

A photograph of three young children in a classroom setting, looking intently at a tablet computer held by one of them. The image is overlaid with a semi-transparent blue filter. The background shows a typical classroom environment with desks, books, and other students.

**Kentucky Academic Standards  
for**

# **Technology**

Kindergarten through Grade 12

# Table of Contents

<b>Table of Contents</b>	<b>2</b>
<b>Introduction</b>	<b>3</b>
Background	3
Kentucky's Vision for Students	3
<b>Legal Basis</b>	<b>5</b>
<b>Writers' Vision Statement</b>	<b>6</b>
Design Considerations	7
What is Technology Education?	7
Technology Standards vs. Computer Science Standards	8
Consulted Partners	9
<b>Standards Use and Development</b>	<b>9</b>
The Kentucky Academic Standards KAS are Standards, not Curriculum	9
Translating the Standards into Curriculum	10
Organization of the Standards	10
Standards Structure and Identifiers	10
<b>Grade Bands and Grade Level Considerations</b>	<b>11</b>
Supplementary Materials to the Standards	12
<b>Primary K-2 KAS for Technology</b>	<b>14</b>
<b>Intermediate 3-5 KAS for Technology</b>	<b>24</b>
<b>Middle School 6-8 KAS for Technology</b>	<b>34</b>
<b>High School 9-12 KAS for Technology</b>	<b>44</b>
<b>References</b>	<b>53</b>
<b>Appendix A: Connection to Graduation</b>	<b>54</b>
<b>Appendix B: Writing and Review Committees</b>	<b>56</b>
<b>Appendix C: Standards Progression Chart</b>	<b>58</b>



# Introduction

## Background

Today's society is witnessing an unprecedented explosion of information and use of digital resources. In an environment where information is doubling at an incredible rate and digital, distance, and remote learning resources are becoming an increased component of the classroom and the workplace, students face both difficult challenges and increased opportunities. The successful students, workers, and citizens of tomorrow will be digitally connected self-directed agents of their own learning.

The KETS Master Plan for Education Technology 2018-2024 identified updating the current Technology Standards as an area of emphasis and priority for the KDE in collaboration with our local school districts and professional partners. The plan's vision for student learning highlights equitable, personalized, applied, and engaged digital, distance, and remote learning for all students. Digital tools can enhance student learning as they connect efforts to identify what students should know and be able to do as well as help students and educators assess progress toward achieving academic goals. Strong technology skills can also help students perform, apply, and demonstrate what they have learned. To meet the needs of today's students and to ensure they are college and career ready, schools are encouraged to be innovative in providing student learning experiences, adopting technologies and instruction in ways which meaningfully engage the digital generation. Therefore, the Kentucky Department of Education KDE engaged with state and local partners to develop the *Kentucky Academic Standards for Technology* which focus on providing students with opportunities to develop fundamental skills essential to all college and career paths; whereby, stimulating Kentucky's economy and workforce.

## Kentucky's Vision for Students

The Kentucky Board of Education's KBE vision is that each and every student is empowered and equipped to pursue a successful future. To equip and empower students, the following capacity and goal statements frame instructional programs in Kentucky schools. They were established by the Kentucky Education Reform Act of 1990, as found in Kentucky Revised Statute KRS 158.645 and KRS 158.6451. All students shall have the opportunity to acquire the following capacities and learning goals:

- Communication skills necessary to function in a complex and changing civilization;
- Knowledge to make economic, social and political choices;
- Core values and qualities of good character to make moral and ethical decisions throughout life;



- Understanding of governmental processes as they affect the community, the state and the nation;
- Sufficient self-knowledge and knowledge of their mental health and physical wellness;
- Sufficient grounding in the arts to enable each student to appreciate their cultural and historical heritage;
- Sufficient preparation to choose and pursue their life's work intelligently; and
- Skills to enable students to compete favorably with students in other states.

Furthermore, schools shall:

- Expect a high level of achievement from all students.
- Develop their students' ability to:
  - Use basic communication and mathematics skills for purposes and situations they will encounter throughout their lives;
  - Apply core concepts and principles from mathematics, the sciences, the arts, the humanities, social studies and practical living studies to situations they will encounter throughout their lives;
  - Become self-sufficient individuals of good character exhibiting the qualities of altruism, citizenship, courtesy, hard work, honesty, human worth, justice, knowledge, patriotism, respect, responsibility and self-discipline;
  - Become responsible members of a family, work group or community, including demonstrating effectiveness in community service;
  - Think and solve problems in school situations and in a variety of situations they will encounter in life;
  - Connect and integrate experiences and new knowledge from all subject matter fields with what students have previously learned and build on past learning experiences to acquire new information through various media sources; and
  - Express their creative talents and interests in visual arts, music, dance and dramatic arts.
- Increase student attendance rates.
- Increase students graduation rates and reduce dropout and retention rates.
- Reduce physical and mental health barriers to learning.
- Be measured on the proportion of students who make a successful transition to work, postsecondary education and the military.

Kentucky law establishes minimum requirements for all students to earn a diploma. However, elective courses are offered based on decisions of local districts and schools. Schools have also offered specialized technology-related courses in the past through Career and Technical Education CTE Pathways.

To ensure legal requirements of social studies classes are met, the Kentucky Department of Education KDE encourages schools to use the Model Curriculum Framework to inform



development of curricula related to these courses. The Model Curriculum Framework encourages putting the student at the center of planning to ensure that:

*...the goal of such a curriculum is to produce students that are ethical citizens in a democratic global society and to help them become self-sufficient individuals who are prepared to succeed in an ever-changing and diverse world. Design and implementation requires professionals to accommodate the needs of each student and focus on supporting the development of the whole child so that all students have equitable access to opportunities and support for maximum academic, emotional, social and physical development.*

*Model Curriculum Framework, page 19*

## Legal Basis

The following Kentucky Revised Statutes KRS and Kentucky Administrative Regulations KAR provide a legal basis for this publication:

### **KRS 156.160 Promulgation of administrative regulations by the Kentucky Board of Education**

With the advice of the Local Superintendents Advisory Council LSAC, the KBE shall promulgate administrative regulations establishing standards that public school districts shall meet in student, program, service and operational performance. These regulations shall comply with the expected outcomes for students and schools set forth in KRS 158:6451.

### **704 KAR 3:305 Minimum high school graduation requirements**

This administrative regulation establishes the minimum high school graduation requirements necessary for entitlement to a public high school diploma.

### **704 KAR 8:090 Kentucky Academic Standards for Technology**

Senate Bill 1 (2017) calls for the KDE to implement a process for establishing new, as well as reviewing all approved academic standards and aligned assessments beginning in the 2017-18 school year. The current schedule calls for content areas to be reviewed each year and every six years thereafter on a rotating basis. The KDE collects public comment and input on all of the draft standards for 30 days prior to finalization.

Senate Bill 1 (2017) called for content standards that:

- Focus on critical knowledge, skills and capacities needed for success in the global economy;
- Result in fewer but more in-depth standards to facilitate mastery learning;



- Communicate expectations more clearly and concisely to teachers, parents, students and citizens;
- Are based on evidence-based research;
- Consider international benchmarks; and
- Ensure the standards are aligned from elementary to high school to postsecondary education so students can be successful at each education level.

### **704 KAR 8:090 adopts into law the *Kentucky Academic Standards for Technology*. Standards Creation Process**

Per Senate Bill 1 (2017), the *Kentucky Academic Standards for Technology* was entirely conceived and written by teams of Kentucky educators. The Technology Advisory Panel (AP) was composed of 24 teachers, three public post-secondary professors from institutions of higher education and four community members. The function of the AP was to review and revise the standards and make recommendations for changes to a Review and Development Committee (RD). The Technology RD was composed of six teachers, four public post-secondary professors from institutions of higher education and three community members. The function of the RD was to review the work and findings from the AP and make recommendations to revise or replace existing standards. The team was selected based on their expertise in the area of technology and learning through digital tools and resources, including those with a specialty in the disciplines of technology. When choosing writers, the selection committee considered state-wide representation for public elementary, middle and high school teachers as well as higher education instructors and community members.

## Writers’ Vision Statement

The writing team envisioned standards that would afford students the opportunity to engage in becoming empowered as a learner, constructing new meaning and new knowledge, digital citizenship, computational thinking, problem-solving, communication, and collaboration through demonstrated student technology skills. The writing team wanted standards that would:

- initiate cross-curricular connections to enhance the understanding of learning through digital technology skills and concepts;
- establish a continuum of technology competencies K-12 for to be demonstrated ;
- provide opportunities for ALL students to engage in learning through technology experiences and
- advanced demonstration of technology competencies and digital skills to prepare them for future success; and
- prepare students to address a critical workforce need related to technology knowledge, skills, and application.



## Design Considerations

The writers designed a single set of standards to frame learning experiences in such a way so as to allow local schools and districts the flexibility to choose the curricular design that best meets the needs of students. The writers chose to organize the standards into seven broad concept areas that students should apply and embody. With digital technologies students should be an: empowered learner, digital citizen, knowledge constructor, innovative designer, computational thinker, creative communicator, and a global collaborator. Standards in each area were written as performance expectations to depict what students must do to demonstrate competency in technology.

## What is Technology Education?

*Kentucky's Academic Standards for Technology* identifies and defines the knowledge and skills essential for all Kentucky students to access, evaluate, and use information and technology to engage in and take ownership of their learning. These standards connect and interrelate current perspectives and fluencies in information, media, and technology into a unified conceptual framework. The standards also demonstrate processes for rethinking education, rethinking learning when, how, space, and pace adapting to a constantly changing digital landscape and preparing students to transition into an increasingly global economy.

As educators, we are preparing students for a future that we cannot yet imagine. Empowering students to become lifelong learners and providing them with the skills to face future challenges resourcefully and creatively is critical. Empowering students is not about using digital tools to support outdated education strategies and models: it is about tapping into technology's potential to amplify human capacity for collaboration, creativity, and communication. The Kentucky Academic Standards for Technology are about leveling the playing field and providing young people worldwide with equitable access to powerful learning experiences.

The purpose of these standards is to identify technology-related content competencies and skills and performance application standards for all students throughout the kindergarten through grade twelve K-12 curriculum. We must ensure that all children have equal access to high-quality education programs. Clear statements about what students must know and be able to do are essential in making sure our schools offer opportunities to get the knowledge, skills, and application of such, necessary for success beyond the classroom. The standards are designed to be integrated into the various content and skill areas of the school curriculum. **The focus is on transforming learning experiences with technology** rather than learning about technologies or learning how to use technologies. Integration will be varied and diverse based on the curricula of individual schools and school systems. The reflective dialogue will occur in school districts among students, teachers, administrators, parents, curriculum directors, library media specialists, education technology leaders, digital learning coaches, instructional





coaches, parents, and community members as each district leverages these standards and integrates them into the local instructional program for students.

## Technology Standards vs. Computer Science Standards

Kentucky officially recognized Technology Academic Standards in 2008, for the first time. The academic standards for technology represented in this document are a refresh and modernization to those original adopted standards. While these technology standards complement the *Kentucky Academic Standards for Computer Science*, the resulting competencies are substantially different. The technology standards are broad and should lead students towards competencies that highlight learning academic standards in other content areas: e.g. mathematics, social studies, science, etc. with technology. These academic standards for technology are also designed to support the implementation of content-area standards, such as digital fluency skills demonstrating the responsible use of appropriate technology to communicate, solve problems, access, manage, integrate, evaluate and create information to improve learning in all subject areas.

The *Kentucky Academic Standards for Technology*, based on the International Society for Technology in Education [ISTE](#) Student Standards, provide a framework for integrating technology into all content areas and reflect the basic digital skills required for each student to be competitive in today's global economy. Additionally, "demonstrating performance-based competency in technology" is included as a [minimum graduation requirement](#) in Kentucky public schools. For students to attain the required technology competencies, it is essential they have access to technology during the school day at all grade levels and during digital, distance, and remote learning. Instruction should provide opportunities for students to gain and demonstrate technology skills that build throughout their K-12 educational careers.

Computer science, however, often is confused with the everyday use of computers and computer applications, such as learning how to access the Internet and use digital presentation software. Parents, teachers, students, and local and state education leaders share this confusion. The Kentucky Academic Standards for Computer Science clarifies not only what computer science is but also what students should know and be able to do in computer science from kindergarten to 12th grade. Computer science builds on the KAS for Technology, computer literacy, educational technology, digital citizenship, and information technology. Their slight differences and relationship with technology are described below.

- **Computer literacy** or *digital literacy* refers to the general use of computers and programs i.e., computer applications such as productivity software. Examples include performing an Internet search and creating a digital presentation.
- **Educational technology** applies computer literacy to school subjects. For example, students in an English class can use a web-based application to collaboratively create, edit, and store an essay online.
- **Digital citizenship** refers to the appropriate and responsible use of technology, such as choosing an appropriate password and keeping it secure.





- **Information technology** often overlaps with computer science but is mainly focused on industrial applications of computer science, such as installing and operating software rather than creating it. Information technology professionals often have a background in computer science.
- **Computer Science** as an academic discipline encompassing the study of computers and algorithmic processes to include principles, hardware and software designs, applications, networks and the impact on society.

These aspects of computing and technology are distinguished from each other because they focus on *using* computer technologies rather than understanding *why* they work and *how* to create those technologies. Knowing why and how computers work i.e., computer science , provides the basis for a deep understanding of computer use and the relevant rights, responsibilities and applications K-12 Computer Science Framework Steering Committee, 2016 .

