K-2 EdTech Standards Connections & Integration

Introduction

The following guidance documents were drafted in collaboration between ADE's Academic Standards Educational Technology Team and a dedicated working group of educational technology leaders and content area experts to provide additional guidance to K-2 educators looking to integrate Arizona's Educational Technology Standards into their classroom.

Essential Background Information: Arizona's Educational Technology Standards

It is highly recommended that educators familiarize themselves with Arizona's Educational Technology Standards prior to utilizing the following guidance document.

Overview: Arizona's Educational Technology Standards illustrate what students should know and be able to do in a digital world. They integrate with all academic standards to create multi-modal pathways for all learners, while building technological literacy, media literacy, and digital citizenship. Arizona last adopted its Educational Technology Standards in 2009. This document contained performance objectives, which acted as a checklist for learning discrete skills. As technology has advanced, so have educational technology standards, which now need to be more robust and rigorous to reflect technology's increased role in the learning and lives of students. This is illustrated in Arizona's new, more robust Educational Technology Standards.

Vision: Arizona's Educational Technology Standards are designed to be equitably integrated into all classes for all students to use technology to:
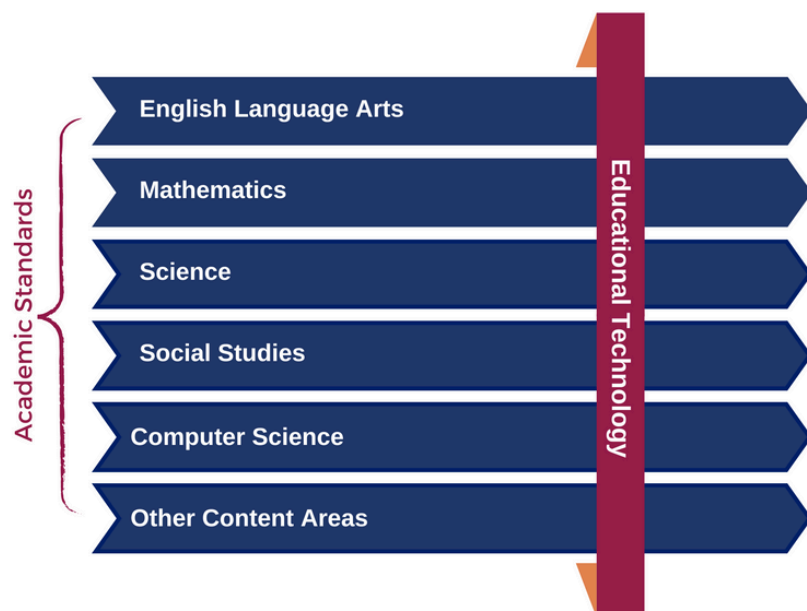
- Develop agency over their learning and understanding
- Build transferable skills that adapt with changing technology
- Innovate solutions for real-world issues
- Utilize higher-level thinking skills
- Build, enhance, and extend content knowledge
- Foster local and global collaboration

Understanding the Educational Technology Standards Framework

The Arizona Educational Technology Standards are structured so that educators can see the progression of the skill called for in the indicator across the K-12 continuum. The grade band performance indicators are scaffolded to build towards mastery with checkpoints at the end of each grade band (K-2, 3-5, 6-8, 9-12). To help educators support students on this learning journey, sample student performance examples are provided alongside the indicators and core content area specific examples are provided in this guidance document.

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Purpose of the Arizona Educational Technology Standards

The Arizona Educational Technology Standards present a vision of what it means to be a technologically literate, informed digital citizen, who is college and career ready. Today's students must be prepared to thrive in a constantly evolving technological landscape. The Arizona Educational Technology Standards are designed to empower student voices and ensure that learning is a student-driven process. These standards outline what all students need to know, understand, and be able to do at each point in their K-12 educational journey.

Academic Standards
- English Language Arts
- Mathematics
- Science
- Social Studies
- Computer Science
- Other Content Areas

Educational Technology

Below are the seven K-12 Educational Technology Standards. These serve as anchor standards with grand-band specific indicators for K-2, 3-5, 6-8, and 9-12.

ARIZONA'S K-12 EDUCATIONAL TECHNOLOGY STANDARDS

Standard #1: Empowered Learner

Students leverage technology to take an active role in choosing, achieving, and demonstrating competency in their learning goals, informed by the learning sciences.

Standard #2: Digital Citizen

Students recognize the rights, responsibilities, and opportunities of living, learning, and working in an interconnected digital world, and they act and model in ways that are safe, legal, and ethical.

