model is the right one for your lesson.

TPACK

TPACK stands for Technological Pedagogical Content Knowledge is another helpful framework for you to look at when considering how educational technology fits into your current daily teaching practices. To begin to understand the TPACK model it helps to review the Venn diagram in Figure 3.2 below.

Figure 3.2

TPACK Model Illustrated



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by tpack.org

Punya Mishra and Matthew J. Koehle (2006) introduced the TPACK model in response to technology being seen as a separate skill set. They identified three types of knowledge:

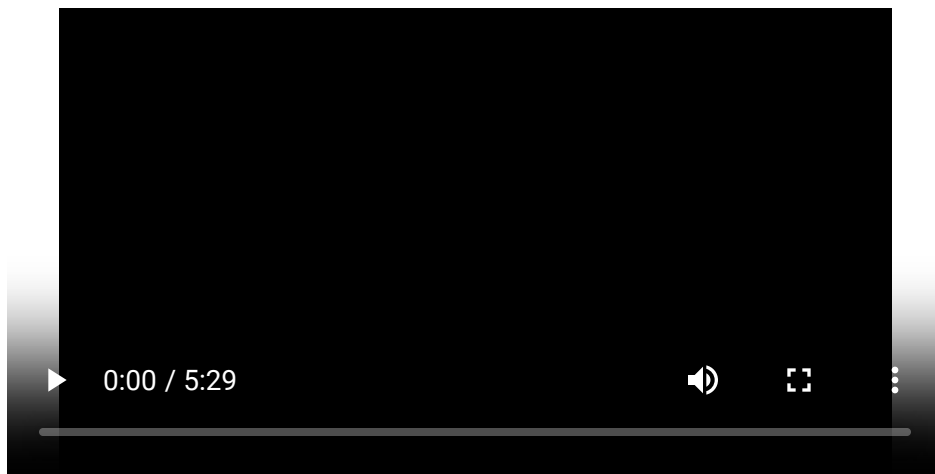
- **Pedagogical Knowledge** - a teacher's understanding of strategies and methods
- **Content Knowledge** - a teacher's understanding of a subject area
- **Technological Knowledge:** a teacher's understanding of digital tools, programs, and resources (which are frequently evolving)

Their research looked at the various intersections of the three types of knowledge.

- **Pedagogical Content Knowledge (PCK, the green intersection):** one's understanding of how best to vary instructional strategies to transform a specific subject for individual students' needs.
- **Technological Content Knowledge (TCK, the purple intersection):** one's understanding of how applied technology can enhance and/or constrain how content is represented and delivered
- **Technological Pedagogical Knowledge (TPK, the pink intersection):** one's understanding of how digital tools can affect the teaching and learning of desired outcomes

Confusing? Maybe, but as usual, Common Sense Education has a great video to help make the TPACK model easy to grasp.

https://video.commonsensemedia.org/education/Intro_to_TPACK_model_RB2016.mp4



What are the differences between SAMR and TPACK? The SAMR model emphasizes the roles that technology can fill in an educational environment. The substitution and augmentation levels are seen as enhancement while the modification and redefinition levels are viewed as transformational. Bray, Oldham, and Tangney (2013) write, "The interventions deemed most successful, according to the review, are those that are classified as being within the transformation space in the SAMR hierarchy, that is, those that achieve significant task redesign or the creation of new, previously inconceivable tasks, through appropriate use of technology" (p. 78).

TPACK is a structural understanding of how an instructor's knowledge of technology needs to be integrated into their educational framework. This framework also focuses on the technology, but the knowledge related to technology, with content and pedagogy.

PICRAT

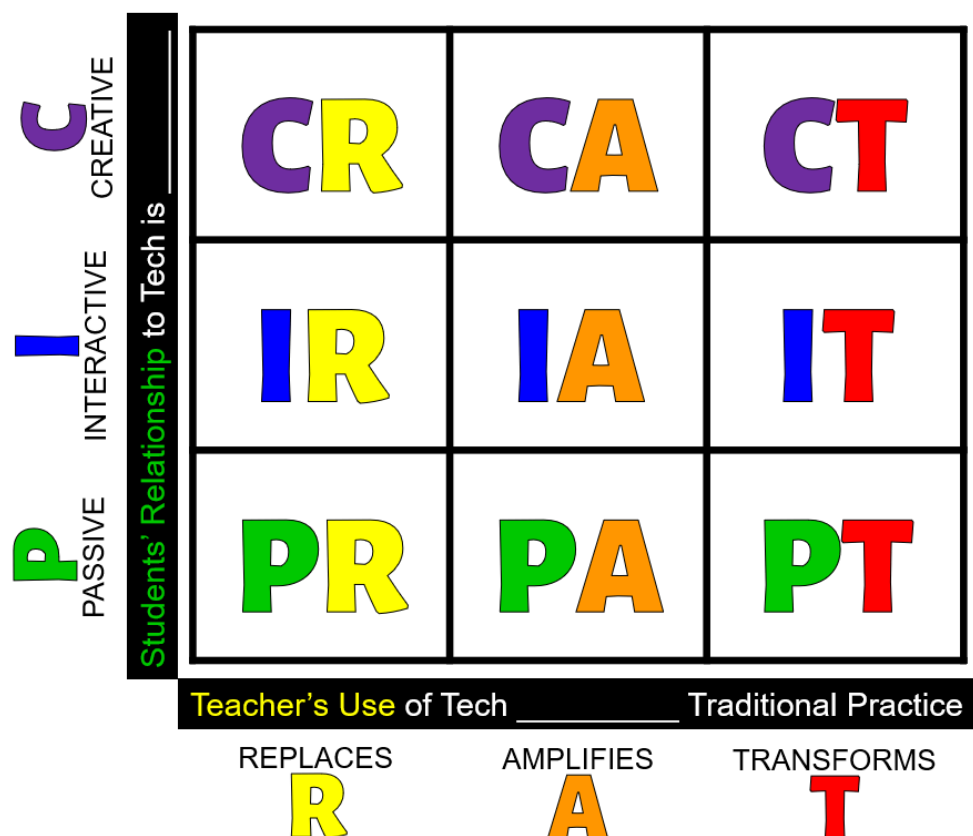
The final model we look at in this chapter is PICRAT. The PICRAT model was introduced by Kimmons, Graham, and West (2020) This model focuses on two different ways in which technology impacts teaching and learning. The PIC side of the model looks at how students are interacting with technology, either passively, interactively, or creatively. The RAT axis looks at how technology impacts instruction as opposed to traditional teaching, replacing, amplifying, or transforming. Figure 3.3 is a common visualization of the PICRAT model. The x-axis indicates the student's relationship to technology. The y-axis shows how technology influences the teacher's practice as opposed to traditional instruction.

Kimmons et. al. write, "As a theoretical model to guide teacher technology integration, PICRAT enables teacher educators to encourage reflection, prescriptively guide practice, and evaluate student teacher work. Any theoretical model will explain particular attributes well and neglect others, but PICRAT is a student-focused, pedagogy-driven model that

can be effective for the specific context of teacher education —comprehensible and usable by teachers as it guides the most worthwhile considerations for technology integration" (Kimmons, Graham, and West, 2020, p. 184)

Figure 3.3

PICRAT Model Illustrated



For those of you who learn better by seeing, here is a short video that does a very nice job of explaining the PICRAT model.

As you can see, SAMR, TPACK, and PICRAT have different foci. Which is the best one for you? It depends on what you are trying to accomplish. If you are looking at ways to move from a traditional approach and move toward redefining the way you teach SAMR would be a good choice. If you want to focus on blending content, teaching strategies, and technology then TPACK would be a logical choice. If you want to see how technology is being used by the student and also how it is changing the way you teach then it would be PICRAT. I go back to the George Box quote at the beginning of this chapter - "All models are wrong, but some are useful."