## Consulted Partners

Through the *Kentucky Academic Standards for Technology* development process many partners were consulted. The following list represents partners who assisted in the drafting of these standards provided valuable research and resources:

- The International Society for Technology in Education 2016 . ISTE Standards for Students, Revised 2016. Retrieved from <https://www.iste.org/standards/standards/adopting-the-standards>.
- States Consulted and referenced: Wisconsin, Washington, Ohio, Montana.
- States modeled after: Wisconsin
- US Department of Education, National Education Technology Plan. Retrieved from <https://tech.ed.gov/netp/>.
- Southern Regional Education Board. 2016 . Bridging the computer science education gap. Retrieved from <https://www.sreb.org/publication/bridging-computer-science-education-gap>

## Standards Use and Development

### The Kentucky Academic Standards KAS are Standards, not Curriculum

The Kentucky Academic Standards for Technology outlines the minimum standards Kentucky students should learn in each grade level kindergarten through eighth grade or high school grade-span. The standards address a foundational framework of what is to be learned



but do not address how learning experiences are to be designed or what resources should be used.

A standard represents a goal or outcome of an educational program; standards are vertically aligned expected outcomes for all students. The standards do not dictate the design of a lesson plan or how units should be organized. The standards establish a statewide baseline of what students should know and be able to do at the conclusion of a grade or grade-span. The instructional program should emphasize the development of students' abilities to acquire and apply the standards. The curriculum must ensure that appropriate accommodations are made for diverse populations of students found within Kentucky schools.

These standards are not a set of instructional or assessment tasks, but rather statements of what students should be able to master after instruction. Decisions on how best to help students meet these program goals are left to local school districts and teachers. Curriculum includes the vast array of instructional materials, readings, learning experiences and local mechanisms of assessment, including the full body of content knowledge to be covered, all of which are to be selected at the local level according to Kentucky law.

## Translating the Standards into Curriculum

The KDE does not require specific curriculum or strategies to be used to teach the Kentucky Academic Standards (KAS). Local schools and districts choose to meet those minimum required standards using a locally adopted curriculum according to KRS 158.6453, which outlines the SBDM's role in determining curriculum. As educators implement academic standards, they, along with community members, must guarantee 21st-century readiness that will ensure all learners are transition-ready. To achieve this, Kentucky students need a curriculum designed and structured for a rigorous, relevant and personalized learning experience, including a wide variety of learning opportunities in the classroom and during digital, distance, and remote learning. The [Kentucky Model Curriculum Framework](#) is a resource to help an instructional supervisor, principal and/or teacher leader revisit curriculum planning, offering background information and exercises to generate "future-oriented" thinking while suggesting a process for designing and reviewing local curriculum.

## Organization of the Standards

### Standards Structure and Identifiers

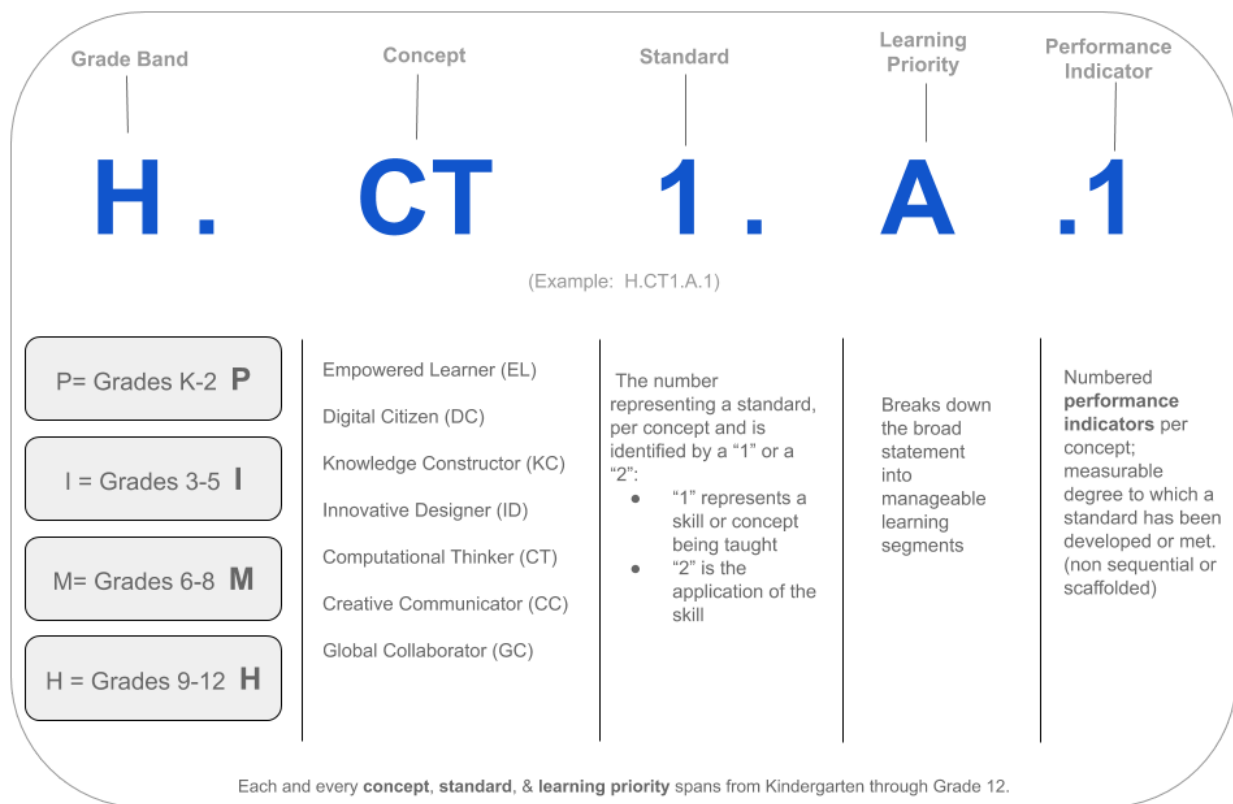
*The Kentucky Academic Standards for Technology follow a specific structure.*

- **Standard Identifier:** reflects consistent coding for the identification of a standard representing the grade or grade band, the concept area and the numerated standard number per concept.
- **Grade Band:** identifies the grade band associated with the standard.



- **Concept:** categorizes the standards into seven concepts Empowered Learner, Digital Citizen, Knowledge Constructor, Innovative Designer, Computational Thinker, Creative Communicator, and Global Collaborator .
- **Standard:** outlines what students are expected to know or be able to do.
- **Learning Priority:** translates the standard into manageable learning pieces and represents the specific ideas within that concept. Subconcept overviews summarize how learning progresses across multiple grade bands and are used to develop the progression chart Appendix C .
- **Grade-by-Grade Performance Indicators:** provide a comprehensive picture of performance expectations for each standard in the K-12 grade bands and include thorough descriptions of exemplary practices and processes.

### Standard Identifier example



### Grade Bands and Grade Level Considerations

*The Kentucky Academic Standards for Technology* are organized in specific grade bands K-2, 3-5, 6-8 and 9-12 . This organization enables teachers to create grade level or course-specific student expectations derived from the standards. Additionally, connections exist between



standards in different grade bands and demonstrate how one concept builds on another to provide vertically aligned learning experiences for students.

- *The Kentucky Academic Standards for Technology* represent knowledge and skills that should be demonstrated through the transition of each grade band i.e. grade 2, grade 5, grade 8 and grade 12 . While middle school and high school students generally have the opportunity to demonstrate the learning of technology skills and concepts through dedicated technology empowered projects, students in elementary school may be more likely to learn technology skills integrated throughout the curriculum in all content areas. Therefore, **grade-by-grade indicators are included, per standard, for kindergarten through grade12.**
- Technology at the middle school level continues to develop students' foundational skills in problem solving, computational and critical thinking through the awareness and exploration of technology-related concepts.
- Technology at the high school level continues to develop students' foundational understanding of transformational learning with technology through in-depth learning opportunities, demonstrated competencies, including awareness and exploration activities.

## Supplementary Materials to the Standards

The final set of the *Kentucky Academic Standards for Technology* is the result of educator involvement and public feedback. Short summaries of each of the appendices are listed below.

### Appendix A: Connection to Graduation

The *Kentucky Academic Standards for Technology* are included in Kentucky's minimum graduation requirements. This section provides key points, an explanation of the requirement, and guidance for implementation.

### Appendix B: Writing and Review Teams

Background information on the team who wrote the *Kentucky Academic Standards for Technology* is included. Additional information includes those who reviewed the standards and/or provided feedback.

### Appendix C: Grade Band Progression Chart

The progression chart represents the K-12 *Kentucky Academic Standards for Technology* progressions for ALL students, to include all concept areas and subconcepts.



# Grades K-2

## Kentucky Academic Standards for Technology



# Primary K-2 KAS for Technology

Overview for Primary K-2 :

The technology standards at the primary level provide an entry-point into necessary knowledge, skills, and competencies that equip students for a successful future. This goal requires the understanding of content that helps: empower learners, create responsible digital citizens, facilitate knowledge construction, design and innovate for learning, think computationally, communicate creatively, and collaborate with a global mindset.

Application of the technology standards at the primary level should focus on active learning and integrating the identified skills into other disciplines. These standards provide a clear progression of skills, and students develop a broad conceptual understanding of technology. All content teachers should provide opportunities for students to apply the skills and knowledge identified.

Concept: **Empowered Learner (EL)**

*Competency: Students use technology to take an active role in their learning.*

## **Standard:**

EL1. Leverage technology to take an active role in choosing, achieving and demonstrating competency in their learning goals, informed by the learning sciences.

## **Learning Priority:**

A. Articulate and set personal learning goals, develop strategies leveraging technology to achieve them and reflect on the learning process itself to improve learning outcomes.

## **Indicators for grades K-2:**

1. Set personal learning goals and use digital tools to achieve those goals, with guidance and support ex.: increase reading fluency by recording and reflecting upon student reading .
2. Reflect on the learning process to improve learning over time, with guidance and support ex.: using digital writing portfolio and reflection log/journal .

## **Learning Priority:**

B. Build networks and customize their learning environments in ways that support the learning process.

## **Indicators for grades K-2:**

1. Participate in teacher-led explorations utilizing digital tools to expand learning spaces beyond the classroom ex.: expert video channels, video conferencing with professionals, authors blogs .





**Learning Priority:**

C. Use technology to seek feedback that informs and improves their practice and to demonstrate their learning in a variety of ways.

**Indicators for grades K-2:**

1. Recognize and use technology to seek feedback as a valued component of the learning process.
2. Use feedback to improve the demonstration of learning ex.: student uses interactive software with immediate feedback to guide their performance .

**Learning Priority:**

D. Understanding the fundamental concepts of how to use technology technology operations .

**Indicator s for grades K-2:**

1. Explore a variety of digital tools and discover how they work based on fundamental concepts of technology operations ex.: a student learns how to turn the audio up/down, how to open, save, close files .
2. Transfer conceptual knowledge of technology operations in multiple contexts, with guidance and support ex.: A student has learned to use a smartphone, and they use what they know about smartphones to use a different device .

**Standard:**

EL2. Apply the fundamental concepts of technology operations and demonstrate the ability to choose, use, and/or troubleshoot current technologies.

**Learning Priority:**

A. Demonstrate learning with the use of technology.

**Indicators for grades K-2:**

1. Use age-appropriate digital resources to produce and publish information.
2. Demonstrate basic ability to communicate a message with digital input strategies ex.: typing/keyboarding, voice to text, video or audio, images .

**Learning Priority:**

B. Apply functions and concepts of technology operations; demonstrate the ability to choose, use and troubleshoot current technologies.

**Indicators for grades K-2:**

1. Choose technology appropriate to task and purpose, with guidance and support.

**Learning Priority:**

C. Transfer knowledge to emerging technology.

**Indicators for grades K-2:**

1. Apply and adapt knowledge of existing technology to the substitution-based use of new technologies.

Concept: **Digital Citizen (DC)**

*Competency: Students manage their digital identity in a safe, positive, and proactive way.*

**Standard:**

DC1. Recognize the rights, responsibilities and opportunities of living, learning and working in an interconnected digital world; act and model in ways that are safe, legal and ethical.

**Learning Priority:**

A. Cultivate and manage your digital identity and reputation, and be aware of the permanence of your actions in the digital world.

**Indicators for grades K-2:**

1. Understand what it means to be a positive influence offline and how that could relate to being positive online.
2. Show awareness that when something is put on the internet websites, social media, apps it can leave a trail online digital footprint .

**Learning Priority:**

B. Engage in positive, safe, legal and ethical behavior when using technology, including social interactions online or when using networked devices.

**Indicators for grades K-2:**

1. Choose appropriate websites, and understand to seek help from a trusted adult when faced with problems online related to safety.
2. Understand that what is online has positive and negative consequences, and relate the understanding to behaviors offline.

**Learning Priority:**

C. Manage their personal data to maintain digital privacy and security and are aware of data-collection technology used to track their navigation online.

**Indicators for grades K-2:**

1. Understand usernames and passwords, and understand why these are not shared with others.
2. Navigate to trusted websites and know how to search for websites in a safe manner with awareness that not all websites are safe.

**Standard:**

DC2. Demonstrate an understanding of and respect for the rights and obligations of using and sharing intellectual property.

**Learning Priority:**

A. Use information, media and digital resources in a responsible manner.

**Indicators for grades K-2:**

1. Identify acceptable use of the internet and other digital resources.

**Learning Priority:**

B. Respect intellectual property rights.

**Indicators for grades K-2:**



1. Recognize that everyone has different ideas in creating their own work intellectual property .
2. Show respect for others intellectual property with positive words.
3. Understand not to copy someone else s work intellectual property .
4. Understand that someone else s creations found on the internet or shared in person, cannot be used without permission, and the creator should be given credit.

Concept: **Knowledge Constructor (KC)**

*Competency: Students use various digital tools to find information and make meaning.*

**Standard:**

KC1. Students critically curate a variety of resources using digital tools to construct knowledge.

**Learning Priority:**

A. Plan and employ effective research strategies to locate information and other resources for their intellectual or creative pursuits.

**Indicators for grades K-2:**

1. Use basic keyword searches to locate information to build deeper understanding of a subject.
2. Apply print reference knowledge and strategies to find and locate information in digital resources.
3. Satisfy curiosity by exploring answers to questions with digital resources.