Standard #3: Knowledge Constructor

Students critically curate a variety of resources using digital tools to construct knowledge, produce creative artifacts, and make meaningful learning experiences for themselves and others.

Standard #4: Innovative Designer

Students use a variety of technologies within a design process to identify and solve problems by creating new, useful or imaginative solutions.

Standard #5: Computational Thinker

Students develop and employ strategies for understanding and solving problems in ways that leverage the power of technological methods to develop and test solutions.

Standard #6: Creative Communicator

Students communicate clearly and express themselves creatively for a variety of purposes using the platforms, tools, styles, formats and digital media appropriate to their goals.

Standard #7: Global Collaborator

Students use digital tools to broaden their perspectives and enrich their learning by collaborating with others and working effectively in teams locally and globally.

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EDUCATIONAL TECHNOLOGY STANDARD 1. EMPOWERED LEARNER

Students leverage technology to take an active role in choosing, achieving, and demonstrating competency in their learning goals, informed by the learning sciences.

Indicators

Sample Student Performance

K-2.1.a. Students, with guidance, consider and set personal learning goals and utilize appropriate technology to demonstrate knowledge and reflect on the learning process.

- Students select work samples that show evidence of learning within a digitized portfolio and conference with the teacher to set and monitor a goal for improvement.

K-2.1.b. Students, with guidance, learn about technologies that can be used to connect to others and demonstrate the ability to link purpose with resource(s) to enhance and customize their learning.

- Students participate in teacher-led connections both in and outside the students' community (e.g. videoconference, email, virtual field trips).
- Students use tools to personalize content accessibility (e.g., highlighting, video, text-to-speech, audio).

K-2.1.c. Students, with guidance, learn to recognize feedback from both people and features embedded in digital tools, and use age-appropriate technology to share learning.

- Students use automated learning systems to demonstrate learning and receive active feedback (e.g., online quizzes, interactive content learning platforms).
- Students create, review, and share work using digital tools.

K-2.1.d. Students, with guidance, learn to recognize commonalities and fundamental structures across digital tools and begin to transfer learning between tools or learning environments.

- Students access devices and digital resources (e.g., locate, launch, use, create, save, retrieve).
- Students transfer skills from one digital platform to another (e.g., open, cut, save, copy, paste).

Content Specific Sample Student Performance

English Language Arts

- Students use digital rubrics, including pictures, images, and icons, to self-evaluate and peer-evaluate their writing.
- Students revise writing based on feedback from people and digital tools.
- Students, with guidance, use digital tools to seek the meaning of unknown words.

Mathematics

- Students, with guidance, take a screenshot of work and/or use a video tool to explain how they solved a problem and provide classmates with peer feedback.
- Students recognize feedback that appears in digital quizzes or adaptive learning programs.
- Students recognize buttons/keys for numbers and symbols across digital learning platforms.

Science

- Using their science notebooks, students share learning by taking a photo/screenshot of an artifact.
- Students upload their science explanations or investigations to a digital discussion board to share their learning and get feedback from others.
- Students use text-to-speech tools to have short science passages read aloud to them after doing an investigation.

Social Studies

- Students provide and receive feedback, including pictures, liking, or reacting to work from peers using a digital platform or discussion board.
- Students use text-to-speech tools to have social studies text/passages read aloud to them.
- Students demonstrate their learning by selecting an option from a choice board.

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EDUCATIONAL TECHNOLOGY STANDARD 2. DIGITAL CITIZEN

Students recognize the rights, responsibilities, and opportunities of living, learning, and working in an interconnected digital world, and they act and model in ways that are safe, legal, and ethical.

Indicators

Sample Student Performance

K-2.2.a Students, with guidance, discuss and develop their digital identity through responsible use of technology.

- Students identify both positive and negative impacts technology can have on them.
- Students explain how information shared online leaves a digital footprint or trail.

K-2.2.b Students, with guidance, engage in positive and safe behavior when using devices and working online with others.

- Students explain the potential benefits and implications of interacting with others online.
- Students demonstrate positive and safe online behavior when using technology.

K-2.2.c Students, with guidance, begin to develop an understanding of ownership, sharing of information, and how to respect the work of others.

- Students articulate the importance of respecting others' digital content and information.
- Students locate the title and author (individual or organization) for an age-appropriate digital resource.

K-2.2.d Students, with guidance, demonstrate the importance of keeping their information private.

- Students explain the difference between information that is likely safe and appropriate to share online and information that should not be shared.
- Students discuss the tracking of online activity and the importance of keeping some information private.