While these models are all useful, educators have to always keep content and pedagogy top of mind. A visual that many have found helpful is the [Padagogy Wheel](#) (Carrington,

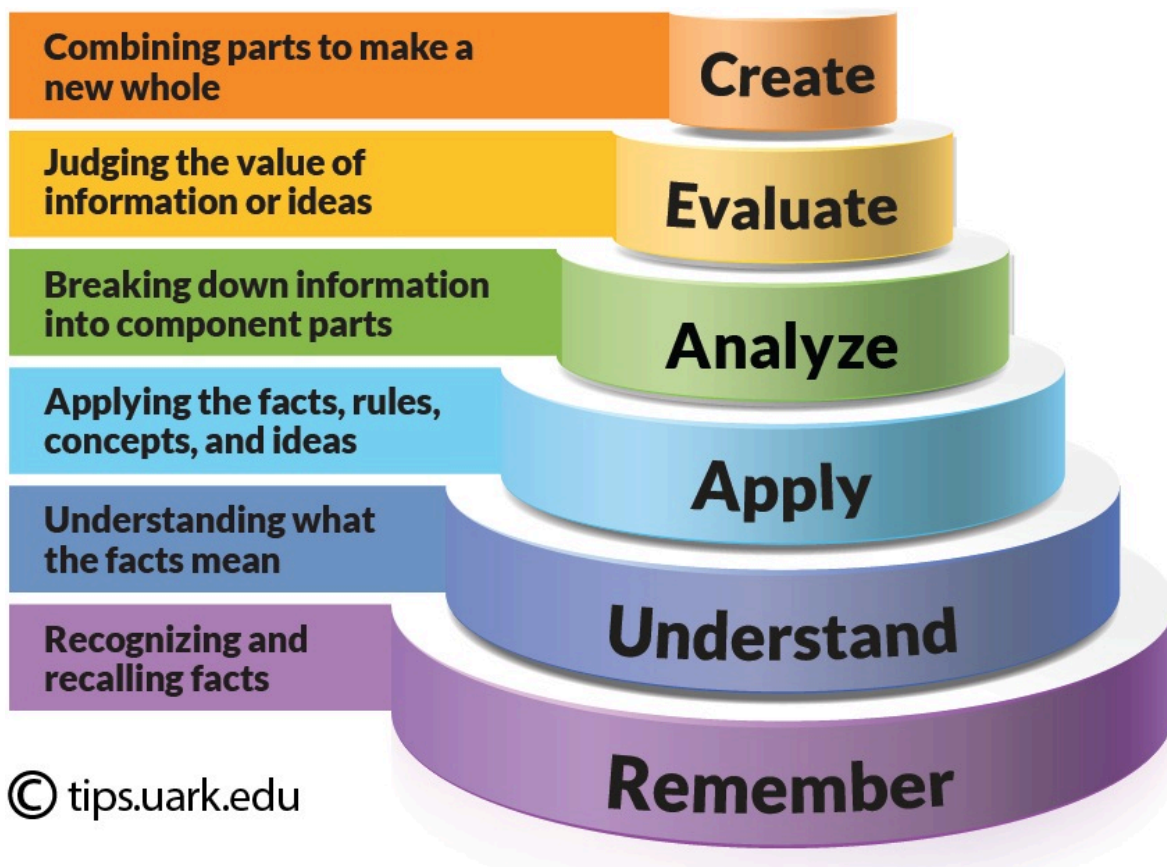
2022). Along the outside where of the Padagogy Wheel you see the SAMR categories. Toward the hub of the wheel are the levels of Bloom's Taxonomy. Moving out one layer from Bloom's descriptors are action verbs that can be associated with those Bloom's levels. One more layer out toward the edge are activities associated with Bloom's. These types of wheels aren't new and certainly aren't technology focused, however, one more layer outward you will find scores of apps that can be used with the activities and action verbs to create technology-enhanced lessons that take both Bloom's Taxonomy and the SAMR model into account.

But wait - there's more

Higher Order Thinking (HOTS)

Basic skills including memorization and factual knowledge are essential to learning, but educators can challenge their learners by developing their higher-order thinking skills. Identifying reliable information and analyzing data often require more complicated thought processes and intentional work. This kind of critical thinking was also discussed in the previous chapter under the heading of fake news. Higher-order thinking skills can help learners (and adults) solve problems by finding connections between different ideas.

Bloom's Taxonomy and HOTS



Graphic by Jessica Shabatura.

Bloom's taxonomy is taught in a majority of teacher education programs in the United States, including at The Teachers College at Emporia State University. In case it's been a while since you learned about Bloom's Taxonomy (or in case you

were sleeping when it was presented) ESU has a great refresher - [Ways to Use Bloom's Taxonomy in Teaching.](#)

The aim of the taxonomy is to promote higher forms of thinking in education, such as analyzing, synthesizing, and evaluating, rather than just teaching students to memorize facts and formulas. Sue Watson (2019) writes, "The top three levels of Bloom's taxonomy—which is often displayed as a pyramid, with ascending levels of thinking at the top of the structure—are analysis, synthesis, and evaluation. These levels of the taxonomy all involve critical or higher-order thinking. Students who are able to think are those who can apply the knowledge and skills they have learned to new contexts."

4 C's of 21st Century Learning

The 4 Cs, are four skills that have been identified by the United States-based Partnership for 21st Century Skills (P21) as the most important skills required for 21st-century education. The 4 C's are critical thinking, communication, collaboration, and creativity. These 21st-century skills have been identified and supported by national educational and political leaders in the United States, including President Obama.

In January 2016 members of the US House of Representatives created a bipartisan Congressional 21st Century Skills Caucus.

The Four Cs have been adopted and implemented into the curricula of schools, school districts, and professional development programs throughout the United States and beyond.

Critical thinking in the 21st century is described as the ability to design and manage projects, solve problems, and make effective decisions using a variety of tools and resources.

Communication in a 21st-century context refers not only to the ability to communicate effectively, orally, in writing, and with a variety of digital tools but also to listening skills.

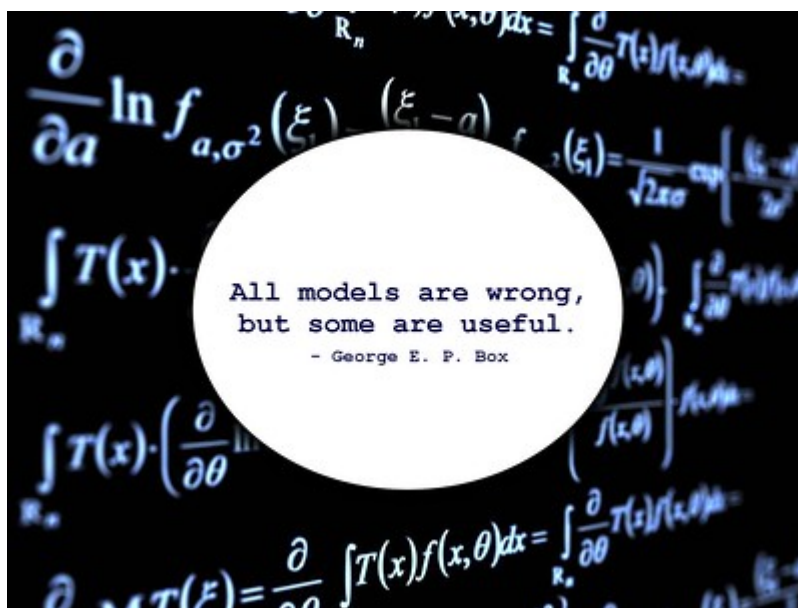
Collaboration in a 21st-century context requires the ability to work in teams, learn from and contribute to the learning of others, use social networking skills, and demonstrate empathy in working with diverse others.

Creativity is often described as the pursuit of new ideas, concepts, or products that meet a need in the world. Innovation contains elements of creativity and is often described as the realization of a new idea to make a useful contribution to a particular field.

Learn more about the 21st-Century Partnership 4 C's by watching the following short video created by Joseph D'Addario (2016).

Conclusion

This chapter has been all about frameworks and modalities. We end this chapter as we began it with the quote from George Box.



"All models are wrong" by ryan2point0 is marked with [Public Domain Mark 1.0](#).

Application:

Using the Pedagogy Wheel as a [mentor text](#), design your own, original, one-page poster that incorporates at least 3 of the following elements. Also, you must correctly demonstrate how the **3 selected elements** connect and interact with each other--so the layout, organization, wording, etc. will play a significant role.

- As you create your poster, be sure to select technology (apps/tools) that:
 - Align with at least **2** of these categories:
 - SAMR Level
 - Bloom's Taxonomy Verbs &/or Levels - University of Arkansas resource
 - Costa's Levels of Inquiry
 - 4 Cs of 21st-Century Skills
 - Align with at least **1** of these categories (refer to your school/district documents):
 - Content Area Standards
 - Sample Questions/Question Stems
 - Sample Activities
 - Applicable Websites/Apps
 - Interdisciplinary Connections

Extension Activity

Create a modified lesson plan or PD session utilizing the SAMR Model.



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Chapter 4 - Movements

In this chapter, we are looking forward. What are the current trends in education? The main trends we will discuss aren't futuristic things that may or may not happen in 10 years. We will look at artificial intelligence, augmented reality, coding and app development, and virtual and flipped classrooms.



"What's ahead?" by [Z Andrei](#) is licensed under [CC BY-NC 2.0](#).

Learning Objectives

After reading this chapter learners will be able to:

1. Understand and be able to elaborate on tenets of various movements.
2. Summarize the course content of the chapter.

We began this ebook with a look in the rearview mirror. In this chapter, we are looking forward. What are the current trends in education? The main trends we will discuss aren't futuristic things that may or may not happen in 10 years, but rather some leading technologies that are appearing in schools today. We will look at artificial intelligence, augmented reality, coding and app development, and virtual and flipped classrooms.

Artificial Intelligence



[ChatGPT-3 is here](#)

In an article in the February-March, 2023 issue of Fortune Magazine Jeremy Kahn (Kahn, 2023) wrote "There were web browsers as early as 1990. But it wasn't until Netscape Navigator came along in 1994 that most people discovered the internet. There were MP3 players before the iPod debuted in 2001, but they didn't spark the digital music revolution. There were smartphones before Apple dropped the iPhone in 2007 too-but before the iPhone, there wasn't an app for that. (p.44)" November 30, 2022 might be the day that artificial intelligence had what might be its Netscape Navigator moment. That is when Sam Altman, the CEO of OpenAI tweeted, "today we launched ChatGPT. try talking with it here." That tweet was followed by a link that allowed anyone to sign up for an account and begin chatting with OpenAI's new chatbot for free.