**Learning Priority:**

B. Evaluate the accuracy, perspective, credibility and relevance of information, media, data or other resources.

**Indicators for grades K-2:**

1. Classify websites into general categories to guide relevance of search results ex.: entertainment/games, reference, learning .
2. Compare information on the same topic across multiple digital resources.

**Learning Priority:**

C. Curate information from digital resources using a variety of tools and methods to create collections of artifacts that demonstrate meaningful connections or conclusions.

**Indicators for grades K-2:**

1. Use digital organizers to create collections of artifacts ex.: bookmarks, hyperlinks, sites .
2. Organize gathered artifacts into general themed collections ex.: Famous African-Americans, favorite cartoon characters, pictures of bridges .

**Standard:**

KC2. Produce creative artifacts and make meaningful learning experiences from curated knowledge for themselves and others.



**Learning Priority:**

A. Produce creative artifacts.

**Indicators for grades K-2:**

1. Use digital tools to create artifacts from information found in various digital resources.

**Learning Priority:**

B. Build knowledge by actively exploring real-world issues and problems, developing ideas and theories and pursuing answers and solutions.

**Indicators for grades K-2:**

1. Use a variety of digital resources ex.: website, video clip, photos to explore and report on real world issues.

Concept: **Innovative Designer (ID)**

*Competency: Students use a variety of technologies to design and create.*

**Standard:**

ID1. Use a variety of technologies to identify and solve authentic real-world problems.

**Learning Priority:**

A. Find authentic real-world problems in local and global contexts.

**Indicators for grades K-2:**

1. Use technology to identify a problem in the school or home environment with guidance and support.  
2. Describe the problem, using technology, and explain why it is problematic.

**Learning Priority:**

B. Exhibit a tolerance for ambiguity, perseverance and the capacity to work with open-ended problems.

**Indicators for grades K-2:**

1. Demonstrate perseverance when working to complete a challenging task.

**Standard:**

ID2. Use a variety of technologies within a design process to create new, useful and imaginative solutions.

**Learning Priority:**

A. Know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems.

**Indicators for grades K-2:**

1. Use a design process ex.: creative thinking spiral to ask questions, suggest



solutions, test ideas to solve problems, and share their learning, with guidance and support.

**Learning Priority:**

B. Select and use digital tools to plan and manage a design process that considers design constraints and calculated risks.

**Indicators for grades K-2:**

1. Use a variety of age-appropriate digital tools to design something, with guidance and support.

**Learning Priority:**

C. Develop, test and refine prototypes as part of a cyclical design process.

**Indicators for grades K-2:**

1. Use a design process to develop ideas or creations, test their design, and redesign if necessary.

Concept: **Computational Thinker (CT)**

*Competency: Students understand sequences and use them to develop solutions to problems.*

**Standard:**

CT1. Develop and employ strategies for understanding and solving problems in ways that leverage the power of technological methods to develop and test solutions.

**Learning Priority:**

A. Formulate problem definitions suited for technology-assisted methods such as data analysis, abstract models and algorithmic thinking in exploring and finding solutions.

**Indicators for grades K-2:**

1. Identify a problem and choose the appropriate digital tools to explore and find solutions to the problem through the use of a step-by-step plan, with guidance and support.

**Learning Priority:**

B. Collect data or identify relevant data sets, use digital tools to analyze them, and represent data in various ways to facilitate problem-solving and decision-making.

**Indicators for grades K-2:**

1. Utilize an age-appropriate digital tool to collect, organize, and represent data ex.: online surveys, spreadsheets, graphs, charts, etc ; students will use this data to look for similarities and identify patterns and categories within the data set ex.: simple data mining , with guidance and support.

**Learning Priority:**

C. Break problems into component parts, extract key information, and develop descriptive



models to understand complex systems or facilitate problem-solving.

**Indicators for grades K-2:**

1. Break a problem into smaller parts, identify key information, and use age-appropriate digital tools to help with problem solving ex.: online whiteboard, online mindmapping tools, digital outline , with guidance and support.

**Learning Priority:**

D. Understand how automation works and use algorithmic thinking to develop a sequence of steps to create and test automated solutions.

**Indicators for grades K-2:**

1. Define and give examples of automation ex.: thermostat controls temperature, buttons pressed on toys make various sounds .  
2. Complete a simple coding task with at least 3-5 coded actions ex.: html, block-based coding, python , with guidance and support.

**Standard:**

CT2. Apply strategies for understanding and solving problems by using technological methods to develop and test solutions.

**Learning Priority:**

A. Use resources to collect, analyze, and represent data.

**Indicators for grades K-2:**

1. Use digital tools to ask questions and digitally collect data, with guidance and support.

**Learning Priority:**

B. Deconstruct components to understand systems and facilitate problem-solving.

**Indicators for grades K-2:**

1. Use digital tools to identify patterns in order to solve problems, with guidance and support.

**Learning Priority:**

C. Create and test automated solutions.

**Indicators for grades K-2:**

1. Use digital tools to identify and create algorithms, with guidance and support.

Concept: **Creative Communicator (CC)**

*Competency: Students communicate clearly and express themselves with a variety of digital tools.*

**Standard:**

CC1. Communicate clearly and express themselves creatively for a variety of purposes using the platforms, tools, styles, formats and digital media appropriate to their goals, audience and task.





**Learning Priority:**

A. Choose the appropriate platforms and tools for meeting the desired objectives of their creation or communication.

**Indicators for grades K-2:**

1. Introduce and use age appropriate digital tools ex.: art creation programs, video production, photography, presentations, video media, green screen, stop motion animation for producing new creations or published communications using appropriate digital etiquette with guidance and support.

**Learning Priority:**

B. Create original works or responsibly repurpose and/or remix digital resources into new creations.

**Indicators for grades K-2:**

1. Use age appropriate digital tools to create original and remixed work, with respect to intellectual property with guidance and support.

**Learning Priority:**

C. Communicate complex ideas clearly and effectively by creating or using a variety of digital objects such as visualizations, models or simulations.

**Indicators for grades K-2:**

1. Observe and participate in the communication of ideas using a variety of digital tools ex.: video reflections, interactive notebooks, audio recording, as well as visual representation with guidance and support.

**Standard:**

CC2. Publish and present content customized for their audience s , purpose, and task.

**Learning Priority:**

A. Publish and present content that customizes the message and medium for their intended audiences.

**Indicators for grades K-2:**

1. Explore a variety of digital tools ex.: drawing/ art programs, video production, green screen, digital art . to create and communicate an idea to a variety of audiences with guidance and support.  
2. Discuss different audiences and how presentations can change based on audience.

Concept: **Global Collaborator (GC)**

*Competency: Students use digital tools to connect with learners inside and outside of their classroom.*

**Standard:**

GC1. Use digital tools to broaden their perspectives and enrich their learning by collaborating with others and working effectively in teams locally and globally.



**Learning Priority:**

A. Use digital tools to connect with learners from a variety of backgrounds and cultures, engaging with them in ways that broaden mutual understanding and learning.

**Indicators for grades K-2:**

1. Use digital tools and resources ex.: digital resources, virtual field trips, virtual reality, video media, and social media , to understand the similarities and differences of others in school, community, and beyond with guidance and support.

**Learning Priority:**

B. Contribute constructively to project teams, assuming various roles and responsibilities to work effectively toward a common goal.

**Indicators for grades K-2:**

1. Use digital tools to collaborate with team members in a digital workspace with guidance and support.

**Learning Priority:**

C. Contribute to the exchange of ideas within and beyond the learning community.

**Indicators for grades K-2:**

1. Respect the interest of others by collaborating to share ideas, experiences, and opinions ex.: virtual collaboration, presentation, and discussion boards with guidance and support.

**Standard:**

GC2. Use digital tools to connect with a global network of learners and engage with issues that impact local and global communities.

**Learning Priority:**

A. Use collaborative technologies to work with others, including peers, experts or community members, to examine issues and problems from multiple viewpoints.

**Indicators for grades K-2:**

1. Use digital tools to collaborate with others to examine problems from school, community, and beyond with guidance and support.

**Learning Priority:**

B. Explore local and global issues and use collaborative technologies to work with others to investigate solutions.

**Indicators for grades K-2:**

1. Use digital tools to collaborate with school, community, and beyond to solve problems with guidance and support.

A photograph of a classroom where several children are sitting on the floor, focused on using tablets. In the foreground, two boys are prominently featured, each holding a tablet. They are wearing orange and red shirts. In the background, another child is visible, and there are educational materials like a large letter 'Dd' on the floor and a tray of colorful blocks. The scene is brightly lit and shows a typical classroom environment.

# Grades 3-5

Kentucky Academic Standards for Technology

# Intermediate 3-5 KAS for Technology

Overview for Intermediate 3-5 :

The technology standards at the intermediate level continue to lay the foundation of necessary knowledge, skills, and competencies that equip students for a successful future. This goal requires the understanding of content that helps: empower learners, create responsible digital citizens, facilitate knowledge construction, design and innovate for learning, think computationally, communicate creatively, and collaborate with a global mindset.

Application of the technology standards at the intermediate level should focus on active learning and integrating the identified skills into other disciplines. These standards provide a clear progression of skills, and students develop a broad conceptual understanding of technology. All content teachers should provide opportunities for students to apply the skills and knowledge identified.

Concept: **Empowered Learner (EL)**

*Competency: Students use technology to take an active role in their learning.*

## **Standard:**

EL1. Leverage technology to take an active role in choosing, achieving and demonstrating competency in their learning goals, informed by the learning sciences.

## **Learning Priority:**

A. Articulate and set personal learning goals, develop strategies leveraging technology to achieve them and reflect on the learning process itself to improve learning outcomes.

## **Indicators for grades 3-5:**

1. Set personal learning goals and self-select digital tools to support accomplishing the goals.
2. Reflect on and revise the learning process as needed to improve learning over time ex.: using digital writing portfolio and reflection log/journal .

## **Learning Priority:**

B. Build networks and customize their learning environments in ways that support the learning process.

## **Indicators for grades 3-5:**

1. Participate in explorations that support identifying and building a network ex.: expert video channels, video conferencing with professionals, authors blogs unique to one's own interests/needs to support the learning process.



**Learning Priority:**

C. Use technology to seek feedback that informs and improves their practice and to demonstrate their learning in a variety of ways.

**Indicators for grades 3-5:**

1. Seek feedback that informs and improves learning ex.: Students seek feedback from teachers and peers during the digital writing process .
2. Use feedback to improve products that demonstrate learning in a variety of ways.

**Learning Priority:**

D. Understanding the fundamental concepts of how to use technology technology operations .

**Indicators for grades 3-5:**

1. Explore and select digital tools that support learning in different contexts ex.: a student chooses a tool to collect data and then creates a graphical display of the data using a digital tool of their choice .
2. Transfer conceptual knowledge of technology operations to multiple contexts.
3. Transfer knowledge of fundamental concepts of technology operations to troubleshoot basic technology operations.

**Standard:**

EL2. Apply the fundamental concepts of technology operations and demonstrate the ability to choose, use, and/or troubleshoot current technologies.

**Learning Priority:**

A. Demonstrate learning with the use of technology.

**Indicators for grades 3-5:**

1. Identify age-appropriate digital tools to produce and publish information for an identified target audience.
2. Demonstrate efficient ability to communicate a message with digital input strategies ex.: typing/keyboarding, voice to text, video or audio .

**Learning Priority:**

B. Apply functions and concepts of technology operations; demonstrate the ability to choose, use and troubleshoot current technologies.

**Indicators for grades 3-5:**

1. Choose technology appropriate to their task and purpose.

**Learning Priority:**

C. Transfer knowledge to emerging technology.

**Indicators for grades 3-5:**

1. Apply and adapt knowledge of existing technology to the augmentative use of new technologies.

Concept: **Digital Citizen (DC)**

*Competency: Students manage their digital identity in a safe, positive, and proactive way.*

**Standard:**

DC1. Recognize the rights, responsibilities and opportunities of living, learning and working in an interconnected digital world; act and model in ways that are safe, legal and ethical.

**Learning Priority:**

A. Cultivate and manage your digital identity and reputation, and be aware of the permanence of your actions in the digital world.

**Indicators for grades 3-5:**

1. Model positive behaviors in online communications at school and understand how to apply those behaviors to online activities outside of school.
2. Show awareness and understand they are creating a digital footprint, and can identify positive and negative online activity.

**Learning Priority:**

B. Engage in positive, safe, legal and ethical behavior when using technology, including social interactions online or when using networked devices.

**Indicators for grades 3-5:**

1. Collaborate online with peers and educators in a positive manner, and begin to recognize online behaviors can have positive or negative consequences.
2. Understand that decisions and behaviors online can affect others in both negative and positive and hurtful and helpful ways.

**Learning Priority:**

C. Manage personal data to maintain digital privacy and security and are aware of data-collection technology used to track navigation online.

**Indicators for grades 3-5:**

1. Create and know usernames and passwords, and understand why these and other personal information are not shared with others online and offline.
2. Search websites understanding that some sites are not safe without adult permission.

**Standard:**

DC2. Demonstrate an understanding of and respect for the rights and obligations of using and sharing intellectual property.

**Learning Priority:**

A. Use information, media, and digital resources in a responsible manner.

**Indicators for grades 3-5:**

1. Demonstrate acceptable use of the internet and identify acceptable use of social media and other digital media.

**Learning Priority:**

B. Respect intellectual property rights.





**Indicators for grades 3-5:**

1. Value others intellectual property by encouraging others.
2. Give positive and constructive feedback on others intellectual property with respect.

**Learning Priority:**

C. Demonstrate an understanding of and respect for the rights and obligations of using and sharing intellectual property.

**Indicators for grades 3-5:**

1. Use others creations intellectual property with permission public domain, creative commons, or copyright owner s permission .
2. Create their own intellectual property in digital projects.