Content Specific Sample Student Performance

English Language Arts

- Students use sentence stems to model positive and safe behavior when using technology to respond to questions, suggestions, and/or feedback from peers to strengthen their writing as needed.
- When engaging in discussion using digital tools, students, with guidance, ask & answer questions such as who, what, when, where, why, and how to show understanding.

Mathematics

- Students, with guidance, use a digital platform to share their work and model respectful behavior, using sentence frames if needed, when critiquing the reasoning of others.
- Students model collaborative and respectful behavior when problem solving together with and without technology.

Science

- Students, with guidance, model responsible behavior when using technology to define problems and design solutions.
- Students acknowledge and respect different perspectives when developing and using models or constructing explanations and designing solutions.
- Students respectfully ask questions about others' responses or reasoning on a scientific topic.

Social Studies

- Students, with guidance, identify rules and responsibilities of using technology inside and outside the classroom community, and consider the consequences of what happens when rules aren't followed.
- Students apply values of respect, responsibility, equality, and fairness within a digital community or classroom.

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EDUCATIONAL TECHNOLOGY STANDARD 3. KNOWLEDGE CONSTRUCTOR

Students critically curate a variety of resources using digital tools to construct knowledge, produce creative artifacts, and make meaningful learning experiences for themselves and others.

Indicators

Sample Student Performance

K-2.3.a Students, with guidance, use provided digital tools and resources to find information on topics of interest.

- Students use basic search tools with age-appropriate digital resources for locating and using information.
- Students generate simple search terms to find information in a digital resource (e.g., online library catalog).

K-2.3.b Students, with guidance, become familiar with age-appropriate criteria for evaluating digital content.

- Students apply basic questions to help them evaluate whether a digital resource is a good fit for the purpose.
- Students distinguish between nonfiction and fictional digital resources.

K-2.3.c Students, with guidance, use a variety of provided tools to organize information and make connections to their learning.

- Students use digital tools to organize information and support classroom learning (e.g. graphic organizers, concept mapping, photo collage, category sorts, timelines, files).

K-2.3.d Students, with guidance, explore real-world issues and share their ideas about them with others.

- Students explore real-world issues through research and digitally share ideas about the topics (e.g., presentation, video, discussion).

Content Specific Sample Student Performance

English Language Arts

- Students gather information from sources to answer questions and participate in shared research projects.
- Students evaluate sources using digital rubrics (using pictures/icons).
- Students explore grade-level appropriate real-world issues and share ideas with others in the form of pictures, writing, or speaking.

Mathematics

- Students explore real-world issues and share how they use math to solve them.
- Students research mathematicians to build students' own math identity.
- Students collect data digitally on a table, graph, or chart.
- Students look at shapes and use research to find a real-world object for each shape.

Science

- Students write and search specific ideas/terms using provided resources.
- Using the engineering design process, students explore technologies to help solve problems and share their learning via a slide, video, digital drawing, collage, illustration, audio recording, or a written report.

Social Studies

- Students create a chronological sequence of events & digitally organize information.
- Students use a variety of provided sources, including online encyclopedias and databases, to make connections. (i.e. maps or graphs)
- Students evaluate whether a source is useful for informing a specific topic or achieving a specific goal.

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EDUCATIONAL TECHNOLOGY STANDARD 4. INNOVATIVE DESIGNER

Students use a variety of technologies within a design process to identify and solve problems by creating new, useful or imaginative solutions.

Indicators	Sample Student Performance
K-2.4.a Students, with guidance, ask questions, suggest solutions, test ideas to solve problems, and share their learning.	• Students use a design process to identify and solve problems. • Students explain their learning from using a design process through a live or recorded presentation.
K-2.4.b Students, with guidance, use age appropriate digital and/or nondigital tools to describe the steps in a design process.	• Students reflect on the design process and use digital and/or nondigital tools to describe the steps used to solve problems (e.g. demonstration, model, drawing, list of steps, presentation, video, concept map).
K-2.4.c Students, with guidance, use a design process to develop ideas or creations, test their design, and redesign as necessary.	• Students plan, test, and iterate designs/creations to solve problems.
K-2.4.d Students demonstrate perseverance when working to complete a challenging task.	• Students ask questions and use digital feedback tools to clarify understanding of problems, develop a plan of action, and monitor personal progress when working with a challenging task.

Content Specific Sample Student Performance

English Language Arts

- Students ask questions and share ideas (verbal, written, or illustrated) about solving problems characters encounter in a text.
- Students write to describe steps in the design process.
- Students write to describe a challenge, their ideas of possible solutions, and add details as they use a design process.