What is ChatGPT and how might it impact K-12 teaching? Generative Pre-trained Transformer 3 (GPT-3) was released in 2020 and is used to produce human-like text. Given an initial text as a prompt, it will produce text that continues the prompt. GPT is a deep learning neural network with more than 175 billion and is the largest neural network ever produced. Developed by OpenAI, it can take a small amount of input text and generate large volumes of relevant text and do so in a way that makes it convincing enough to think it was created by a human.

What ChatGPT has done is provide a very simple interface to interact with its tremendous amount of data. Simply enter a question or request and within seconds you will see the result. Looking back to the previous chapter you could ask, "explain the PICRAT model and how a teacher could use it in their planning" and in seconds you would see a report that the instructor would be hard-pressed to distinguish as computer generated. Maybe you would like a scope and sequence for a 4-week unit on the book "I Know Why a Caged Bird Sings" by Maya Angelou. I entered the following into the ChatGPT engine. "Create a scope and sequence for a 4-week unit on teaching when the cage bird sings to 9th grade students", typos and all. Here is the output and my follow-up requests:

Create a scope and sequence for a 4 week unit on teaching when the cage bird sings to 9th grade students

Sure, here's a possible scope and sequence for a 4 week unit on teaching "I Know Why the Caged Bird Sings" to 9th grade students:

Week 1: Introduction to the Novel and the Author

- Day 1: Introduce the novel "I Know Why the Caged Bird Sings" by Maya Angelou to the students. Provide some background information about the author and her life experiences.
- Day 2: Begin reading the novel in class, starting with Chapter 1. Have students take notes on important characters, themes, and symbols.
- Day 3: Continue reading and discussing the novel in class. Introduce the concept of a memoir and how it differs from other types of literature.
- Day 4: Assign reading of Chapters 2-4 for homework. Have students write a brief reflection on the themes and ideas presented in these chapters.

Week 2: Themes and Literary Analysis

- Day 1: Review the themes and ideas presented in Chapters 2-4. Discuss how these themes are relevant to the students' own lives and experiences.
- Day 2: Assign reading of Chapters 5-8 for homework. Have students identify and analyze the use of literary devices such as symbolism, imagery, and figurative language.
- Day 3: Analyze the character development of Maya and Bailey Johnson, Jr. throughout the novel. Discuss how they grow and change over time.
- Day 4: Assign reading of Chapters 9-12 for homework. Have students analyze the symbolism of the caged bird and its meaning in the novel.

Week 3: Historical Context and Social Issues

- Day 1: Provide background information on the historical context of the novel, including the civil rights movement and segregation.
- Day 2: Assign reading of Chapters 13-16 for homework. Have students identify and analyze the social issues presented in the novel, such as racism, gender roles, and poverty.
- Day 3: Discuss the significance of the title "I Know Why the Caged Bird Sings" and how it relates to the novel's themes and motifs.
- Day 4: Assign reading of Chapters 17-20 for homework. Have students research and present on a related historical event or figure from the civil rights era.

Week 4: Culminating Projects and Assessment

- Day 1: Allow time for students to work on their culminating projects, which could include a creative writing assignment, a visual representation of a theme or symbol, or a research paper on a related topic.
- Day 2: Have students present their projects to the class and engage in a discussion about the novel's themes and ideas.
- Day 3: Administer an assessment that includes multiple choice questions, short answer responses, and an essay question.
- Day 4: Wrap up the unit by reflecting on what the students have learned and how the novel's themes and ideas relate to their own lives and experiences.

write a lesson plan for week 1 day 1

Sure! Here is a possible lesson plan for Week 1, Day 1 of a 4 week unit on teaching "I Know Why the Caged Bird Sings" to 9th grade students:

Lesson Plan: Introduction to the Novel and the Author

Objective: Students will be able to understand the background information on the novel "I Know Why the Caged Bird Sings" and its author Maya Angelou.

Materials:

- Copies of the novel "I Know Why the Caged Bird Sings"
- Whiteboard and markers
- Handout with background information on the author Maya Angelou

Warm-up (10 minutes):

- Ask students to brainstorm what they know about Maya Angelou and her work.
- Write their ideas on the whiteboard.

Direct Instruction (20 minutes):

- Provide some background information about the author Maya Angelou, her life experiences, and her career as a writer and activist.
- Introduce the novel "I Know Why the Caged Bird Sings" and explain its significance as a memoir and a work of literature.
- Explain the themes and motifs of the novel, such as racism, identity, and coming of age.

Guided Practice (15 minutes):

- Begin reading the first chapter of the novel aloud as a class.
- Pause at key moments to discuss the setting, characters, and themes presented in the text.
- Encourage students to take notes on important details and ideas.

Independent Practice (15 minutes):

- Assign students to read Chapters 1-2 of the novel for homework.
- Provide a handout with discussion questions for them to answer and bring to class tomorrow.
- Encourage students to take notes on important characters, themes, and symbols as they read.

Closure (5 minutes):

- Recap the key ideas and themes presented in the lesson.
- Remind students to bring their books and discussion questions to class tomorrow.

Assessment:

- Informally assess students' understanding of the novel and the author by monitoring their participation in the warm-up and guided practice activities.

write a handout for the background information

Sure! Here's a possible handout with background information on the author Maya Angelou:

Background Information on Maya Angelou

Maya Angelou (1928-2014) was an American poet, memoirist, and civil rights activist. She is best known for her autobiographical works, including "I Know Why the Caged Bird Sings" (1969), which is widely regarded as a classic of African American literature.

Angelou was born Marguerite Annie Johnson in St. Louis, Missouri, but spent much of her childhood in the segregated South. Her parents divorced when she was young, and she and her brother were sent to live with their grandmother in Stamps, Arkansas. Angelou's experiences growing up in the Jim Crow South had a profound influence on her writing and activism.

In her early adulthood, Angelou worked as a dancer, singer, and actress, performing in clubs and theaters across the United States and in Europe. She also became involved in the civil rights movement, working with leaders such as Martin Luther King Jr. and Malcolm X.

Angelou's first book, "I Know Why the Caged Bird Sings," was published in 1969 and became an instant bestseller. The book is a coming-of-age memoir that explores Angelou's childhood and early adulthood, including her experiences with racism, sexual abuse, and trauma. The title of the book is taken from a poem by the African American poet Paul Laurence Dunbar, which contrasts the free bird with the caged bird as a metaphor for the struggle of African Americans to achieve equality and freedom.

Angelou went on to write many more books, including poetry collections, essays, and additional memoirs. She was also a prominent speaker and advocate for civil rights and social justice. In 2010, she was awarded the Presidential Medal of Freedom, the highest civilian honor in the United States.

Angelou's writing and activism have had a lasting impact on American literature and culture. Her work continues to inspire readers and writers around the world.

Here is another example:

write a lesson plan for lesson 2-2 in everyday math

Title: Adding and Subtracting Whole Numbers

Grade Level: 2

Objectives:

By the end of the lesson, students will be able to:

- Add and subtract whole numbers up to 20.
- Use the commutative and associative properties of addition to solve problems.
- Use mental math strategies to solve addition and subtraction problems.

Materials:

- Everyday Math Student Reference Book
- Whiteboard and markers
- Counters or other manipulatives
- Addition and subtraction worksheets

Introduction (10 minutes):

1. Review the concept of addition and subtraction, and ask students to share what they know about these operations.
2. Display a set of counters or other manipulatives, and ask students to count them.
3. Write a simple addition problem (e.g., $2 + 3$) on the board, and ask students to use the counters to solve it.
4. Repeat with a subtraction problem (e.g., $5 - 2$).

Direct Instruction (20 minutes):

1. Display a more complex addition problem (e.g., $8 + 6$), and ask students to solve it using their fingers or mental math.
2. Discuss the commutative property of addition, and demonstrate how to use it to solve problems (e.g., $6 + 8$ is the same as $8 + 6$).
3. Display an addition problem (e.g., $3 + 7 + 5$), and demonstrate how to use the associative property of addition to solve it (e.g., $(3 + 7) + 5$ or $3 + (7 + 5)$).
4. Repeat steps 2 and 3 with subtraction problems.

Guided Practice (15 minutes):

1. Display a set of addition and subtraction problems on the board.
2. Have students work in pairs to solve the problems using the mental math strategies they learned.
3. Circulate the room and provide assistance as needed.

Independent Practice (15 minutes):

1. Distribute worksheets with addition and subtraction problems.
2. Instruct students to complete the problems independently.
3. Circulate the room and provide assistance as needed.

Closure (5 minutes):

1. Review the commutative and associative properties of addition and subtraction.
2. Ask students to share one thing they learned during the lesson.
3. Preview the next lesson.