**Concept: Knowledge Constructor (KC)**

*Competency: Students use various digital tools to find information and make meaning.*

**Standard:**

KC1. Students critically curate a variety of resources using digital tools to construct knowledge.

**Learning Priority:**

A. Plan and employ effective research strategies to locate information and other resources for their intellectual or creative pursuits.

**Indicators for grades 3-5:**

1. Filter searches to gather specific information on a subject or research topic ex.: searching "food sources for Beluga whales" instead of searching "whales" or "Beluga whales" .
2. Use a variety of digital reference resources ex.: digital encyclopedia, digital atlas/maps to locate information related to a research topic.

**Learning Priority:**

B. Evaluate the accuracy, perspective, credibility and relevance of information, media, data or other resources.

**Indicators for grades 3-5:**

1. Identify criteria to analyze information presented in a digital resource to determine its accuracy, perspective, credibility, and relevance.
2. Explore different media types ex.: infographics, videos, graphs, text and how they might influence an audience.
3. Compare information presented across different domain extensions ex.: .com, .net, .gov, .edu to help evaluate accuracy, perspective, credibility, and relevance of information.

**Learning Priority:**

C. Curate information from digital resources using a variety of tools and methods to create collections of artifacts that demonstrate meaningful connections or conclusions.



**Indicator s for grades 3-5:**

1. Collect information ex.: images, diagrams, maps, graphs, infographics, videos, animations using digital tools from resources to clarify and add to knowledge of a topic.
2. Organize gathered artifacts into themed collections with subcategories ex.: Famous African-Americans: Scientists, Politicians, Athletes; Favorite Cartoon Characters: Disney, Nickelodeon, Looney Tunes .

**Standard:**

KC2. Produce creative artifacts and make meaningful learning experiences from curated knowledge for themselves and others.

**Learning Priority:**

A. Produce creative artifacts.

**Indicators for grades 3-5:**

1. Use digital tools to create artifacts that connect similar information found in various digital resources.

**Learning Priority:**

B. Build knowledge by actively exploring real-world issues and problems, developing ideas and theories and pursuing answers and solutions.

**Indicators for grades 3-5:**

1. Use a variety of digital resources ex.: website, video clip, photos to explore and collaborate with others on real-world issues.

Concept: **Innovative Designer (ID)**

*Competency: Students use a variety of technologies to design and create.*

**Standard:**

ID1. Use a variety of technologies to identify and solve authentic real-world problems.

**Learning Priority:**

A. Find authentic real-world problems in local and global contexts.

**Indicators for grades 3-5:**

1. Identify and describe problems or challenges present in their community then analyze the conditions that make it a problem.

**Learning Priority:**

B. Exhibit a tolerance for ambiguity, perseverance and the capacity to work with open-ended problems.

**Indicators for grades 3-5:**

1. Demonstrate perseverance when working with authentic, open-ended problems.



**Standard:**

ID2. Use a variety of technologies within a design process to create new, useful and imaginative solutions.

**Learning Priority:**

A. Know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems.

**Indicators for grades 3-5:**

1. Explore and practice how a deliberate design process ex.: design thinking works to generate ideas, consider solutions, test theories, plan to solve a problem, or create innovative products to share with others.

**Learning Priority:**

B. Select and use digital tools to plan and manage a design process that considers design constraints and calculated risks.

**Indicators for grades 3-5:**

1. Use a variety of digital tools to plan and manage a design process, with consideration to design constraints and risks.

**Learning Priority:**

C. Develop, test and refine prototypes as part of a cyclical design process.

**Indicators for grades 3-5:**

1. Engage in a cyclical design process to develop and test prototypes; reflect on the role that trial and error plays in the process.

**Concept: Computational Thinker (CT)**

*Competency: Students understand sequences and use them to develop solutions to problems.*

**Standard:**

CT1. Develop and employ strategies for understanding and solving problems in ways that leverage the power of technological methods to develop and test solutions.

**Learning Priority:**

A. Formulate problem definitions suited for technology-assisted methods such as data analysis, abstract models and algorithmic thinking in exploring and finding solutions.

**Indicators for grades 3-5:**

1. Plan and implement a design process in which they explore solutions to a problem and use digital tools to analyze data, create models, and represent collected data ex.: spreadsheets, graphs, charts, tables, presentations, infographics in a way that can be shared with others, with guidance.

**Learning Priority:**

B. Collect data or identify relevant data sets, use digital tools to analyze them, and represent



data in various ways to facilitate problem-solving and decision-making.

**Indicators for grades 3-5:**

1. Select and utilize an age-appropriate digital tool to represent data ex.: spreadsheets, digital graphs/charts , with guidance and support from adults.
2. Use data to discuss findings and share conclusions with others ex.: presentation apps/website .

**Learning Priority:**

C. Break problems into component parts, extract key information, and develop descriptive models to understand complex systems or facilitate problem-solving.

**Indicators for grades 3-5:**

1. Break a problem into smaller parts, identify patterns and key information, and use age-appropriate digital tools to brainstorm a problem solving plan ex.: online whiteboard, online mindmapping tools, digital outline either collaboratively or independently.

**Learning Priority:**

D. Understand how automation works and use algorithmic thinking to develop a sequence of steps to create and test automated solutions.

**Indicators for grades 3-5:**

1. Complete a coding task with coded actions ex.: html, block-based coding, python either collaboratively or independently.

**Standard:**

CT2. Apply strategies for understanding and solving problems by using technological methods to develop and test solutions.

**Learning Priority:**

A. Use resources to collect, analyze, and represent data.

**Indicators for grades 3-5:**

1. Use digital tools to ask questions and digitally collect data.

**Learning Priority:**

B. Deconstruct components to understand systems and facilitate problem-solving.

**Indicators for grades 3-5:**

1. Use digital tools to find patterns in order to solve complex problems.

**Learning Priority:**

C. Create and test automated solutions.

**Indicators for grades 3-5:**

1. Use digital tools to identify and create algorithms.



Concept: **Creative Communicator (CC)**

*Competency: Students communicate clearly and express themselves with a variety of digital tools.*

**Standard:**

CC1. Communicate clearly and express themselves creatively for a variety of purposes using the platforms, tools, styles, formats and digital media appropriate to their goals, audience and task.

**Learning Priority:**

A. Choose the appropriate platforms and tools for meeting the desired objectives of their creation or communication.

**Indicators for grades 3-5:**

1. Evaluate and utilize the features of a variety of digital tools ex.: including, but not limited to: adding video/audio, digital collaboration tools, tools affecting the aesthetics of the piece, as well as methods for sharing/publishing for producing new creations or communications with teacher support, following appropriate digital etiquette.

**Learning Priority:**

B. Create original works or responsibly repurpose and/or remix digital resources into new creations.

**Indicators for grades 3-5:**

1. Learn and apply strategies to responsibly remix creative work, respecting digital citizenship copyright , both collaboratively and independently.

**Learning Priority:**

C. Communicate complex ideas clearly and effectively by creating or using a variety of digital objects such as visualizations, models or simulations.

**Indicator s for grades 3-5:**

1. Create digital artifacts ex.: presentations, data collection, models, audio/video, websites, and digital art to display knowledge and communicate ideas clearly to a variety of audiences, both collaboratively and independently.

**Standard:**

CC2. Publish and present content customized for their audience s , purpose, and task.

**Learning Priority:**

A. Publish and present content that customizes the message and medium for their intended audiences.

**Indicators for grades 3-5:**

1. Utilize digital tools to create, share, communicate, and publish work effectively ex.: video/ audio creation, social media, spreadsheets, blogs, presentation platforms, word processing, and digital art platforms .  
2. Identify the intended audience and select appropriate platform medium when creating digital pieces, presenting, and collaborating to communicate ideas to the audience.

Concept: **Global Collaborator (GC)**

*Competency: Students use digital tools to connect with learners inside and outside of their classroom.*

**Standard:**

GC1. Use digital tools to broaden their perspectives and enrich their learning by collaborating with others and working effectively in teams locally and globally.

**Learning Priority:**

A. Use digital tools to connect with learners from a variety of backgrounds and cultures, engaging with them in ways that broaden mutual understanding and learning.

**Indicators for grades 3-5:**

1. Use digital tools and resources ex.: presentations, videos, or various digital media platforms to connect and collaborate with authentic audiences from a variety of backgrounds and cultures to enrich learning experiences.

**Learning Priority:**

B. Contribute constructively to project teams, assuming various roles and responsibilities to work effectively toward a common goal.

**Indicators for grades 3-5:**

1. Use digital tools to learn how to collaborate with team members in a digital workspace ex.: sharing and respecting digital work within a team workspace, assuming team roles and working together to create video/ green screen production, stop-motion animation, and various other forms of digital creations . Use digital tools and take on a variety of roles to contribute to team projects with guidance and support.

**Learning Priority:**

C. Contribute to the exchange of ideas within and beyond the learning community.

**Indicators for grades 3-5:**

1. Use a variety of digital resources to collaborate with mutual respect ex.: video conferencing, commenting tools, slide decks, and documents .

**Standard:**

GC2. Use digital tools to connect with a global network of learners and engage with issues that impact local and global communities.

**Learning Priority:**

A. Use collaborative technologies to work with others, including peers, experts or community members, to examine issues and problems from multiple viewpoints.

**Indicators for grades 3-5:**

1. Use digital tools to collaborate with peers, experts, and community members to examine problems from multiple viewpoints ex.: video/voice conferencing .

**Learning Priority:**





B. Explore local and global issues and use collaborative technologies to work with others to investigate solutions.

**Indicators for grades 3-5:**

1. Collaborate digitally with others to understand multiple perspectives while exploring both local and global issues to solve problems with guidance and support ex.: project-based learning and community problem solving .



A photograph of two students, a boy and a girl, sitting at a table in a classroom or lab. They are focused on working with numerous small, cube-shaped components, likely micro:bit devices, which are scattered on the table. The boy is on the left, wearing a red hoodie, and the girl is on the right, wearing a dark hoodie with 'GRADE' visible. In the background, there is a computer monitor displaying a landscape image, a window with a view of a building, and a piece of equipment labeled 'LASER'. The entire image has a light blue overlay.

# Grades 6-8

Kentucky Academic Standards for Technology

# Middle School 6-8 KAS for Technology

Overview for Middle School 6-8 :

The technology standards at the middle school level expand upon the framework of necessary knowledge, skills, and competencies that equip students for a successful future. This goal requires the understanding of content that helps: empower learners, create responsible digital citizens, facilitate knowledge construction, design and innovate for learning, think computationally, communicate creatively and collaborate with a global mindset.

Application of the technology standards at the middle school level should focus on active learning and integrating the identified skills into other disciplines. These standards provide a clear progression of skills, and students develop a broad conceptual understanding of technology. All content teachers should provide opportunities for students to apply the skills and knowledge identified.

Concept: **Empowered Learner (EL)**

*Competency: Students use technology to take an active role in their learning.*

## **Standard:**

EL1. Leverage technology to take an active role in choosing, achieving and demonstrating competency in their learning goals, informed by the learning sciences.

## **Learning Priority:**

A. Articulate and set personal learning goals, develop strategies leveraging technology to achieve them and reflect on the learning process itself to improve learning outcomes.

## **Indicators for grades 6-8:**

1. Set personal learning goals and select and manage digital tools that will best support individualized learning ex.: use collaborative documents to revise and reflect on the writing process .
2. Reflect on successes, areas of improvement, and make necessary revisions to improve the learning over time ex.: using digital writing portfolio and reflection log/journal .

## **Learning Priority:**

B. Build networks and customize their learning environments in ways that support the learning process.

## **Indicators for grades 6-8:**

1. Collaborate with a network of self-selected global partners ex.: students, teachers, professionals, and the global community to customize and support the individual learning process.



**Learning Priority:**

C. Use technology to seek feedback that informs and improves their practice and to demonstrate their learning in a variety of ways.

**Indicators for grades 6-8:**

1. Seek feedback from an authentic audience and from features embedded in digital tools ex.: share documents with teachers and peers asking for feedback on writing .
2. Use feedback to analyze data and make learning adjustments based on the feedback.

**Learning Priority:**

D. Understanding the fundamental concepts of how to use technology technology operations .

**Indicators for grades 6-8:**

1. Understand the fundamental use of technology tools to consider how to use technology to promote creativity, communication, collaboration, and critical thinking.
2. Choose and troubleshoot technology tools to suit purpose.
3. Transfer the knowledge of existing technology to explore new technologies.

**Standard:**

EL2. Apply the fundamental concepts of technology operations and demonstrate the ability to choose, use, and/or troubleshoot current technologies.

**Learning Priority:**

A. Demonstrate learning with the use of technology.

**Indicators for grades 6-8:**

1. Evaluate the effectiveness of different digital tools to communicate information with multiple audiences.

**Learning Priority:**

B. Apply functions and concepts of technology operations; demonstrate the ability to choose, use and troubleshoot current technologies.

**Indicators for grades 6-8:**

1. Choose functions and operations appropriate to their task and purpose.

**Learning Priority:**

C. Transfer knowledge to emerging technology.

**Indicators for grades 6-8:**

1. Apply and adapt knowledge of existing technology to the modification-based use of new technologies.



Concept: **Digital Citizen (DC)**

*Competency: Students manage their digital identity in a safe, positive, and proactive way.*

**Standard:**

DC1. Recognize the rights, responsibilities and opportunities of living, learning and working in an interconnected digital world; act and model in ways that are safe, legal and ethical.

**Learning Priority:**

A. Cultivate and manage your digital identity and reputation, and be aware of the permanence of your actions in the digital world.

**Indicators for grades 6-8:**

1. Recognize behaviors, habits, and actions that create, maintain, and influence both positive and negative digital identities, reputations, and footprints in the digital world.
2. Build awareness of public and permanent nature of online actions and the possible present and future consequences in personal, academic, and professional lives.

**Learning Priority:**

B. Engage in positive, safe, legal and ethical behavior when using technology, including social interactions online or when using networked devices.