Mathematics

- Students practice perseverance when finding solutions to mathematical problems.
- Students demonstrate and explain their thinking using video, audio, drawing, or modeling with physical or virtual manipulatives, to solve problems addressing situational/real-life applications.
- Students solve problems using addition and subtraction; and evaluate if their solutions are reasonable.

Science

- Students capture and upload pictures and/or videos to a virtual learning environment to display thinking about investigations and designed models.
- Students digitally annotate resources with audio/text comments and drawings to share questions, observations, ideas, and reflections about their design, constraints, or redesign.

Social Studies

- Students engage in the inquiry arc.
- Students present a video/audio summary of their ideas/conclusion using digital technology.
- Students use primary and secondary sources to examine changes made by individuals in the past/present, problems encountered before/after the change, and possible ideas for solving the problems.

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EDUCATIONAL TECHNOLOGY STANDARD 5. COMPUTATIONAL THINKER

Students develop and employ strategies for understanding and solving problems in ways that leverage the power of technological methods to develop and test solutions.

Indicators

Sample Student Performance

K-2.5.a Students, with guidance, identify a problem and select appropriate technology tools to explore and find solutions.

- Students solve an identified problem through self-selecting appropriate digital resources (e.g., virtual manipulatives, pictures, videos, educator-provided resources, block-coding, robotics).

K-2.5.b Students, with guidance, analyze age appropriate data and look for similarities in order to identify patterns and categories.

- Students find patterns and explore the meaning of charts, graphs, and tables.

K-2.5.c Students, with guidance, break a problem into parts and identify ways to solve the problem.

- Students explain parts of a problem.
- Students identify ways that they can solve a problem.

K-2.5.d Students discuss and develop an understanding of how technology is used to make a task easier or repeatable and can identify real-world examples.

- Students describe and provide examples of how digital tools and materials are things that help people complete a task.
- Students understand and describe how developing a replicable sequence of steps simplifies task completion.

Content Specific Sample Student Performance

English Language Arts

- Students use visual aids or digital storytelling tools to break a story into basic parts. (beginning, middle, and end)
- Using a block-based coding program, or simple presentation software, students create a simple animation to re-tell a familiar story building their understanding of sequencing and decomposition.
- Students explore how AI uses patterns from existing stories to create new ones.

Mathematics

- Students use physical or digital cubes to make simple addition and subtraction patterns, such as "add one more" or "take away two".
- Students work together to list the steps of a familiar routine (brushing teeth, getting dressed) and use a visual or digital chart to show these steps in order, helping them understand that an algorithm is a set of steps to finish a task.

Science

- Using digital resources such as a block coding program, slide presentation, or video animation students depict a scientific system or structure.
- Students create an algorithm to explain the steps/cycle of a system or how a structure functions.
- Students use a technology tool of their choice (presentation software, block coding program, small robot) to discuss and model patterns in the natural and designed world.

Social Studies

- Students work together to list steps to solve a real-world (within the school) problem and discuss how those steps could be used again to solve a similar problem.
- Students design a set of instructions to guide a person, object, or robot along a path representing a migration route or trade route helping them understand how people or goods move from one place to another.

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EDUCATIONAL TECHNOLOGY STANDARD 6. CREATIVE COMMUNICATOR

Students communicate clearly and express themselves creatively for a variety of purposes using the platforms, tools, styles, formats and digital media appropriate to their goals.

Indicators

Sample Student Performance

K-2.6.a Students, with guidance, use a variety of tools for creating something new and communicating with others.

- Students use digital tools to communicate and express their thinking, ideas, and creativity.

K-2.6.b Students, with guidance, create original works using digital tools and resources.

- Students use digital tools to communicate and express their thinking, ideas, and creativity.

K-2.6.c Students, with guidance, create digital artifacts to share ideas in multiple formats.

- Students use a variety of digital tools and resources to communicate complex ideas.

K-2.6.d Students, with guidance, select the appropriate technology for sharing their ideas with intended audiences.

- Students discuss needs and identify digital communication tools appropriate to the task and situation.

Content Specific Sample Student Performance

English Language Arts

- Students use digital tools to describe story elements and/or sequencing of stories.
- Students create a video or digital drawing to retell stories and demonstrate comprehension.
- Students use digital tools to communicate informational text elements.

Mathematics

- Students take a screenshot of work or use a video or voice recording tool to explain how they solved a problem.
- Students record themselves or their screens as a formative assessment.
- Students model different types of problems on a digital whiteboard or drawing program by selecting tools of their choice or using virtual manipulatives.