Assessment:

- Monitor student participation during the lesson.
- Review student worksheets to check for understanding.
- Use exit tickets to assess student learning at the end of the lesson.

write an exit ticket

Exit Ticket: Adding and Subtracting Whole Numbers

Name: _____

1. What is the commutative property of addition? Give an example.
2. What is the associative property of addition? Give an example.
3. Solve the following problem using mental math: $9 + 5 - 3 = \underline{\hspace{2cm}}$
4. Fill in the blank: The commutative property of subtraction states that $a - b$ is the same as $\underline{\hspace{2cm}}$.
5. Circle the addition problem: $12 - 7$ or $4 + 9$?
6. Solve the following problem using the associative property of addition: $2 + (5 + 3) = \underline{\hspace{2cm}}$.
7. True or false: The answer to an addition problem is always greater than the numbers being added.
8. How did you feel about today's lesson? Circle one: Confident, Okay, Unsure.
9. What is one thing you learned today about adding and subtracting whole numbers?

Thank you for your hard work!

I could have continued and asked to create the assessments or the slide presentations. Where was this when we were all undergraduates? I hope you are as blown away as I was. This technology has the potential to be transformative. Of course, there is also the potential for danger.

New AI platforms for teachers are appearing weekly. Here is a list of some you should consider:

- [Diffit](https://web.diffit.me/) - Teachers use Diffit to get “just right” instructional materials, saving tons of time and helping all students access grade-level content. <https://web.diffit.me/>
- [MagicSchool](https://www.magicschool.ai/) - 60+ AI tools to help you lesson plan, differentiate, write assessments, write IEPs, communicate clearly, and more. <https://www.magicschool.ai/>
- [Gamma](https://gamma.app/) - **Gamma App** is a revolutionary medium for presenting ideas that utilizes the power of AI. With **Gamma App**, you can effortlessly create beautiful and engaging content without the hassle of formatting and design work. <https://gamma.app/>
- [Bing Chat](https://bing.com) - A ChatGPT-4 powered chatbot that can help you browse the web, answer questions, and much more. It can be accessed through the Bing website or Microsoft Edge browser, and can be used to ask both simple and complex questions, request summaries of articles, books, events, news, sports results, and more. Bing Chat can also be used as a creative tool, helping you write poems, stories, or even share ideas for a project. bing.com
- [Pictory.ai](https://pictory.ai/) - Pictory AI is a really cool platform that makes it super easy to create engaging videos. It uses advanced AI technology to help you turn your written scripts or articles into captivating videos. You can even add your own voice or use an AI voiceover to bring your video to life. <https://pictory.ai/>
- [Eduaide](https://www.eduaide.ai/) - Eduaide.ai is an AI-powered teaching assistant designed to help teachers with lesson planning, instructional design, and generating educational content. It offers a resource generator, teaching assistant, feedback bot, and AI chat. <https://www.eduaide.ai/>
- [QuestionWell](http://questionwell.org) - QuestionWell generates an endless supply of questions so teachers can focus on what matters. Just input some reading, and the AI will write essential questions, learning objectives, and aligned multiple-choice questions. <http://questionwell.org>

If your head is exploding right now, know that there are dozens more AI apps and site dedicated to helping teachers and students.

Augmented Reality

Let's begin with augmented reality and virtual reality. Augmented reality layers computer-generated enhancements on top of an existing reality in a way that makes it more meaningful through the ability to interact with it. Augmented reality requires just a few things – a smartphone or tablet with a back-facing camera, an augmented reality app, and a trigger image. An internet connection is also needed for the real-time overlaying of information. The trigger image can simply be a QR code or it might be a specialized matrix or image that is designed to be viewed through a specific app. Does this sound complicated and way out of reach for younger learners? Take a look at the Quiver app.

We have seen augmented reality in the business world for a few years now. You can layer furniture, paint, and more over the image of your living room before you buy. AR in the classroom can increase engagement and allow learners to view and manipulate an object they are learning about and gain a deeper understanding. Think about AR on a classroom word wall or book review. How much more engaged might a learner be if we included AR when studying Civil War battles? [Five Ways To Use Augmented Reality In The Classroom](#) (Keet, 2021) presents some additional great ideas.

Virtual Reality

While AR overlays objects on top of existing reality, VR puts people into a completely virtual, computer-generated environment. While almost anyone with a smartphone can access AR, VR requires a VR headset and often a set of controllers. These can range from a few dollars for a Google Cardboard to a few hundred dollars for a Sony or Meta system.

Think about the implications for teacher education if prospective teachers can actually practice in a robust virtual classroom in which the professor controls the parameters. In the K-12 classroom, VR can be used in geography to explore various parts of the globe, either in the present or in the past. Think about learners sitting in on the Constitutional Convention of 1787 in Philadelphia or talking looking over Edison's lab in Menlo Park. Teachers could also use VR in physical education classes. For example, virtual reality can be used to play tennis, volleyball, baseball, golf, etc. Here is an example of what VR can do in a high school classroom.

Coding and App Development

One of the recommendations of the ACOT² study is to engage learners in the creation of content. They shouldn't just be consumers of knowledge but creators as well. This also aligns very well with the three frameworks we learned about in the previous chapters. One way to enable this is to teach learners to code. When learners code they quickly see that they are the ones who control their devices rather than the devices controlling them. The great thing about coding is that the tools and programs available today make coding accessible to even the youngest of learners. What this "Grow with Google" video and see the excitement coding brings to young learners. This final quote in this video is especially important.

Yes, what problems do you want to solve when you grow up?



One great way to begin coding is the Hour of Code developed by code.org. The [Hour of Code](https://code.org) is the brainchild of [Code.org](https://code.org) and more than 400 partners and 200,000 educators. A mixture of one-hour tutorials, special events, and activities related to the field of computer science, the Hour of Code is a grassroots effort to illustrate the importance of coding in the classroom. Pre-readers learn to create shapes with [Kodable](https://code.org/kodable), help a monkey find bananas with Code Monkey Junior, create interactive stories with [PBS Kids Scratch Junior](https://pbskids.org/scratch/junior), and much more. Older learners can create artificial intelligence apps using [Hyperpad](https://hyperpad.org), create a [photo filter using Javascript](https://code.org/photo-filter), and much more. A great thing about the Hour of Code activities is that each one comes with a link to the specific standards that the activity addresses. Many also come with teacher guides.

Technology shouldn't be used just for technology's sake. As we learned in previous chapters, technology should be used intentionally and purposefully. Learning to code involves logic, problem-solving, backward planning, and other thinking skills. Teachers of all subject areas could consider making coding a part of their content area. For a deeper dive into "why coding" read the [Teacher's Essential Guide to Coding in the Classroom](https://www.common-sense.org/2018/04/teacher-essential-guide-to-coding-in-the-classroom/) produced by Common Sense Education.

Virtual and Flipped Classrooms

There aren't a lot of great things that COVID-19 brought to education, but one positive is that COVID literally forced schools to rapidly move to virtual learning. The road was bumpy at first, but districts took advantage of Federal relief dollars to provide devices for students and expand internet accessibility, both in their schools and in many cases, throughout their communities. Teachers learned new teaching strategies to enable them to teach virtually. While most schools have since returned to face-to-face learning, some parents and students found they actually learned better working independently and have remained virtual.

The unplanned, rapid shift to virtual learning had another positive. Blended and flipped learning became teaching strategies that many teachers learned and have added to their teaching toolbelts. Blended and flipped learning are related but different. In an article written for [Educational Technology and Mobile Learning](#), Dr. Med Kharback articulates four models of blended learning teachers should know about. These four models are:

- the station rotation model,
- lab rotation model,
- flex model, and
- flipped learning.

Read his article and think about which model might work with your situation. Here are some things to consider before moving into blended learning:

- Not every student is a good fit for blended learning,
- Some learners won't respond well to a self-directed learning style,
- Flipped learning required more front-end work on the teacher's part,
- Blended learning requires equal and adequate bandwidth and technology for both teachers and all learners.

On the other hand, in blended and flipped learning:

- teachers can focus more on individual learners,
- learners gain better access to the content,
- learners move at their own pace and learn to be more independent and self-directed, and
- learning is more consistent because learner absences due to illness, family travel, snow days, etc. don't stop learning.

There is a fifth blended model that some elementary teachers and teachers in communities with limited access at home have used effectively. I refer to this as the faux flipped model. In this model, all of the learning takes place in the classroom. Learners begin the process by watching a teacher-created or collated video and then taking a quiz on the material. Based on their score on the quiz they either move to a center with the teacher or review the material in the video. Here is a video from the Highland Park, ISD showing the faux flipped model in action.

Moving to a blended or completely flipped teaching and learning model can seem daunting, but remember this. You don't have to make the transition all at once. Take it one step at a time. Pick one of the models that makes sense for your teaching style and your learners learning styles. Think about technology access at school and in the homes in your community. Then take one lesson and move it to a blended format. Build on that success and turn that lesson into a unit and then another and another. While there is more front loading in this style of teaching, you only have to do that once. The next year you will have a number of lessons or units in the bank and can keep building.

In this chapter, we looked at blended and flipped classrooms, but we also acknowledged that learners have different learning styles and what works well for some might not work well for others. In the next chapter, we will look at differentiation and how technology can add to a differentiated classroom.