**Indicators for grades 6-8:**

1. Recognize and demonstrate responsible behaviors that are safe, ethical, and legal across a variety of devices, platforms, and settings while considering possible consequences for themselves and/or others.
2. Understand how to be respectful to others online while interacting, communicating, and collaborating and know strategies in order to avoid and/or combat cyberbullying.

**Learning Priority:**

C. Manage their personal data to maintain digital privacy and security and are aware of data-collection technology used to track their navigation online.

**Indicators for grades 6-8:**

1. Distinguish between information that is public and personal/private and develop and utilize strategies to secure and protect personal/private data and user accounts.
2. Understand that data-collection technology is used to track online navigation and recognize and avoid online scams and phishing.

**Standard:**

DC2. Demonstrate an understanding of and respect for the rights and obligations of using and sharing intellectual property.

**Learning Priority:**

A. Use information, media and digital resources in a responsible manner.

**Indicators for grades 6-8:**

1. Demonstrate acceptable use of the internet, information, media and digital resources, including social media according to user agreements, policies, and laws.

**Learning Priority:**

B. Respect intellectual property rights.



**Indicators for grades 6-8:**

1. Recognize and respect different intellectual property classifications, including those that are copyrighted, subject to fair use, public domain properties, and/or have creative commons licenses.

**Learning Priority:**

C. Demonstrate an understanding of and respect for the rights and obligations of using and sharing intellectual property.

**Indicators for grades 6-8:**

1. Recognize and seek permission to use the intellectual property of others appropriately.
2. Use and share the intellectual property of others with proper citation and attribution elements.

**Concept: Knowledge Constructor (KC)**

*Competency: Students use various digital tools to find information and make meaning.*

**Standard:**

KC1. Students critically curate a variety of resources using digital tools to construct knowledge.

**Learning Priority:**

A. Plan and employ effective research strategies to locate information and other resources for their intellectual or creative pursuits.

**Indicators for grades 6-8:**

1. Demonstrate effective digital search techniques ex.: filtering searches using advanced settings/tools, keyword/term choices, or phases to locate information or other resources to gather specific information on a subject or research topic.
2. Practice research strategies that outline a process for locating information digitally ex.: tools and effective search techniques .

**Learning Priority:**

B. Evaluate the accuracy, perspective, credibility and relevance of information, media, data or other resources.

**Indicators for grades 6-8:**

1. Select a method, tool, or strategy to evaluate source s for credibility, relevance, authority, accuracy, and perspective.
2. Analyze digital information, media, data, and materials for credibility, relevance, authority, accuracy, and perspective.

**Learning Priority:**

C. Curate information from digital resources using a variety of tools and methods to create collections of artifacts that demonstrate meaningful connections or conclusions.

**Indicators for grades 6-8:**

1. Combine various tools ex.: spreadsheet, database, saved files and methods ex.: concept mapping, flow charting and outlining software to classify information, observations, or experiments digitally.
2. Compile information from digital resources ex.: search engines, online periodical databases, virtual library/online catalogs, interactive video conferencing .

**Standard:**

KC2. Produce creative artifacts and make meaningful learning experiences from curated knowledge for themselves and others.

**Learning Priority:**

A. Produce creative artifacts.

**Indicators for grades 6-8:**

1. Demonstrate the ability to create new ideas/concepts or products with digital tools.

**Learning Priority:**

B. Build knowledge by actively exploring real-world issues and problems, developing ideas and theories and pursuing answers and solutions.

**Indicators for grades 6-8:**

1. Build knowledge by generating and testing solutions for exploring real world issues using a variety of technology ex.: data collection tools, models, videos, podcast, simulations, forms .

Concept: **Innovative Designer (ID)**

*Competency: Students use a variety of technologies to design and create.*

**Standard:**

ID1. Use a variety of technologies to identify and solve authentic real-world problems.

**Learning Priority:**

A. Find authentic real-world problems in local and global contexts.

**Indicators for grades 6-8:**

1. Collaborate with others in and out of the classroom using digital tools to identify real-world problems and propose a solution that affects the local and global community.

**Learning Priority:**

B. Exhibit a tolerance for ambiguity, perseverance and the capacity to work with open-ended problems.





**Indicators for grades 6-8:**

1. Demonstrate the ability to investigate and make sense of open-ended problems using digital tools and persevere in solving them.

**Standard:**

ID2. Use a variety of technologies within a design process to create new, useful and imaginative solutions.

**Learning Priority:**

A. Know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems.

**Indicators for grades 6-8:**

1. Explore and choose appropriate processes and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems.

**Learning Priority:**

B. Select and use digital tools to plan and manage a design process that considers design constraints and calculated risks.

**Indicators for grades 6-8:**

1. Investigate and use meaningful digital tools to plan and manage a design process that considers design constraints and calculated risks.

**Learning Priority:**

C. Develop, test and refine prototypes as part of a cyclical design process.

**Indicators for grades 6-8:**

1. Create, develop and test prototypes; understand and appreciate that failures are opportunities for growth and improvement.

**Concept: Computational Thinker (CT)**

*Competency: Students understand sequences and use them to develop solutions to problems.*

**Standard:**

CT1. Develop and employ strategies for understanding and solving problems in ways that leverage the power of technological methods to develop and test solutions.

**Learning Priority:**

A. Formulate problem definitions suited for technology-assisted methods such as data analysis, abstract models and algorithmic thinking in exploring and finding solutions.

**Indicators for grades 6-8:**

1. Ask questions, gather data, create/observe abstract models, and think of different processes while finding solutions to real-world problems.



**Learning Priority:**

B. Collect data or identify relevant data sets, use digital tools to analyze them, and represent data in various ways to facilitate problem-solving and decision-making.

**Indicators for grades 6-8:**

1. Solve problems and make decisions by collecting data or identifying relevant data sets, using digital tools ex.: sheets, surveys to analyze the data, and represent their findings through various ways.

**Learning Priority:**

C. Break problems into component parts, extract key information, and develop descriptive models to understand complex systems or facilitate problem-solving.

**Indicators for grades 6-8:**

1. Break problems into parts, extract key information, and develop descriptive models to understand complex systems or lead problem solving tasks.

**Learning Priority:**

D. Understand how automation works and use algorithmic thinking to develop a sequence of steps to create and test automated solutions.

**Indicators for grades 6-8:**

1. Use digital tools to collect data, conduct analysis, and discuss findings or possible solutions.

**Standard:**

CT2. Apply strategies for understanding and solving problems by using technological methods to develop and test solutions.

**Learning Priority:**

A. Use resources to collect, analyze, and represent data.

**Indicators for grades 6-8:**

1. Use digital tools to ask questions to an audience and digitally collect data, and analyze the findings.

**Learning Priority:**

B. Deconstruct components to understand systems and facilitate problem-solving.

**Indicators for grades 6-8:**

1. Use technology-assisted methods to break problems down into smaller, more manageable parts by finding patterns or other methods of decomposition.

**Learning Priority:**

C. Create and test automated solutions.

**Indicators for grades 6-8:**

1. Use algorithm design to develop step-by-step instructions for solving a problem.



Concept: **Creative Communicator (CC)**

Competency: *Students communicate clearly and express themselves with a variety of digital tools.*

**Standard:**

CC1. Communicate clearly and express themselves creatively for a variety of purposes using the platforms, tools, styles, formats and digital media appropriate to their goals, audience and task.

**Learning Priority:**

A. Choose the appropriate platforms and tools for meeting the desired objectives of their creation or communication.

**Indicators for grades 6-8:**

1. Choose from available platforms and tools to meet the designated objectives of their creation or communication.

**Learning Priority:**

B. Create original works or responsibly repurpose and/or remix digital resources into new creations.

**Indicators for grades 6-8:**

1. Create original works, or repurpose/remix digital resources into new creations, while demonstrating an understanding of digital citizenship ex.: intellectual property rights or copyrights .

**Learning Priority:**

C. Communicate complex ideas clearly and effectively by creating or using a variety of digital objects such as visualizations, models or simulations.

**Indicators for grades 6-8:**

1. Create or incorporate digital content to communicate complex ideas clearly and effectively to a variety of audiences.

**Standard:**

CC2. Publish and present content customized for their audience s , purpose, and task.

**Learning Priority:**

A. Publish and present content that customizes the message and medium for their intended audiences.

**Indicators for grades 6-8:**

1. Publish or present original content to a predetermined audience that appropriately customizes the message and medium.



Concept: **Global Collaborator (GC)**

Competency: *Students use digital tools to connect with learners inside and outside of their classroom.*

**Standard:**

GC1. Use digital tools to broaden their perspectives and enrich their learning by collaborating with others and working effectively in teams locally and globally.

**Learning Priority:**

A. Use digital tools to connect with learners from a variety of backgrounds and cultures, engaging with them in ways that broaden mutual understanding and learning.

**Indicators for grades 6-8:**

1. Use digital tools and resources to connect and collaborate with authentic audiences from various backgrounds and cultures to broaden mutual understanding and learning, while using appropriate digital citizenship skills.

**Learning Priority:**

B. Contribute constructively to project teams, assuming various roles and responsibilities to work effectively toward a common goal.

**Indicators for grades 6-8:**

1. Select and use digital tools in diverse collaborative teams within the classroom, assuming specific roles, responsibilities, and perspectives other than your own, to contribute effectively toward a common goal.

**Learning Priority:**

C. Contribute to the exchange of ideas within and beyond the learning community.

**Indicators for grades 6-8:**

1. Select and use digital tools in diverse collaborative teams outside the classroom, assuming specific roles, responsibilities, and perspectives other than their own, to contribute effectively toward a common goal.

**Standard:**

GC2. Use digital tools to connect with a global network of learners and engage with issues that impact local and global communities.

**Learning Priority:**

A. Use collaborative technologies to work with others, including peers, experts or community members, to examine issues and problems from multiple viewpoints.

**Indicators for grades 6-8:**

1. Use collaborative technologies to connect with others - including peers, experts, and community members - to learn about issues and problems or to gain diverse local and global perspectives.

**Learning Priority:**

B. Explore local and global issues and use collaborative technologies to work with others to investigate solutions.



**Indicators for grades 6-8:**

1. Use collaborative technologies and assume roles within digital creations while maintaining digital citizenship within the team digital workspace to investigate and develop solutions to local and global issues.





# Grades 9-12

Kentucky Academic Standards for Technology

# High School 9-12 KAS for Technology

Overview for High School 9-12 :

The technology standards at the high school level serve as a culmination of the necessary knowledge, skills, and competencies that equip students for a successful future. This goal requires the understanding of content that helps: empower learners, create responsible digital citizens, facilitate knowledge construction, design and innovate for learning, think computationally, communicate creatively and collaborate with a global mindset.

Application of the technology standards at the high school level should focus on active learning and integrating the identified skills into other disciplines. These standards provide a clear progression of skills, and students develop a broad conceptual understanding of technology. All content teachers should provide opportunities for students to apply the skills and knowledge identified.

Concept: **Empowered Learner (EL)**

*Competency: Students use technology to take an active role in their learning.*

## **Standard:**

EL1. Leverage technology to take an active role in choosing, achieving and demonstrating competency in their learning goals, informed by the learning sciences.

## **Learning Priority:**

A. Articulate and set personal learning goals, develop strategies leveraging technology to achieve them and reflect on the learning process itself to improve learning outcomes.

## **Indicators for grades 9-12:**

1. Set and articulate personal learning goals and develop strategies leveraging digital tools to achieve those goals.
2. Reflect on successes, areas of improvement, and make necessary revisions to improve the learning over time and adjust for future learning.

## **Learning Priority:**

B. Build networks and customize their learning environments in ways that support the learning process.

## **Indicators for grades 9-12:**

1. Initiate collaboration with a network of global partners ex.: students, teachers, professionals, or the global community to support and enhance the learning process.

## **Learning Priority:**

C. Use technology to seek feedback that informs and improves their practice and to



demonstrate their learning in a variety of ways.

**Indicators for grades 9-12:**

1. Seek feedback independently through the use of technology ex.: use video chat to share and reflect upon a learning process or product .
2. Use feedback to effectively demonstrate learning in a variety of ways.

**Learning Priority:**

D. Understanding the fundamental concepts of how to use technology technology operations .

**Indicators for grades 9-12:**

1. Understand the fundamental use of technology tools to embrace creativity, communication, collaboration, and critical thinking.
2. Choose and effectively troubleshoot technology tools to suit purpose.
3. Transfer and extend the knowledge of existing technology to explore new technologies.

**Standard:**

EL2. Apply the fundamental concepts of technology operations and demonstrate the ability to choose, use, and/or troubleshoot current technologies.

**Learning Priority:**

A. Demonstrate learning with the use of technology.

**Indicators for grades 9-12:**

1. Select appropriate digital resources to develop, implement and/or evaluate communication with an authentic audience.

**Learning Priority:**

B. Apply functions and concepts of technology operations; demonstrate the ability to choose, use and troubleshoot current technologies.

**Indicators for grades 9-12:**

1. Choose efficient functions and concepts appropriate to their task and purpose.
2. Apply an understanding of devices to troubleshoot current technology and adjust for future events.

**Learning Priority:**

C. Transfer knowledge to emerging technology.

**Indicators for grades 9-12:**

1. Apply and adapt knowledge of existing technology to the innovative redefinition-based use of new technologies.





Concept: **Digital Citizen (DC)**

*Competency: Students manage their digital identity in a safe, positive, and proactive way.*

**Standard:**

DC1. Recognize the rights, responsibilities and opportunities of living, learning and working in an interconnected digital world; act and model in ways that are safe, legal and ethical.

**Learning Priority:**

A. Cultivate and manage your digital identity and reputation, and be aware of the permanence of your actions in the digital world.

**Indicators for grades 9-12:**

1. Actively develop and maintain a positive, authentic digital identity and presence.
2. Comprehend the permanence of actions in the digital world and their potential visibility to future employers, colleagues and social relations.