Science

- Students use a digital platform to create a science presentation given the expectations of the classroom rubric.
- Students create a digital artifact, such as a meme, to visually represent their understanding of a science concept, vocabulary, or ideas.
- Students show thinking by drawing or finding photos to represent a product or the findings.

Social Studies

- Students create digital books or audio recordings about history, culture, etc.
- Students create a video PSA or meme to teach about issues, such as how to be responsible in the hallway, around school, or around their community.
- Student create stickers to pass out and share how to be a digital citizen.

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EDUCATIONAL TECHNOLOGY STANDARD 7. GLOBAL COLLABORATOR

Students use digital tools to broaden their perspectives and enrich their learning by collaborating with others and working effectively in teams locally and globally.

Indicators

Sample Student Performance

K-2.7.a Students, with guidance, use digital tools to work with other learners and get to know people within their local community and beyond.

- Students utilize digital tools to connect and communicate for learning.

K-2.7.b Students, with guidance, use technology to communicate with others and to look at problems from different perspectives.

- Students collaborate using online software so that multiple perspectives can be captured.

K-2.7.c Students, with guidance, take on various team roles and use age appropriate technology to complete projects.

- Students assume roles and work collaboratively to create a digital product.

K-2.7.d Students, with guidance, use age appropriate technology to work together to demonstrate an understanding of local or global issues and suggest possible solutions.

- Students use age-appropriate collaborative technologies for conducting research to investigate problems and solutions.

Content Specific Sample Student Performance

English Language Arts

- Students compare and contrast versions of the same story by different authors or cultures.
- Students ask and answer questions about the world around them.
- Students engage with digital pen pals to work with other learners and connect with others in their community and beyond.

Mathematics

- Students ask questions, collect data, and present data about a grade level appropriate real world issue or problem.
- Students take a picture or screenshot of their work and share it with their classmates using online collaboration software. (i.e. Google Slides, Padlet, etc)

Science

- Students add visuals/recorded explanations into slides to convey their thinking and share their perspective with others.
- Students interact within a digital whiteboard using text, pictures, or drawings to share and compare ideas with others.
- Students gather and construct information by adding comments or visual responses/votes to shared resources.

Social Studies

- Students participate in a virtual meeting conversation with people from other places and various roles to explore locations and perspectives/contributions. (i.e. virtual field trips, class pen pals, etc)
- Students use a 3D viewer to go on immersive journeys related to content topics.
- Students create and share posters / PSA videos with information & solutions to problems in their community.

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FAQ Page

Welcome to the FAQ page for the K-2 EdTech Integration & Connections Guidance Document. Here, we address common questions and provide clarifications to help you effectively implement Arizona's K-12 EdTech Standards in your classroom.

Question	Answer
Who is responsible for teaching the EdTech Standards?	Arizona's Educational Technology Standards are designed to be equitably integrated into all classrooms across K-12, therefore it is ideal for all teachers to share the responsibility of implementation. However, some schools may choose to have a specialist or elective teacher lead implementation, with classroom teachers supporting or extending EdTech Standards instruction.
What specific tools or apps should I use to support implementation of Arizona's EdTech Standards in my classroom?	Each district and/or school has their own process for vetting, approving, and purchasing digital resources for their staff and students. We recommend reaching out to your district or school's technology department for a list of approved tools and apps that you may use.
How can I address concerns about my students' ability to master the standards for their grade level band?	It is important to remember that Arizona's EdTech Standards are designed in grade level bands. Students are not expected to master the standard until the end of the specified grade band. For example, in the K-2 standards, the continuum would be as follows: **Kindergarten:** The standard is introduced and explored to build the foundation with support from the classroom teacher. **First grade:** Students develop and apply the skills of the standard with support from the classroom teacher. **Second grade:** Students work towards mastery of the standard through application and integration with support from the classroom teacher.
How can I learn more about what it looks like to implement educational technology in my classroom in alignment with Arizona's EdTech Standards?	Arizona's Educational Technology Standards are based on ISTE's Standards for Students. ISTE's website includes additional information about the standards, including video examples of implementation from real classrooms.
How can I avoid the over-reliance of technology while still ensuring implementation of Arizona's EdTech Standards?	The intention of Arizona's Educational Technology Standards is to facilitate learning experiences where technology is used in meaningful ways to support students in preparing for their futures in an increasing digital world. We encourage teachers to be thoughtful in the use of technology within their lesson to ensure that value is added, rather than passively using technology for substitution.

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