Application:

To help deepen your understanding of the ideas presented in this chapter, create a visually appealing* [infographic](#) exploring one of the movements presented in this chapter - augmented/virtual learning, coding and app development, or flipped classrooms.

- Briefly explain the topic you chose and why.
- What did you find most beneficial from the readings?
- What would you like to know more about regarding this topic?
- How do you think you could use something you learned in your teaching or leadership role?

*In order to make an infographic visually appealing, make sure you consider organization and layout, font style/size, and image/media use.



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Chapter 5 - Differentiated Learning



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I

Learning objectives

By the end of this chapter the learner will be able to:

1. Explain key vocabulary terms, theories, and resources relating to differentiated instruction using digital tools.
2. Design a differentiated learning experience for students or faculty.
3. Summarize course content and student contributions for the week.

Introduction

In the previous chapter, we explored some of the ways technology is changing teaching and learning in today's classrooms. These different approaches to teaching can be effectively used to differentiate learning for learners. Carol Ann Tomlinson is one of the leading voices on the topic of differentiation. She writes that there are three primary ways

you can differentiate - by modifying the content, the process, and/or the product (Tomlinson, 2016). Differentiated instruction isn't as hard as some teachers think it is. Differentiation doesn't mean creating a separate lesson for every learner. It's really about getting to know your learners and how they work best and making decisions during instruction to best meet those needs. Larry Ferlazzo is an ELL teacher and a blogger for Education Week. He has a really great video that provides our foundation for this chapter on differentiation with technology.

That was a quick refresher on differentiation, but this is a book about technology integration.

How can technology assist in differentiating instruction?

Technology can play a key role in helping teachers to differentiate instruction to meet the needs of every learner. Just as every learner grows and develops at different rates, they learn in different ways and at different speeds. Technology can make it possible to pace lessons appropriately and can be used to promote learning in multiple intelligences.

Differentiation by process

Learners process information differently. Depending on the task at hand, learners might have different learning preferences. For example, when getting directions to a new destination I prefer to see a map, my son likes to hear the directions read as he is driving, and my wife prefers seeing the directions in writing. Matching teaching strategies to learning preferences is one way to differentiate by process. Let's look at the different learning preferences and then a short list of websites and apps that focus on those preferences. The three learning preferences we will explore are visual, auditory, and kinesthetic.

Visual Preference



"[NASA Visualization Explorer Now Available For All iOS Devices](#)" by [NASA Goddard Photo and Video](#) is licensed under [CC BY 2.0](#).

You will recognize learners who prefer visual stimuli when they say that they learn by seeing. Show them and they are more likely to remember. Here are a few apps to address the particular need of learners who prefer to see things in certain learning situations.

- [Lucid](#) is for learners that can acquire knowledge more easily by seeing. A lot of visually stimulating study materials are included in this app. With visuals at the core of the product, the app provides engaging material to students. Learners who want to do courses in the field of psychology, technology, health, history, finance, and even leadership can benefit from this educational support.
- [Mindly](#) is a brainstorming and collaboration tool that is great for learners who need to store and process information in the format they relate to best by creating pictures, flowcharts, and diagrams.
- [Picmonic](#) is an app that focuses on the visual needs of K-12 learners. The name is a combination of pictures and mnemonics. It's a good app for test prep.
- [BrainPop](#) and [BrainPop Jr.](#) are websites that include animated, curricular content that engages learners, supports educators, and bolsters achievement. Most videos include lesson plans for teachers and connections to standards.
- [Visuwords](#) is a unique concept built for teaching words in a way that makes sense visually. It includes a visual dictionary, thesaurus, and interactive lexicon.
- [TedEd](#) offers the convenience of accessing video lessons by choosing the subject as well as age. It is a storehouse of information and walks the users through interactive sessions that ensure that learning is much more elaborate and sustainable.
- [Pixton](#) is a popular comic/graphic novel maker and storyboard creator for teachers and learners. They can share their ideas, opinions, and stories publishing them instantly to a worldwide web audience without having to draw. Look for those students who tend to read graphic novels in their spare time.
- [MindMesiter](#) is great for learners who want to be able to visualize what they're learning. MindMeister allows users to create, share and manage mind maps online and offline.
- [TeacherTube](#) works like YouTube but is dedicated to hosting instructional videos. This free site hosts videos on nearly every topic imaginable. You also won't find any ads that are not age-appropriate.
- [Scooch](#) offers free slide show software that is perfect for learners who want to transform text into easier-to-recall slides.
- [Picture History](#) displays 200 years of history in photographs. Great for learners who want to see more about American history.
- [Pics4Learning](#) is a curated image library that is safe and free for education. Teachers and students can use copyright-friendly photos and illustrations for classroom projects, websites, videos, portfolios, or any other projects in an educational setting.

Auditory Preference



"Auditory Learner" by [JoanDragonfly](#)
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Some learners thrive best when they are involved with a lot of speaking and listening. How will you recognize auditory learners? I am fairly confident you already know who these learners are.

- [Audible](#) is one of the most powerful listening apps on the market today. It has been around for a long time, and currently features more than 470,000 titles in its library.
- [LibriVox](#) audiobooks are free for anyone to listen to, on their computers, iPods, or other mobile devices, or to burn onto a CD.
- [Audacity](#) is easy-to-use audio editing software that lets you record and edit audio. It is free to use and works across multiple platforms (Mac OS X, Windows, and GNU/LINUX.)
- [Midomi](#) is a unique search engine is powered by sound, not text. You can find the music you're looking for by singing, humming, or whistling ten seconds of the tune.
- [PodOmatic](#) is a free site that enables learners can create, find and share podcasts through. PodOmatic hosts the world's largest selection of commercial-free podcasts.
- [PodcastDirectory](#) is a great place to search for free podcasts by subject. Users can also search by country, region, city, language, and popularity level.

Kinesthetic Preferences

Some students learn best when they are involved with hands-on activities - think interactive science labs or art/music classes. Not all learners love lectures.

- [Sketchup](#) allows learners to make anything they can imagine, without downloading a thing. It allows kinesthetic users to create, modify and share 3D models.
- [Flashcard Exchange](#) is the world's largest flashcard library. Learners can improve their retention ability by making and manipulating flashcards on this website.
- [Quizlet](#) is specifically designed to help learners get involved in the learning process. Quizlet users can create their own flashcards and quizzes or study materials that have been made by other students.
- [ClassMarker](#) allows learners to create free online quizzes (with time limits) to test their knowledge of any subject.
- [Quia](#) users can create their own educational surveys, quizzes, games, and activities to engage in an interactive learning experience. There is a subscription fee, but all users are eligible for a free 30-day trial.
- [SparkNotes](#) allows learners to get involved in assigned reading projects when they visit SparkNotes online. The site offers free study guides, quizzes, and other interactive aids for readers.
- [Little Digits](#) for younger learners encourages one-to-one recognition through fun numeric characters which are displayed by detecting how many fingers are placed on the screen.
- [GoNoodle](#) helps teachers and parents get kids moving with short interactive activities. Desk-side movement helps kids achieve more by keeping them engaged and motivated throughout the day.
- [Interactives](#) provides activities, strategies, and other concepts that enhance learning skills. Interactives is aimed at grades 6 thru 12 but makes a good tool for hands-on learners of all ages.
- [The National Library of Virtual Manipulatives](#) is a digital library containing Java applets and activities for K-12 mathematics. The site was created and hosted by Utah State University. It was one of the first sites of its kind and is still one of the best.
- [Education Place](#) is designed for K-12 learners who want to explore various subjects through games and activities.

Differentiation by Product

Tomlinson (2014) explains that products are “vehicles through which students demonstrate and extend what they have learned” (p. 18). Here are just a few ways learners can express their understanding of the content with the help of technology.

Digital Portfolios

Educators know that individual learners have unique strengths and weaknesses but in a system often driven by pre-set curriculum and assessments, it can be difficult to enable learners to celebrate their uniqueness. An online learning portfolio that empowers learners to show what they are learning within the classroom. Each learner in a class can have their own, personalized digital portfolio that provides a private place to keep their assignments and projects, and these activities can also be shared with the teacher, parents, and the broader community. Learners have so many options to demonstrate their learning. [Seesaw](#) is one example of a platform that fosters independence and choice, as learners select how they will document their learning with built-in creative tools. Here is a video of Seesaw digital portfolios in use at James Madison Primary School, in Edison NJ.

The advantages of digital portfolios for learners are shown in this chart from [The Complete Guide to Student Digital Portfolios](#) (Morris & Burt, 2020).

Benefits of Digital Portfolios For Students

Portfolios can capture the **whole student** in a way that standardized tests or summative assessments simply cannot.

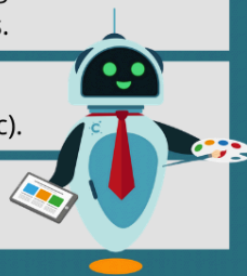
Students can build a **digital footprint** that may help them gain future work or education opportunities, while learning about **digital citizenship**.