**Learning Priority:**

B. Engage in positive, safe, legal and ethical behavior when using technology, including social interactions online or when using networked devices.

**Indicators for grades 9-12:**

1. Make responsible decisions based on ethical standards, positive social behavior and the safety of oneself and others when interacting and collaborating in a digital world.
2. Understand the mental and legal ramifications of cyber bullying and harassment; employ strategies to avoid and/or combat cyberbullying and harassment.

**Learning Priority:**

C. Manage personal data to maintain digital privacy and/or security, and be aware of data-collection technology used to track your navigation online.

**Indicators for grades 9-12:**

1. Think critically about the information shared in an online environment in order to keep sensitive personal information safe and secure.
2. Comprehend the presence and ramifications of online data collection and how it is used to track online navigation and influence consumer decisions.

**Standard:**

DC2. Demonstrate an understanding of and respect for the rights and obligations of using and sharing intellectual property.

**Learning Priority:**

A. Use information, media and digital resources in a responsible manner.

**Indicators for grades 9-12:**

1. Understand the need for, and comply with, acceptable user policies and agreements.
2. Make responsible decisions in the use of information, media, social media and other digital resources in accordance with acceptable user policies and agreements.

**Learning Priority:**

B. Respect intellectual property rights.



**Indicators for grades 9-12:**

1. Respect the importance of intellectual property in encouraging thought, design, innovation and/or creation.
2. Use, share and/or interact with intellectual property in accordance with the rights given by the owner of the intellectual property.

**Learning Priority:**

C. Demonstrate an understanding of and respect for the rights and obligations of using and sharing intellectual property.

**Indicators for grades 9-12:**

1. Apply understanding of "fair use" and copyright laws when sharing the intellectual property of others, as well as, when producing new intellectual property.
2. Seek permission and properly cite the usage of the intellectual property of others.

**Concept: Knowledge Constructor (KC)**

*Competency: Students use various digital tools to find information and make meaning.*

**Standard:**

KC1. Students critically curate a variety of resources using digital tools to construct knowledge.

**Learning Priority:**

A. Plan and employ effective research strategies to locate information and other resources for their intellectual or creative pursuits.

**Indicators for grades 9-12:**

1. Utilize a variety of digital resources effectively and safely by applying a variety of search strategies ex.: filtering searches, advanced settings/tools, file types, database/source selection .
2. Plan and use multiple research strategies to locate information from digital resources for a variety of purposes.

**Learning Priority:**

B. Evaluate the accuracy, perspective, credibility and relevance of information, media, data or other resources.

**Indicators for grades 9-12:**

1. Evaluate digital sources for accuracy of information; compare and consider the perspectives of the sources; determine usefulness, and assess the credibility of the sources.

**Learning Priority:**

C. Curate information from digital resources using a variety of tools and methods to create collections of artifacts that demonstrate meaningful connections or conclusions.



**Indicators for grades 9-12:**

1. Use multiple digital tools to select, organize, and communicate information from digital sources.
2. Utilize digital tools to communicate information in real world applications, to address or solve a problem, or to make meaningful connections.

**Standard:**

KC2. Produce creative artifacts and make meaningful learning experiences from curated knowledge for themselves and others.

**Learning Priority:**

- A. Produce creative artifacts.

**Indicators for grades 9-12:**

1. Choose and use digital tools to create products that exhibit choice and creativity.
2. Create products independently and collaboratively that incorporate creative elements, and communicate to multiple audiences.

**Learning Priority:**

- B. Build knowledge by actively exploring real-world issues and problems, developing ideas and theories and pursuing answers and solutions.

**Indicators for grades 9-12:**

1. Select and use digital tools to create products that demonstrate meaningful connections or conclusions.
2. Create products independently and collaboratively that explore real-world issues and problems and engage in discussion around current issues.

**Concept: Innovative Designer (ID)**

*Competency: Students use a variety of technologies to design and create.*

**Standard:**

ID1. Use a variety of technologies to identify and solve authentic real-world problems.

**Learning Priority:**

- A. Find authentic real-world problems in local and global contexts.

**Indicators for grades 9-12:**

1. Use a variety of technologies to independently identify real-world problems in the local and global community.

**Learning Priority:**

- B. Exhibit a tolerance for ambiguity, perseverance and the capacity to work with open-ended problems.



**Indicators for grades 9-12:**

1. Use a variety of technologies to independently demonstrate perseverance when dealing with ambiguous and open-ended problems.

**Standard:**

ID2. Use a variety of technologies within a design process to create new, useful and imaginative solutions.

**Learning Priority:**

A. Know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems.

**Indicators for grades 9-12:**

1. Self-select and use a variety of digital tools within a deliberate process for generating ideas, researching, and testing ideas for solving problems or creating original products that demonstrate understanding.

**Learning Priority:**

B. Select and use digital tools to plan and manage a design process that considers design constraints and calculated risks.

**Indicators for grades 9-12:**

1. Self-select and use appropriate digital tools to manage work and create original products that take into consideration project constraints, obstacles and outcomes.

**Learning Priority:**

C. Develop, test and refine prototypes as part of a cyclical design process.

**Indicators for grades 9-12:**

1. Select and use a variety of digital tools to aid in working collaboratively or independently to create, test and refine prototypes, drafts and concepts based on self-initiated feedback and reflection in design cycles.

Concept: **Computational Thinker (CT)**

*Competency: Students understand sequences and use them to develop solutions to problems.*

**Standard:**

CT1. Develop and employ strategies for understanding and solving problems in ways that leverage the power of technological methods to develop and test solutions.

**Learning Priority:**

A. Formulate problem definitions suited for technology-assisted methods such as data analysis, abstract models and algorithmic thinking in exploring and finding solutions.

**Indicators for grades 9-12:**

1. Precisely define a problem and develop a solution using digital tools, conducting data analysis, abstract models, and algorithmic thinking.



**Learning Priority:**

B. Collect data or identify relevant data sets, use digital tools to analyze them, and represent data in various ways to facilitate problem-solving and decision-making.

**Indicators for grades 9-12:**

1. Use digital tools to effectively collect, organize, and manipulate data to test, verify, and present possible solutions to a problem.

**Learning Priority:**

C. Break problems into component parts, extract key information, and develop descriptive models to understand complex systems or facilitate problem-solving.

**Indicators for grades 9-12:**

1. Evaluate the problem-solving process to deconstruct data and information to develop effective solutions to real-world problems.

**Learning Priority:**

D. Understand how automation works and use algorithmic thinking to develop a sequence of steps to create and test automated solutions.

**Indicators for grades 9-12:**

1. Demonstrate their understanding of automation and logic to develop a process to create and verify automated solutions.

**Standard:**

CT2. Apply strategies for understanding and solving problems by using technological methods to develop and test solutions.

**Learning Priority:**

A. Use resources to collect, analyze, and represent data.

**Indicators for grades 9-12:**

1. Use digital tools to collect relevant data, conduct analysis, and prepare data for presentation to facilitate problem-solving and decision-making.

**Learning Priority:**

B. Deconstruct components to understand systems and facilitate problem-solving.

**Indicators for grades 9-12:**

1. Use technology-assisted methods to more easily identify key information by breaking down data to facilitate problem-solving.

**Learning Priority:**

C. Create and test automated solutions.

**Indicators for grades 9-12:**

1. Use digital tools and algorithmic thinking to develop automated systems to test solutions.



Concept: **Creative Communicator (CC)**

*Competency: Students communicate clearly and express themselves with a variety of digital tools.*

**Standard:**

CC1. Communicate clearly and express themselves creatively for a variety of purposes using the platforms, tools, styles, formats and digital media appropriate to their goals, audience and task.

**Learning Priority:**

A. Choose the appropriate platforms and tools for meeting the desired objectives of their creation or communication.

**Indicators for grades 9-12:**

1. Evaluate and determine appropriate platforms and digital tools to create or share digital content with an authentic audience for a desired purpose.

**Learning Priority:**

B. Create original works or responsibly repurpose and/or remix digital resources into new creations.

**Indicators for grades 9-12:**

1. Create work for an authentic audience and desired purpose that reflects a responsible repurposing of digital media or resources.

**Learning Priority:**

C. Communicate complex ideas clearly and effectively by creating or using a variety of digital objects such as visualizations, models or simulations.

**Indicators for grades 9-12:**

1. Analyze and communicate complex ideas, data, or solutions to an authentic audience for a desired purpose using digital tools.

**Standard:**

CC2. Publish and present content customized for their audience s , purpose, and task.

**Learning Priority:**

A. Publish and present content that customizes the message and medium for their intended audiences.

**Indicators for grades 9-12:**

1. Present an idea or creative work that expresses ideas or content that is published for a range of authentic audiences outside of the classroom.

Concept: **Global Collaborator (GC)**

Competency: *Students use digital tools to connect with learners inside and outside of their classroom.*

**Standard:**

GC1. Use digital tools to broaden their perspectives and enrich their learning by collaborating with others and working effectively in teams locally and globally.

**Learning Priority:**

A. Use digital tools to connect with learners from a variety of backgrounds and cultures, engaging with them in ways that broaden mutual understanding and learning.

**Indicators for grades 9-12:**

1. Evaluate and use digital collaboration tools to connect with others from a variety of local and global backgrounds/cultures in order to exchange ideas, develop an understanding of diverse perspectives and encourage learning.

**Learning Priority:**

B. Contribute constructively to project teams, assuming various roles and responsibilities to work effectively toward a common goal.

**Indicators for grades 9-12:**

1. Use digital tools to contribute to a project team, determine their role and responsibility within the group and work toward a common goal or a solution to a problem.

**Learning Priority:**

C. Contribute to the exchange of ideas within and beyond the learning community.

**Indicators for grades 9-12:**

1. Select digital tools to share and exchange interests, ideas and experiences with others from within and beyond the local learning community.

**Standard:**

GC2. Use digital tools to connect with a global network of learners and engage with issues that impact local and global communities.

**Learning Priority:**

A. Use collaborative technologies to work with others, including peers, experts or community members, to examine issues and problems from multiple viewpoints.

**Indicator s for grades 9-12:**

1. Use collaborative technologies to work with others peers, experts, community members to gain knowledge about issues through various perspectives and opinions and to find solutions for social change.

**Learning Priority:**

B. Explore local and global issues and use collaborative technologies to work with others to investigate solutions.

**Indicators for grades 9-12:**

1. Explore and analyze local and global issues and use collaborative digital tools to





investigate, develop a plan and recommend solutions.

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# Appendix

## Kentucky Academic Standards for Technology

# Appendix A: Connection to Graduation

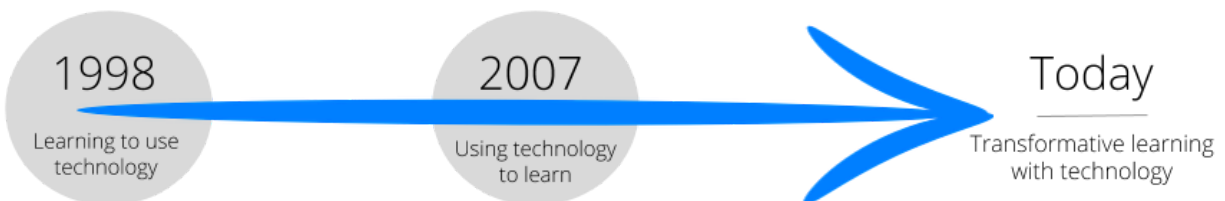
## Technology Connected Grad-Requirement

704 KAR 3:305

On April 5, 2019, Kentucky's minimum high school graduation requirements became law, [704 KAR 3:305](#). One of the stated requirements is centered on a student's demonstrated performance-based competency in technology prior to graduating.

### Key Points:

- The KAS for Technology assists in defining competencies.
- KY Academic Standards for Technology i.e. Technology Standards are required for ALL students via min. Grad requirements, per 704 KAR 3:305. Whereas CS Standards are elective.
- Technology Standards are very broad. Whereas CS Standards are targeted and very specific.
- Modern Technology standards have a completely different focus than early technology standards. New Technology Standards have modernized how we think about these skills and have evolved over time.
- Our Regulation modernization needs to reflect this evolution.



### **Requirement:** *Demonstrated performance-based competency in technology*

*This was progressive at the time it was first initiated - and still is. However, with updated definitions of technology competencies, clearly articulated and modern definitions of ways to “demonstrate” are needed.*

**Guidance:** Successfully demonstrate performance-based competency *in transformative learning with technology* as defined by the *Kentucky Academic Standards for Technology*. In order to award-successful performance-based competencies, districts and schools must

establish a policy for student demonstration in performance-based competency in technology that:

- provides procedures for developing successful demonstrations of performance-based technology competency awards
- identifies successful performance descriptors and/or demonstrations of transformative learning with technology
- establishes evaluation and reporting procedures
- addresses content standards as addressed in *Kentucky Academic Standards for Technology*
- identifies the extent if at all to which integration of performance-based competency in technology is embedded in other content area competency demonstrations.
- allows students to demonstrate competency and earn credit for learning acquired outside of school or in prior learning experiences
- allows students to pursue work-based learning experiences through internships, externships, apprenticeships, cooperative learning experiences and other learning experiences in the school and community
- allows for students meeting computer science standards to be considered as successful in meeting the demonstration of performance-based competency in technology.

Performance-based competency in technology may be awarded for courses, credits, or programs with the following characteristics:

- technology standards-based student technology leadership programs , work-based learning experiences including internship, cooperative-learning experience, technology-related CTE pathway completion including relevant certifications , technology-related apprenticeship, or other supervised learning experiences in the school and the community where learning with technology is demonstrated.
- technology standards-based portfolios, a collection of shared student-created digital products that demonstrate performance-based competency in technology transformative learning with technology , including 8th grade, senior year or capstone projects
- course work and/or structured content that leads to demonstration and performance of learning competencies in technology
  - technology standards-based online or other technology-mediated courses
  - technology standards-based dual credit or other equivalency courses
  - technology standards-based recognized certifications



## Appendix B: Writing and Review Committees

The writing team, composed of current teachers and education professionals, represented both rural and urban settings – including representation from large, medium and small districts from all regions of the state. While these teachers taught a variety of courses and grade levels throughout their careers, the selected committee members were currently teaching or leading areas related to the standards development process. Additionally, the selected writers served in many roles in their schools, technology community and a wide variety of professional organizations. To ensure fidelity to the standards, the writing committee provided feedback at all stages of the development process. The writing and review committee members listed below represented Kentucky’s best as evidenced by their countless qualifications.

### Writing Team Members

Terri Stice, Green River Regional Education Cooperative  
Dianna Wolf, Bowling Green Independent Schools  
Benjamin Thompson, Scott County Schools  
Stacey Spears, Greenup County Schools  
Amanda Ball, Jackson County Schools  
Ashley Judd, Jackson County Schools  
Lisa Salyer, Johnson County Schools  
Jeannie Justice, Morehead State University  
Bobbi Brumfield, Greenup County Schools  
Jennifer Emberton, Simpson County Schools  
Sarah Antle, Adair County Schools  
Stella Pollard, Franklin County Schools  
Adrienne Custer, Graves County Schools  
Jennifer Gream, Mayfield Independent Schools  
Danna Pearsall, Washington County Schools  
Amos Hall, Jefferson County Schools  
Whitney York, Murray Independent Schools  
Heidi Neltner, Fort Thomas Independent Schools  
Brandon Blackburn, Pikeville Independent Schools  
Stephanie Hendrith, Murray State University  
Joe Beers, Jessamine County Schools

### Oversight and Feedback Team Members

Stephanie Younger, Pike County Schools  
Sherri Meier, Oldham County Schools  
Dee Dee Webb, Grayson County Schools  
Steve Swan, University of Louisville



Sean Jackson, Mason County Schools  
Mechelle Gattis, Graves County Schools  
Marshall Jenkins, Morehead State University  
Kevin Mayleben, Campbell County Schools  
Gerry Swan, University of Kentucky  
Matthew Constant, Owensboro Independent Schools



## Appendix C: Standards Progression Chart







Performance Indicator Progression Chart

Concept and Competency	Standard	Learning Priority	Standard Identifier	Grades K-2 (P) By the end of Grade 2, students will be able to...	Grades 3-5 (I) By the end of Grade 5, students will be able to...	Grades 6-8 (M) By the end of Grade 8, students will be able to...	Grades 9-12 (H) By the end of Grade 12, students will be able to...	
Empowered Learner - Students use technology to take an active role in their learning.	1. Skill / Concept Development Leverage technology to take an active role in choosing, achieving and demonstrating competency in their learning goals, informed by the learning sciences.	A. Articulate and set personal learning goals, develop strategies leveraging technology to achieve them and reflect on the learning process itself to improve learning outcomes.	EL1.A.1	Set personal learning goals and use digital tools to achieve those goals, with guidance and support (ex.: increase reading fluency by recording and reflecting upon student reading).	Set personal learning goals and self-select digital tools to support accomplishing the goals.	Set personal learning goals and select and manage digital tools that will best support individualized learning (ex.: use collaborative documents to revise and reflect on the writing process).	Set and articulate personal learning goals and develop strategies leveraging digital tools to achieve those goals.	
			EL1.A.2	Reflect on the learning process to improve learning over time, with guidance and support (ex.: using digital writing portfolio and reflection log/journal).	Reflect on and revise the learning process as needed to improve learning over time (ex.: using digital writing portfolio and reflection log/journal).	Reflect on successes, areas of improvement, and make necessary revisions to improve the learning over time (ex.: using digital writing portfolio and reflection log/journal).	Reflect on successes, areas of improvement, and make necessary revisions to improve the learning over time and adjust for future learning.	
		B. Build networks and customize their learning environments in ways that support the learning process.	EL1.B.1	Participate in teacher-led explorations utilizing digital tools to expand learning spaces beyond the classroom (ex.: expert video channels, video conferencing with professionals, authors' blogs).	Participate in explorations that support identifying and building a network (ex.: expert video channels, video conferencing with professionals, authors' blogs) unique to one's own interests/needs to support the learning process.	Collaborate with a network of self-selected global partners (ex.: students, teachers, professionals, and the global community) to customize and support the individual learning process.	Initiate collaboration with a network of global partners (ex.: students, teachers, professionals, or the global community) to support and enhance the learning process.	
			C. Use technology to seek feedback that informs and improves their practice and to demonstrate their learning in a variety of ways.	EL1.C.1	Recognize and use technology to seek feedback as a valued component of the learning process.	Seek feedback that informs and improves learning (ex.: Students seek feedback from teachers and peers during the digital writing process).	Seek feedback from an authentic audience and from features embedded in digital tools (ex.: share documents with teachers and peers asking for feedback on writing).	Seek feedback independently through the use of technology (ex.: use video chat to share and reflect upon a learning process or product).
		EL1.C.2		Use feedback to improve the demonstration of learning (ex.: student uses interactive software with immediate feedback to guide their performance).	Use feedback to improve products that demonstrate learning in a variety of ways.	Use feedback to analyze data and make learning adjustments based on the feedback.	Use feedback to effectively demonstrate learning in a variety of ways.	
		D. Understanding the fundamental concepts of how to use technology (technology operations).	EL1.D.1	Explore a variety of digital tools and discover how they work based on fundamental concepts of technology operations (ex.: a student learns how to turn the audio up/down, how to open, save, close files).	Explore and select digital tools that support learning in different contexts (ex.: a student chooses a tool to collect data and then creates a graphical display of the data using a digital tool of their choice).	Understand the fundamental use of technology tools to consider how to use technology to promote creativity, communication, collaboration, and critical thinking.	Understand the fundamental use of technology tools to embrace creativity, communication, collaboration, and critical thinking.	
			EL1.D.2	Transfer conceptual knowledge of technology operations in multiple contexts, with guidance and support (ex.: A student has learned to use a smartphone, and they use what they know about smartphones to use a different device).	Transfer conceptual knowledge of technology operations to multiple contexts.	Choose and troubleshoot technology tools to suit purpose.	Choose and effectively troubleshoot technology tools to suit purpose.	
			EL1.D.3		Transfer knowledge of fundamental concepts of technology operations to troubleshoot basic technology operations.	Transfer the knowledge of existing technology to explore new technologies.	Transfer and extend the knowledge of existing technology to explore new technologies.	
		2. Application Apply the fundamental concepts of technology operations and demonstrate the ability to choose, use, and/or troubleshoot current technologies.	A. Demonstrate learning with the use of technology.	EL2.A.1	Use age-appropriate digital resources to produce and publish information.	Identify age-appropriate digital tools to produce and publish information for an identified target audience.	Evaluate effectiveness of different digital tools to communicate information with multiple audiences.	Select appropriate digital resources to develop, implement and/or evaluate communication with an authentic audience.
				EL2.A.2	Demonstrate basic ability to communicate a message with digital input strategies (ex.: typing/keyboarding, voice to text, video or audio, images).	Demonstrate efficient ability to communicate a message with digital input strategies (ex.: typing/keyboarding, voice to text, video or audio).		
	B. Apply functions and concepts of technology operations; demonstrate the ability to choose, use, and/or troubleshoot current technologies.		EL2.B.1	Choose technology appropriate to task and purpose, with guidance and support.	Choose technology appropriate to their task and purpose.	Choose functions and operations appropriate to their task and purpose.	Choose efficient functions and concepts appropriate to their task and purpose.	
			EL2.B.2				Apply an understanding of devices to troubleshoot current technology and adjust for future events.	
	C. Transfer knowledge to emerging technology.		EL2.C.1	Apply and adapt knowledge of existing technology to the substitution-based use of new technologies.	Apply and adapt knowledge of existing technology to the augmentative use of new technologies.	Apply and adapt knowledge of existing technology to the modification-based use of new technologies.	Apply and adapt knowledge of existing technology to the innovative redefinition-based use of new technologies.	
	3. Positive, and proactive way.	1. Skill / Concept Development Recognize the rights, responsibilities and opportunities of living, learning and working in an interconnected digital world; act and model in ways that are safe, legal and ethical.	A. Cultivate and manage your digital identity and reputation, and be aware of the permanence of your actions in the digital world.	DC1.A.1	Understand what it means to be a positive influence offline and how that could relate to being positive online.	Model positive behaviors in online communications at school and understand how to apply those behaviors to online activities outside of school.	Recognize behaviors, habits, and actions that create, maintain, and influence both positive and negative digital identities, reputations, and footprints in the digital world.	Actively develop and maintain a positive, authentic digital identity and presence.
DC1.A.2				Show awareness that when something is put on the internet (websites, social media, apps) it can leave a trail online (digital footprint).	Show awareness and understand they are creating a digital footprint, and can identify positive and negative online activity.	Build awareness of public and permanent nature of online actions and the possible present and future consequences in personal, academic, and professional lives.	Comprehend the permanence of actions in the digital world and their potential visibility to future employers, colleagues and social relations.	
B. Engage in positive, safe, legal and ethical behavior when using technology, including social interactions online or when using networked devices.			DC1.B.1	Choose appropriate websites, and understand to seek help from a trusted adult when faced with problems online related to safety.	Collaborate online with peers and educators in a positive manner, and begin to recognize online behaviors can have positive or negative consequences.	Recognize and demonstrate responsible behaviors that are safe, ethical, and legal across a variety of devices, platforms, and settings while considering possible consequences for themselves and/or others.	Make responsible decisions based on ethical standards, positive social behavior and the safety of oneself and others when interacting and collaborating in a digital world.	
			DC1.B.2	Understand that what is online has positive and negative consequences, and relate the understanding to behaviors offline.	Understand that decisions and behaviors online can affect others in both negative and positive and hurtful and helpful ways.	Understand how to be respectful to others online while interacting, communicating, and collaborating and know strategies in order to avoid and/or combat cyberbullying.	Understand the mental and legal ramifications of cyber bullying and harassment; employ strategies to avoid and/or combat cyberbullying and harassment.	
C. Manage their personal data to maintain digital			DC1.C.1	Understand usernames and passwords, and understand why these are not shared with others.	Create and know usernames and passwords, and understand why these and other personal information are not shared with others online and offline.	Distinguish between information that is public and personal/private and develop and utilize strategies to secure and protect personal/private data and user accounts.	Think critically about the information shared in an online environment in order to keep sensitive personal information safe and secure.	