Essential skills for a rapidly changing world and job market can be developed (e.g. critical thinking, communication, and problem solving).

Motivation for learning may increase when students are given **independence** and **choice** when building their portfolios.

Students can express themselves according to their **strengths** or **learning styles** (e.g. video, audio, art, music).

Students can **keep track** of their progress, successes, and learnings over time in an organized way.



campuspress.com/student-digital-portfolios-guide

If you want to dig deeper into digital portfolios, check out the [guide](#).

Video and Audio Production

Learners can express their understanding in ways other than a standard book report or research paper. Learners who are primarily visual learners often excel in expressing their understanding by creating multimedia presentations in lieu of the standard report. For many learners, making videos is something they do on their own at home. How can you capture the interest and knowledge they have and translate that into classroom learning? Imagine Learning gives educators some great ideas with their website [10 Fun Ways to Use Video Creation in the Classroom](#). There are ideas for all grade levels here. Do you, the teacher, have to be a video creation expert? No! You need to provide the educational context and then set the learners free.

Laura Ascione correlated a list of [16 Multimedia Learning Tools for the Classroom](#) for eSchool News. You will find quite a few apps you are already familiar with like iMovie and Nearpod and a few you might be less familiar with like Glogster and VoiceThread.

[Garageband](#) is an easy-to-use yet very powerful audio creation app that gives learners access to Sound Library so they can browse and download from a massive collection of free sounds, loops, and samples created by some of the biggest producers in the world. Young creators can also play real-sounding instruments and create their own music. Garageband is also a good tool to create podcasts.

Speaking of podcasts, Spotify-owned podcast maker app [Anchor](#) is a popular choice amongst folks looking to test the water with podcasting. Anchor is a free app but is best for shorter podcasts.

There is a nice explanation of podcasts and why to use them in the classroom from EdPuzzle entitled [How to Use Podcasts in the Classroom](#).

Differentiation for Gifted Learners

There are a number of great web tools to address differentiation for gifted learners. The Institute for Educational Advancement (IEA Staff, 2017) collated a list of [Ten Websites for Gifted Kids](#). These are great resources for gifted learners but are also worth looking at for all learners.

There are enough ideas presented in this chapter to keep you and your learners actively engaged for quite a while. In the next chapter, we are going to delve into digital safety and digital citizenship. We group these two topics together in Chapter 6 - Ethical Digital Presence.

Application:

OPTION 1: Design a day of professional development in your building or for your district that reflects a differentiated approach. While you do not need to plan in-depth details of specific sessions, describe what technology-centered/infused topics/sessions might be available for the staff, how you would appeal to learners (staff) of different interests and abilities, how long you might spend on each portion of the PD, who you might ask to present, how you may sort the staff into the various sessions, what resources you might include, etc.

OPTION 2: Take an existing assignment or project and turn it into a [learning menu](#) of at least 9 options (you do not need to provide rubrics for each option—just basic descriptions of each of the tasks). Each of the 9 options must have a digital component—please either hyperlink to the digital tool (or include a working QR code) and at least 3 of the options need to be at the "transformational" levels (modification and redefinition) of the SAMR Model—please use some way to indicate which few you are considering transformative. Additionally, you may use the template from the [G Suite reading](#) or create your own.



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Chapter 6 - Digital Safety and Digital Citizenship



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Learning Objectives

By the end of this chapter the learner will be able to:

1. Explain key vocabulary terms, theories, and resources relating to digital citizenship and safety.
2. Compare and contrast current practices regarding ethics to practices outlined in the readings.
3. Articulate a vision for educational technology in a classroom, school, or district.
4. Summarize the chapter content.

Giving our learners the hardware and software is important, but keeping them safe and teaching them how to behave in an ethical manner is also critical. In Chapter 6 our focus turns to digital safety and digital citizenship. Let's look first at digital safety.

Digital Safety

Digital safety is everyone's concern and it's something our schools must monitor. You may have come across digital safety under other names, such as internet safety, e-safety, or cyber safety, all of which refer to staying safe online.

Being connected to the internet and through that, the world provides learners with so many experiences and resources to help



"[Woman and young girl in kitchen with laptop and paperwork smiling](#)" by [GSCSNJ](#) is licensed under [CC BY-NC 2.0](#).

them learn and grow. But with increased connectivity comes increased risks. Scott Nelson and Sophia Latorre (2022) provide five great digital safety tips for younger learners in their article titled *How to Stay Safe on the Internet (for Kids)*. You will gain much from reading the entire article, but here is a summary.

Tip 1 - Do not create an account for a site if you are under the age of thirteen.

Tip 2 - Avoid responding to messages from strangers or be careful if you do.

Tip 3 - Be careful when meeting with strangers.

Tip 4 - Avoid joining private forums and chat rooms.

Tip 5 - Avoid going on dating sites.

Tip 6 - Avoid accepting random friend requests on social media.

These tips just sound like common sense, but someone needs to intentionally teach them to younger learners. We can't assume they already know these things. The reality is, they don't. Learners need to hear this from trusted adults in their lives. Otherwise, they will learn from their peers.

It is also important to talk about the risk potentials and what to do about them. These include such things as:

- online harassment and bullying
- fake news and propaganda
- predatory behaviors and online grooming
- phishing schemes
- identity theft
- sexting and relationships

These topics, while crucial, are also difficult to discuss. We need to be careful to inform without scaring. One of the best resources available to educators is [Common Sense Education](#). Their curriculum on digital safety and also digital citizenship really provide the foundation for this chapter. Let's begin our dive into digital safety by watching the following recording of a session focused on identifying strategies and dispositions that K–12 educators can use to

teach learners to think critically about the various relationships they're engaging in online. The production value is a C, but the content is definitely an A.



In many ways, being safe online is a lot like

what we have always taught our learners in real life - don't talk to strangers, don't share personal information, be aware of your surroundings, don't be a bully, and report anyone who bullies you to a trusted adult. A big difference is the anonymity of the internet. Things like predatory behaviors and bullying certainly occur in the physical world, but online there is a false feeling of safety. When an older adult approaches a child in the park or the mall, warning bells go off for most kids. Online, however, the child very likely isn't aware of the age or location of the person they are talking with. That 9-year-old girl one of your learners is chatting with in a children's chat room could very well be a 50-year-old man who is intent on grooming her for nefarious purposes.

We are living in a post-truth world

In their article [Seriously? Seriously.](#), Turner and Hicks (2018) talk about living in a post-truth world. Post-truth, they write "this happens when we retweet and share [without critical reading](#). It happens when information remains in a filter bubble. And it happens



["fake-news-detail-2"](#) by [The Public Domain Review](#) is marked with [Public Domain Mark 1.0](#).

when [individuals and corporations can hide in anonymity while sharing fake news](#). As it happens, we can fall prey to misinformation." Please read this great article - seriously! Below are five classroom ideas taken directly from the Hawley-Turner and Hicks article. Be sure to click on the embedded links found in each of the five ideas.

1. Teach about filter bubbles.

Eli Pariser's warning that search algorithms may deliver information that is customized to an individual user and not representative of multiple views takes on increased weight as we curate social media streams. Rather than expanding our worldviews, the information we receive often reinforces our pre-existing beliefs. We can teach students how filter bubbles form so that they can more critically evaluate the information that they encounter. Avid Open Access (Pop the filter bubble, 2022) created a very good resource on the topic including ["Ten Ways to Pop the Filter Bubble."](#)

10 Ways to Pop the Filter Bubble

- | | |
|---|--|
| 1. Understand that information is being filtered. | 6. Seek out less-biased news outlets. |
| 2. Intentionally seek out opposing viewpoints. | 7. Don't avoid the hard conversations; engage in them. |
| 3. Seek news from a variety of sources. | 8. Don't unfriend those who disagree with you. |
| 4. Evaluate the credibility of information sources. | 9. Listen with the intent to learn. |
| 5. Watch for bias . | 10. Question your own perspectives. |

2. Talk about what it means to have productive conversations in digital spaces.

Jimmy Kimmel's popular "[Mean Tweets](#)" series calls out "haters" who post cruel messages to celebrities. In less comedic fashion, PSAs like the following public service announcement (PSA). **WARNING - vulgar language.**

With [reports of the prevalence of cyberbullying](#), it's clear that teens need to consider their writing in social media spaces. Kristen has started this conversation with middle school students by asking them to "write on the wall," a graffiti board where they can respond to a question, read others' writing and continue conversations. At the end of the week, the class discusses what was written, deconstructs the conversations (or lack thereof) that took place, and makes goals for having more productive conversations in their online lives.

3. Analyze social media as readers.

What persona does your feed reveal? Who are you? Val Mattesich ([@VMattPV](#)) asked her students to analyze a public social media feed in order to answer these questions. Using evidence from posts, including pictures, words, and elements of tone, students then made a claim about the persona of the individual.

4. Collect examples of social media that students read and write about.

Asking students to slow down and think about their social media interactions is a key step in helping them to monitor their reading and writing online. [Finding arguments in social media](#) is a weeklong series of activities that Turner and Hicks (2016) designed for this purpose. Perhaps even more simply, you can encourage students to collect examples from their social media lives in their reader's/writer's notebook. Placing value on these kinds of texts in the classroom can support a shift to seeing social media as a space for real reading and writing.

5. Provide constructive feedback on students' reading and writing on social media.

Though it may seem strange at first to ask students to share their social media feeds, as teachers we need to take an active role in this aspect of our students' reading and writing lives. [Pew Internet just reported](#) that 61% of parents check their children and teens' web history — and 60% examine their kids' social media profiles — but this does not mean that they are coaching them to become better readers and writers. This requires [active mediation](#), which is [not happening much at home](#). Ask students to take screenshots of what they are reading and writing, and invite them to reflect on those literacy choices by providing them with suggestions for curating their own social media feeds.

Eisha Bush is the Director of Educational Programs for Common Sense Media, the parent company of Common Sense Education. She has a chart for an EdWeek article (Prothero, A., 2022) titled, "[What's Fake on Social Media - 5 Questions for Teachers and Students to Ask as they examine images and videos on social media.](#)" The article includes a downloadable guide that would be a good addition to your classroom bulletin board.

Digital Citizenship

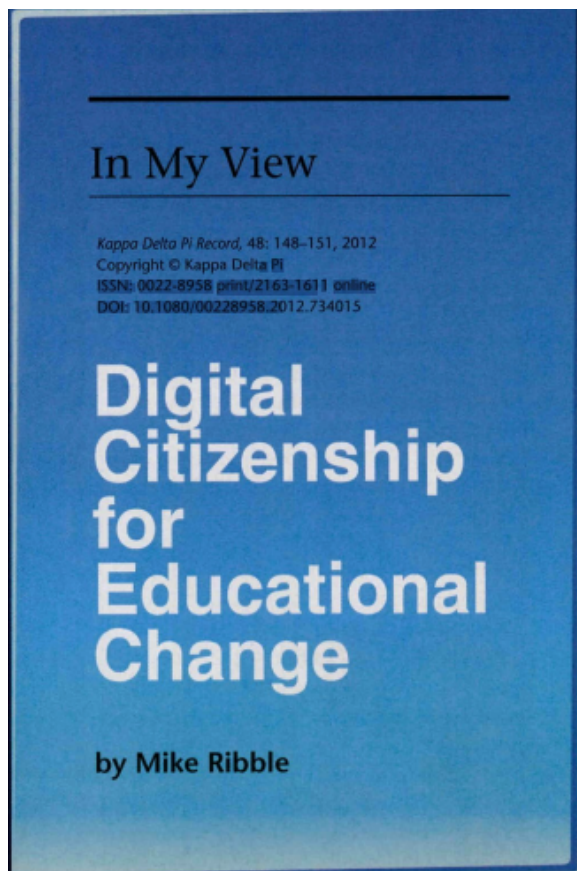


[Watch on YouTube](#)

Common Sense Education, 2017.

The article [Seriously! Seriously.](#) (Hawley-Turner & Hicks, 2017) provides a great transition from digital safety to digital citizenship. Digital safety and digital citizenship are often thought of as one in the same thing, but they are different. Let's first define what we mean by digital citizenship. For our purposes, digital citizenship refers to the responsible use of technology by anyone who uses computers, smartphones, tablets, the internet, and other devices to engage with others on any level. Chris Zook writes that to teach digital citizenship an educator should focus on seven key topics:

1. Empathy
2. How the Internet works
3. Understanding user data
4. Practicing digital literacy
5. Acknowledging the digital divide
6. Practicing digital wellness
7. Securing digital devices (Zook, 2022)



Another great view of digital citizenship comes from Dr. Mike Ribble in his Kappa Delta Pi article, [Digital Citizenship for Educational Change](#) (2012). In that article, Ribble defines digital citizenship as the "norms of appropriate, responsible behavior with regard to technology use." Ribble also introduces a framework of nine elements that help to define and organize the topics being addressed with regard to technology. (see Figure 6.1) Note: You will need to sign into the ESU library to access the Ribble article. After you get to the resource you can download the complete pdf by clicking on the link on the left side of the page.

Figure 6.1 Nine Elements of Digital Citizenship

<p>Digital Access:</p> <p>full electronic participation in society—allowing all technology users to participate fully in a digital society if they choose. Educators can help students understand this topic by identifying what technology tools are available at school as well as in the student's homes. Then discuss how these tools can help students in the classroom.</p>	<p>Digital Commerce:</p> <p>electronic buying and selling of goods—providing the knowledge and protection to buy and sell in a digital world. Help students identify safe websites when providing sensitive information, such as credit card numbers, by looking for https: or a lock on the URL bar or in the bottom corner of a webpage. Have students talk with their parents to identify safe sites if they purchase items online.</p>	<p>Digital Communication:</p> <p>electronic exchange of information—understanding the options of the digital communication methods and when they are appropriate. Help students understand when different tools might be most effective, such as using e-mail for more formal communication and tweeting for casual conversations with friends.</p>
<p>Digital Literacy:</p>	<p>Digital Etiquette:</p>	<p>Digital Law:</p>

<p>process of teaching and learning about technology and the use of technology--learning about and teaching others how to use digital technologies appropriately. Provide explanations on how to use the technology tools in the classroom. Do not assume that all students are familiar with them or know how to use them appropriately. Also, take advantage of any opportunity for a "flipped classroom" moment, where students may be able to support the teacher as well as other students in the classroom.</p>	<p>electronic standards of conduct or procedure--being considerate of others when using digital technologies. Explain that technology use is often personal, but its use can affect others (e.g., talking loudly on a cell phone around others). Allow students to provide experiences they have had with technology and discuss how situations might have been handled better.</p>	<p>electronic responsibility for actions and deeds--having an awareness of laws (rules, policies) that govern the use of digital technologies. Discuss with students the technology rules that are in the school as well as in their homes. Have them explain why these rules are necessary.</p>
<p>Digital Rights and Responsibilities:</p> <p>those requirements and freedoms extended to everyone in a digital world--protecting the digital rights of others while defending individual rights. Help students to see that technology provides many privileges; and to keep those privileges, students need to facilitate their own and others' use of technology in an appropriate manner.</p>	<p>Digital Health and Wellness:</p> <p>physical and psychological well-being in a digital technology world--understanding the risks (both physically and psychologically) that may accompany the use of digital technologies. Identify with students how much technology may be too much (e.g., sitting for long periods of time, eye strain) and how they can balance its use with other activities.</p>	<p>Digital Security (self-protection):</p> <p>electronic precautions to guarantee safety--protecting personal information while taking precautions to protect others' data as well. Provide examples of not sharing and protecting information online; define how much information may be too much.</p>

According to Ribble and Bailey (2007), the purpose of the nine elements is to "help educators better understand the variety of topics that constitute digital citizenship and to provide an organized way to address them" (p.11). This becomes a starting point for preparing learners in a digital world. Some of these elements are best addressed by teachers and others by administrators, but all should be part of a discussion when developing a comprehensive district-wide digital citizenship policy.

When you look at Ribble's Nine Elements, the seven topics in Turner and Hick's article, or the six tips from the Nelson and Latorre article it seems overwhelming. Unfortunately, many people who have taken this course in the past don't see very much of this addressed in their district's policies or curriculum. Many who say their district does include digital safety and digital citizenship say it is being addressed with a statement learners and their parents have to sign at the beginning of the year, acknowledging they have read the policy on safety. Frequently the school's library media specialist teaches a few classes during the year.



"too much information" by [little shiva](#)
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Common Sense Education to the Rescue

We have looked at some of the other work from Common Sense Education in previous chapters. They also address digital citizenship in a thorough manner. Their Digital Citizenship Curriculum was designed and developed in partnership with Project Zero at the Harvard Graduate School of Education – and guided by research with thousands of educators. Each digital citizenship lesson takes on real challenges and digital dilemmas that students face today, giving them the skills they need to succeed as digital learners, leaders, and citizens tomorrow (Common Sense Education, n.d.). They have created [ready-to-teach lessons for all grade levels, K-12](#). Every educator should explore the lessons appropriate for the grade(s) they teach. Think of how you can integrate these lessons directly into your classroom.

Copyright and Fair Use

Copyright is designed to protect the intellectual property of the creator of such work. Copyright law as we know it today was codified in the United States in the [Copyright Act of 1976](#). Just a few things have changed since 1976 and the law has struggled to keep up. Many educators believe that they are permitted to copy and use any material as long as it is in their classroom for educational purposes. This is only partially true. Fair use places conditions on what qualifies as fair use. The conditions are:

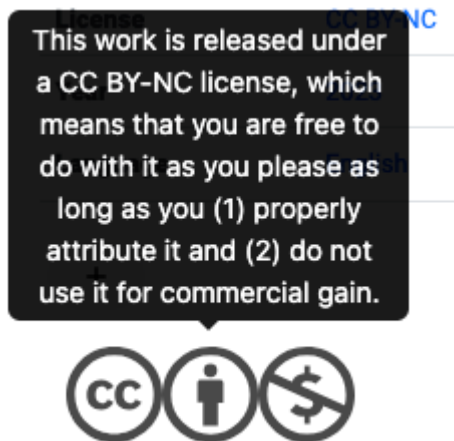
1. the purpose and character of the use (commercial or educational, transformative or reproductive, political);
2. the nature of the copyrighted work Is it fictional or factual? What is the degree of creativity);
3. the amount and substantiality of the portion of the original work used; and
4. the effect of the use upon the market or potential market for the original work.

For example, when I was with McREL International I co-authored several books. Fair use would apply if an educator used some of the bullet points from a chapter as they provided professional development for their staff. If that same educator then was asked to present a similar presentation in another district and charged a fee they would be required to seek and be granted permission to use the material. Some teachers believe it is permissible to copy worksheets from a workbook they legally own and distribute those copies to their students. A common excuse given is financial. The teacher or school just can't afford to purchase a workbook for every student. This would not be fair use. It violates points 3 and 4 above. The worksheets are a substantial part of a workbook and distributing copies rather than purchasing the workbook deprives the author and publisher of income. Copyright and Creativity designed a great [flowchart infographic](#) explaining the conditions of fair use.

If you would like to learn more, visit any or all of these resources:

- [Copyright and Creativity of Ethical Digital Citizens](#)
- [A Teacher's Guide to Copyright and Fair Use](#) by Karen Lagola
- [Teaching Kids About Copyright & Piracy](#) from Common Sense Media
- [Copyright Basics for Online Educators](#), video from Temple University (video below)

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Summary

Chapter 6 covered a lot of material. Honestly, we could spend the entire course working through digital safety and digital citizenship. We end this chapter with a couple of key points.

1. Every district should develop and monitor a comprehensive digital safety/citizenship policy. Beginning with a blank sheet of paper is difficult, so below are some examples of what a comprehensive policy might contain, understand that every district is unique.
 - [Strawberry Fields High School - Chandigarh, India](#)
 - [Peel District School Board - Ontario, Canada](#)
 - [Ft. Bend Independent School District - Sugar Land, TX](#) (notice how this one is phrased in the negative)
2. Everyone has a role to play in teaching and modeling digital safety and digital citizenship - administrators, educators, learners, and parents.

The first six chapters of this book have been loaded with information. In the final chapter, it is time to put it all together. I sense a project coming.

For Discussion

- What did you find beneficial in the readings?
- What would you like to know more about?
- What are you currently doing in your classroom or building OR what would you like to be doing in your classroom or building that addresses digital citizenship and ethics?



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Chapter 7 - Pedagogical Implication, Putting It All Together



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Learning Objectives

By the end of this chapter learners will be able to:

1. Explain key vocabulary, terms, theories, and resources relating to the impact of technology on teaching, learning, and research.
2. Develop a clearly articulated vision for technology integration, either at the team level, building level, or district level, depending on your career path.

We have learned that technology is so much more than replacing current worksheets and quizzes with electronic substitutions. In this final chapter, the goal is to bring together technologies, learning strategies, and policies into a coherent vision for the future of teaching and learning in your school. Leaders envision where they see their

organization in the future. Their vision is a big picture of the way things ought to be. Your vision as a leader is important. Why? Because nothing happens until it first happens in someone's mind.

What is a vision?



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A vision is a view of the way things should be. It is what you are working toward. As you look at technology integration in your school or district you start thinking about how things might be better. Think about a project you were thinking about doing "if only". What are those things stopping good educators from doing great things for their learners? Are there some things that might make collaboration and cooperation among the staff even better? There are a lot of moving parts in a strong vision for technology integration. If you put all of the pieces of what you believe things should be, you have a vision. Once you form your vision, the next step is to communicate that with all parties involved.

Communicate your vision

Here is an excerpt from *Alice's Adventures in Wonderland* by Lewis Carrol (1865).

"Would you tell me, please, which way I ought to go from here?"

"That depends a good deal on where you want to get to," said the Cat.

"I don't much care where--" said Alice.

"Then it doesn't matter which way you go," said the Cat. (p.30)

No one is going to buy into your vision if they don't know what it is. If you don't share your vision then any road at all will do. Sharing your vision with others is an important role of leadership. People need to see the big picture of where the



"June 20th 2008 - Looking Forward to Vacation" by [Stephen Poff](#) is licensed under [CC BY-NC-ND 2.0](#).

school/district is moving toward and how that will make things better for everyone. Your vision should inspire and invigorate others to join you on your adventure - not to Wonderland, but to a clear destination.

What should be in your vision for technology integration?

There are many things to consider as you build your vision. There is the "what" of what you teach. The district-adopted curriculum guides what you teach and should be the starting point. There is the "why" of what you teach. Going back to the research presented in Chapter 1, why are you integrating technology? Is your goal to keep children on task like the German schoolmaster we read about who kept a log of punishments? Is your "why" to better test and diagnose students like the Pressey machine for intelligence testing? Are you trying to automate what you are currently doing without technology? Or is your goal to transform teaching and learning completely? That gets us to the "how" of your vision plan. Chapter 3 presented three strong frameworks - SAMR, TPACK, and PICRAT. Each had a different focus. Which of these is best for your vision of technology moving forward? Do you really need to combine two or even all three of these at times? Remember that your vision is what you think things ought to be. While you need to consider barriers, these should not constrain you from dreaming big.

A vision without a plan is just a dream



"Dreams" by [arctia](#) is licensed under [CC BY-SA 2.0](#).

It is one thing to have a vision and to communicate that vision to others, but while that is good, it isn't sufficient. A vision without a plan is just a dream, and dreaming won't accomplish anything. Nothing will happen until you can dream it in your mind, but now it's time to put some concrete plans in place. Here are some things to consider as you build a plan to implement your vision.

- What are our goals?
- Why integrate digital learning?
- What types of technology or digital learning experiences would help us reach our program goals?
- What barriers should we remove, and who can help us remove them?
- What additional equipment do we need to integrate a digital learning plan into our work?
- How will our vision plan transform teaching and learning for our students?
- How will we know if our vision is successful?
- Who else should we have on our team to help us create the vision? Parents, community, business?

Every school's vision plan will be different. Your plan should reflect the makeup of your school and community. The plan should take into account the teaching staff's current level of technology integration and the kinds of professional development needed to move toward your vision. Think back to the ACOT² research which focused on what do to and how to do it. You should think about the ideas about relationships, collaboration, and instructional strategies presented in Chapters 2 and 4. Will your plan include differentiation? What about digital citizenship and digital safety?

[The National Center for Educational Statistics](#) provides a very thorough overview of technology planning and policies on its website. While this is more information than you need at this point the chapter provides some good guiding questions (Technology in Schools, n.d.).



"Goals" by [stilllearninghowtofly - W W Tribe Psychiatrist](#) is licensed under [CC BY-NC-SA 2.0](#).

Here are a few examples of technology vision statements and implementation plans. All of these are more complex than what you will need to complete for the final project of the course but do provide some great guidance.

[Newton County School District - Covington, GA](#)

[Murrieta Valley Unified School District](#) - Murrieta, CA

And finally . . .

We began by looking in the rearview mirror at where we started in education and how technology has evolved to shape teaching and learning. We explored relationships and strategies and the importance of relationships. We have looked at three models that framed technology integration by looking through different lenses. We have touched on AR/VR, flipped classrooms, coding, differentiation, and digital citizenship. In this final chapter, we explored different ways of looking at a technology vision and plan. Guided by all we have learned, what is your vision and how will you begin to get there? You need both a vision to communicate and a plan to get there.

Application:

1. Using nearly any online assessment tool of your choosing (e.g. [Socrative](#), [Quizlet](#), [Quizizz](#), or any other quiz/assessment tool you prefer, create a 10-15 item review of what you believe are the key vocabulary terms, ideas, resources, theories, etc. presented in this book. As you create your review, implement what you know about quality test construction; avoid vague and simplistic question stems and instead craft specific and, when possible, higher-order (HOTS) review questions. Additionally, include plausible distractors/alternatives.
2. Develop a vision plan for your school or district. Your Vision Plan should include a *vision statement*—a clear, uniquely owned statement of values and beliefs. Vision statements are written to reflect the ideal of what an individual or organization truly wants to be and they are based upon the dreams, needs, and wants to guide the future. When writing your Vision Statement, keep in mind that the statement should be fairly short (perhaps 3-5 sentences long) and should capture the “ideal.” The bottom line is that this is an opportunity to tie current or desired technology practices together with an eye on the future.

While working on your vision plan, you may want to prepare a concept map or brainstorm a list of ideas as you contemplate the following:

- What should be happening in our schools and what do our learning environments need to facilitate these activities?
- What are your BEST hopes for PreK-12 technology in education? What are your WORST fears?
- What are *your* needs and wants as you contemplate restructuring schools/your own classroom?
- How can other school leaders garner support for meaningful, successful technology integration?
- Do you believe technology will significantly change/has significantly changed education?
- What direction do you think technology is headed?
- Where would you like your students/staff/curriculum to be in the future? How will you get there?
- What challenges do you face personally regarding technology? Your students? Your staff? Your school/district?

It is not necessary for you to address all 8 of the bullet points within your project, but you should elaborate on most of them.



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