<b>Digital Citizen</b> - Students manage their digital identity in a safe manner.	2. Application Demonstrate an understanding of and respect for the rights and obligations of using and sharing intellectual property.	A. Use information, media and digital resources in a responsible manner.  B. Respect intellectual property rights.  C. Demonstrate an understanding of and respect for the rights and obligations of using and sharing intellectual property.	DC1.C.2	Navigate to trusted websites and know how to search for websites in a safe manner with awareness that not all websites are safe.	Search websites understanding that some sites are not safe without adult permission.	Understand that data-collection technology is used to track online navigation and recognize and avoid online scams and phishing.	Comprehend the presence and ramifications of online data collection and how it is used to track online navigation and influence consumer decisions.	
			DC2.A.1	Identify acceptable use of internet and other digital resources.	Demonstrate acceptable use of the internet and identify acceptable use of social media and other digital media.	Demonstrate acceptable use of internet, information, media and digital resources, including social media according to user agreements, policies, and laws.	Understand the need for, and comply with, acceptable user policies and agreements.	
			DC2.A.2				Make responsible decisions in the use of information, media, social media and other digital resources in accordance with acceptable user policies and agreements.	
			DC2.B.1	Recognize that everyone has different ideas in creating their own work (intellectual property).	Value others' intellectual property by encouraging others.	Recognize and respect different intellectual property classifications, including those that are copyrighted, subject to fair use, public domain properties, and/or have creative commons licenses.	Respect the importance of intellectual property in encouraging thought, design, innovation and/or creation.	
			DC2.B.2	Show respect for others' intellectual property with positive words.	Give positive and constructive feedback on others' intellectual property with respect.		Use, share and/or interact with intellectual property in accordance with the rights given by the owner of the intellectual property.	
			DC2.B.3	Understand not to copy someone else's work (intellectual property).				
			DC2.B.4	Understand that someone else's creations found on the internet or shared in person, cannot be used without permission, and the creator should be given credit.				
			DC2.C.1		Use others' creations (intellectual property) with permission (public domain, creative commons, or copyright owner's permission).	Recognize and seek permission to use the intellectual property of others appropriately.	Apply understanding of "fair use" and copyright laws when sharing the intellectual property of others, as well as, when producing new intellectual property.	
			DC2.C.2		Create their own intellectual property in digital projects.	Use and share the intellectual property of others with proper citation and attribution elements.	Seek permission and properly cite the usage of the intellectual property of others.	
			<b>Knowledge Constructor</b> - Students use various digital tools to find information and make meaning.	1. Skill / Concept Development Students critically curate a variety of resources using digital tools to construct knowledge.	A. Plan and employ effective research strategies to locate information and other resources for their intellectual or creative pursuits.  B. Evaluate the accuracy, perspective, credibility and relevance of information, media, data or other resources.  C. Curate information from digital resources using a variety of tools and methods to create collections of artifacts that demonstrate meaningful connections or conclusions.	KC1.A.1	Use basic keyword searches to locate information to build deeper understanding of a subject.	Filter searches to gather specific information on a subject or research topic (ex.: searching "food sources for Beluga whales" instead of searching "whales" or "Beluga whales").
KC1.A.2	Apply print reference knowledge and strategies to find and locate information in digital resources.	Use a variety of digital reference resources (ex.: digital encyclopedia, digital atlas/maps) to locate information related to a research topic.				Practice research strategies that outline a process for locating information digitally (ex.: tools and effective search techniques).	Plan and use multiple research strategies to locate information from digital resources for a variety of purposes.	
KC1.A.3	Satisfy curiosity by exploring answers to questions with digital resources.							
KC1.B.1	Classify websites into general categories to guide relevance of search results (ex.: entertainment/games, reference, learning).	Identify criteria to analyze information presented in a digital resource to determine its accuracy, perspective, credibility, and relevance.				Select a method, tool, or strategy to evaluate source(s) for credibility, relevance, authority, accuracy, and perspective.	Evaluate digital sources for accuracy of information; compare and consider the perspectives of the sources; determine usefulness, and assess the credibility of the sources.	
KC1.B.2	Compare information on the same topic across multiple digital resources.	Explore different media types (ex.: infographics, videos, graphs, text) and how they might influence an audience.				Analyze digital information, media, data, and materials for credibility, relevance, authority, accuracy, and perspective.		
KC1.B.3		Compare information presented across different domain extensions (ex.: .com, .net, .gov, .edu) to help evaluate accuracy, perspective, credibility, and relevance of information.						
KC1.C.1	Use digital organizers to create collections of artifacts (ex.: bookmarks, hyperlinks, sites).	Collect information (ex.: images, diagrams, maps, graphs, infographics, videos, animations) using digital tools from resources to clarify and add to knowledge of a topic.				Combine various tools (ex.: spreadsheet, database, saved files) and methods (ex.: concept mapping, flow charting and outlining software) to classify information, observations, or experiments digitally.	Use multiple digital tools to select, organize, and communicate information from digital sources.	
KC1.C.2	Organize gathered artifacts into general themed collections (ex.: Famous African-Americans, favorite cartoon characters, pictures of bridges).	Organize gathered artifacts into themed collections with subcategories (ex.: Famous African-Americans; Scientists; Politicians; Athletes; Favorite Cartoon Characters; Disney; Nickelodeon; Looney Tunes).				Compile information from digital resources (ex.: search engines, online periodical databases, virtual library/online catalogs, interactive video conferencing).	Utilize digital tools to communicate information in real world applications, to address or solve a problem, or to make meaningful connections.	
2. Application Produce creative artifacts and make meaningful learning experiences from curated knowledge for themselves and others.	KC2.A.1	Use digital tools to create artifacts from information found in various digital resources.				Use digital tools to create artifacts that connect similar information found in various digital resources.	Demonstrate the ability to create new ideas/concepts or products with digital tools.	Choose and use digital tools to create products that exhibit choice and creativity.
	KC2.A.2							Create products independently and collaboratively that incorporate creative elements, and communicate to multiple audiences.
B. Build knowledge by actively exploring real-world issues and problems, developing ideas and theories and pursuing answers and solutions.	KC2.B.1	Use a variety of digital resources (ex.: website, video clip, photos) to explore and report on real world issues.	Use a variety of digital resources (ex.: website, video clip, photos) to explore and collaborate with others on real-world issues.	Build knowledge by generating and testing solutions for exploring real world issues using a variety of technology (ex.: data collection tools, models, videos, podcast, simulations, forms).	Select and use digital tools to create products that demonstrate meaningful connections or conclusions.			
	KC2.B.2				Create products independently and collaboratively that explore real-world issues and problems and engage in discussion around current issues.			
1. Skill / Concept Development Use a variety	A. Find authentic real-world problems in local and global contexts.	ID1.A.1	Use technology to identify a problem in the school or home environment with guidance and support.	Identify and describe problems or challenges present in their community then analyze the conditions that make it a problem.	Collaborate with others in and out of the classroom using digital tools to identify real-world problems and propose a solution that affects the local and global community.	Use a variety of technologies to independently identify real-world problems in the local and global community.		
		ID1.A.2	Describe the problem, using technology, and explain why it is problematic.					

<b>Innovative Designer</b> - Students use a variety of technologies to design and create	Use a variety of technologies to identify and solve authentic real-world problems.	B. Exhibit a tolerance for ambiguity, perseverance and the capacity to work with open-ended problems.	ID1.B.1	Demonstrate perseverance when working to complete a challenging task.	Demonstrate perseverance when working with authentic, open-ended problems.	Demonstrate the ability to investigate and make sense of open-ended problems using digital tools and persevere in solving them.	Use a variety of technologies to independently demonstrate perseverance when dealing with ambiguous and open-ended problems.
	<b>2. Application</b> Use a variety of technologies within a design process to create new, useful and imaginative solutions.	A. Know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems.	ID2.A.1	Use a design process (ex.: creative thinking spiral) to ask questions, suggest solutions, test ideas to solve problems, and share their learning, with guidance and support.	Explore and practice how a deliberate design process (ex.: design thinking) works to generate ideas, consider solutions, test theories, plan to solve a problem, or create innovative products to share with others.	Explore and choose appropriate processes and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems.	Self-select and use a variety of digital tools within a deliberate process for generating ideas, researching, and testing ideas for solving problems or creating original products that demonstrate understanding.
		B. Select and use digital tools to plan and manage a design process that considers design constraints and calculated risks.	ID2.B.1	Use a variety of age-appropriate digital tools to design something, with guidance and support.	Use a variety of digital tools to plan and manage a design process, with consideration to design constraints and risks.	Investigate and use meaningful digital tools to plan and manage a design process that considers design constraints and calculated risks.	Self-select and use appropriate digital tools to manage work and create original products that take into consideration project constraints, obstacles and outcomes.
		C. Develop, test and refine prototypes as part of a cyclical design process.	ID2.C.1	Use a design process to develop ideas or creations, test their design, and redesign if necessary.	Engage in a cyclical design process to develop and test prototypes; reflect on the role that trial and error plays in the process.	Create, develop and test prototypes; understand and appreciate that failures are opportunities for growth and improvement.	Select and use a variety of digital tools to aid in working collaboratively or independently to create, test and refine prototypes, drafts and concepts based on self-initiated feedback and reflection in design cycles.
<b>Computational Thinker</b> - Students understand sequences and use them to develop solutions to problems.	<b>1. Skill / Concept Development</b> Develop and employ strategies for understanding and solving problems in ways that leverage the power of technological methods to develop and test solutions.	A. Formulate problem definitions suited for technology-assisted methods such as data analysis, abstract models and algorithmic thinking in exploring and finding solutions.	CT1.A.1	Identify a problem and choose the appropriate digital tools to explore and find solutions to the problem through the use of a step-by-step plan, with guidance and support.	Plan and implement a design process in which they explore solutions to a problem and use digital tools to analyze data, create models, and represent collected data (ex.: spreadsheets, graphs, charts, tables, presentations, infographics) in a way that can be shared with others, with guidance.	Ask questions, gather data, create/observe abstract models, and think of different processes while finding solutions to real-world problems.	Precisely define a problem and develop a solution using digital tools, conducting data analysis, abstract models, and algorithmic thinking.
		B. Collect data or identify relevant data sets, use digital tools to analyze them, and represent data in various ways to facilitate problem-solving and decision-making.	CT1.B.1	Utilize an age-appropriate digital tool to collect, organize, and represent data (ex.: online surveys, spreadsheets, graphs, charts, etc.); students will use this data to look for similarities and identify patterns and categories within the data set (ex.: simple data mining), with guidance and support.	Select and utilize an age-appropriate digital tool to represent data (ex.: spreadsheets, digital graphs/charts), with guidance and support from adults.	Solve problems and make decisions by collecting data or identifying relevant data sets, using digital tools (ex.: sheets, surveys) to analyze the data, and represent their findings through various ways.	Use digital tool(s) to effectively collect, organize, and manipulate data to test, verify, and present possible solutions to a problem.
			CT1.B.2		Use data to discuss findings and share conclusions with others (ex.: presentation apps/website).		
		C. Break problems into component parts, extract key information, and develop descriptive models to understand complex systems or facilitate problem-solving.	CT1.C.1	Break a problem into smaller parts, identify key information, and use age-appropriate digital tools to help with problem solving (ex.: online whiteboard, online mindmapping tools, digital outline), with guidance and support.	Break a problem into smaller parts, identify patterns and key information, and use age-appropriate digital tools to brainstorm a problem solving plan (ex.: online whiteboard, online mindmapping tools, digital outline) either collaboratively or independently.	Break problems into parts, extract key information, and develop descriptive models to understand complex systems or lead problem solving tasks.	Evaluate the problem-solving process to deconstruct data and information to develop effective solutions to real-world problems.
		D. Understand how automation works and use algorithmic thinking to develop a sequence of steps to create and test automated solutions.	CT1.D.1	Define and give examples of automation (ex.: thermostat controls temperature, buttons pressed on toys make various sounds).	Complete a coding task with coded actions (ex.: html, block-based coding, python) either collaboratively or independently.	Use digital tools to collect data, conduct analysis, and discuss findings or possible solutions.	Demonstrate their understanding of automation and logic to develop a process to create and verify automated solutions.
			CT1.D.2	Complete a simple coding task with at least 3-5 coded actions (ex.: html, block-based coding, python), with guidance and support.			
	<b>2. Application</b> Apply strategies for understanding and solving problems by using technological methods to develop and test solutions.	A. Use resources to collect, analyze, and represent data.	CT2.A.1	Use digital tools to ask questions and digitally collect data, with guidance and support.	Use digital tools to ask questions and digitally collect data.	Use digital tools to ask questions to an audience and digitally collect data, and analyze the findings.	Use digital tools to collect relevant data, conduct analysis, and prepare data for presentation to facilitate problem-solving and decision-making.
		B. Deconstruct components to understand systems and facilitate problem-solving.	CT2.B.1	Use digital tools to identify patterns in order to solve problems, with guidance and support.	Use digital tools to find patterns in order to solve complex problems.	Use technology-assisted methods to break problems down into smaller, more manageable parts by finding patterns or other methods of decomposition.	Use technology-assisted methods to more easily identify key information by breaking down data to facilitate problem-solving.
		C. Create and test automated solutions.	CT2.C.1	Use digital tools to identify and create algorithms, with guidance and support.	Use digital tools to identify and create algorithms.	Use algorithm design to develop step-by-step instructions for solving a problem.	Use digital tools and algorithmic thinking to develop automated systems to test solutions.

<b>Creative Communicator</b> - Students communicate clearly and express themselves with a variety of digital tools.	<b>1. Skill / Concept Development</b> Communicate clearly and express themselves creatively for a variety of purposes using the platforms, tools, styles, formats and digital media appropriate to their goals, audience and task.	A. Choose the appropriate platforms and tools for meeting the desired objectives of their creation or communication.	CC1.A.1	Introduce and use age appropriate digital tools (ex.: art creation programs, video production, photography, presentations, video media, green screen, stop motion animation) for producing new creations or published communications using appropriate digital etiquette with guidance and support.	Evaluate and utilize the features of a variety of digital tools (ex.: including, but not limited to: adding video/audio, digital collaboration tools, tools affecting the aesthetics of the piece, as well as methods for sharing/publishing) for producing new creations or communications with teacher support, following appropriate digital etiquette.	Choose from available platforms and tools to meet the designated objectives of their creation or communication.	Evaluate and determine appropriate platforms and digital tools to create or share digital content with an authentic audience for a desired purpose.
		B. Create original works or responsibly repurpose and/or remix digital resources into new creations.	CC1.B.1	Use age appropriate digital tools to create original and remixed work, with respect to intellectual property with guidance and support.	Learn and apply strategies to responsibly remix creative work, respecting digital citizenship (copyright), both collaboratively and independently.	Create original works, or repurpose/remix digital resources into new creations, while demonstrating an understanding of digital citizenship (ex.: intellectual property rights or copyrights).	Create work for an authentic audience and desired purpose that reflects a responsible repurposing of digital media or resources.
		C. Communicate complex ideas clearly and effectively by creating or using a variety of digital objects such as visualizations, models or simulations.	CC1.C.1	Observe and participate in the communication of ideas using a variety of digital tools (ex.: video reflections, interactive notebooks, audio recording, as well as visual representation) with guidance and support.	Create digital artifacts (ex.: presentations, data collection, models, audio/video, websites, and digital art) to display knowledge and communicate ideas clearly to a variety of audiences, both collaboratively and independently.	Create or incorporate digital content to communicate complex ideas clearly and effectively to a variety of audiences.	Analyze and communicate complex ideas, data, or solutions to an authentic audience for a desired purpose using digital tools
	<b>2. Application</b> Publish and present content customized for their audience (s), purpose, and task.	A. Publish and present content that customizes the message and medium for their intended audiences.	CC2.A.1	Explore a variety of digital tools (ex.: drawing/ art programs, video production, green screen, digital art), to create and communicate an idea to a variety of audiences with guidance and support.	Utilize digital tools to create, share, communicate, and publish work effectively (ex.: video/ audio creation, social media, spreadsheets, blogs, presentation platforms, word processing, and digital art platforms).	Publish or present original content to a predetermined audience that appropriately customizes the message and medium.	Present an idea or creative work that expresses ideas or content that is published for a range of authentic audiences outside of the classroom.
			CC2.A.2	Discuss different audiences and how presentations can change based on audience.	Identify the intended audience and select appropriate platform (medium) when creating digital pieces, presenting, and collaborating to communicate ideas to the audience.		
	<b>Global Collaborator</b> - Students use digital tools to connect with learners inside and outside of their classroom.	<b>1. Skill / Concept Development</b> Use digital tools to broaden their perspectives and enrich their learning by collaborating with others and working effectively in teams locally and globally.	A. Use digital tools to connect with learners from a variety of backgrounds and cultures, engaging with them in ways that broaden mutual understanding and learning.	GC1.A.1	Use digital tools and resources (ex.: digital resources, virtual field trips, virtual reality, video media, and social media), to understand the similarities and differences of others in school, community, and beyond with guidance and support.	Use digital tools and resources (ex.: presentations, videos, or various digital media platforms) to connect and collaborate with authentic audiences from a variety of backgrounds and cultures to enrich learning experiences.	Use digital tools and resources to connect and collaborate with authentic audiences from various backgrounds and cultures to broaden mutual understanding and learning, while using appropriate digital citizenship skills.
B. Contribute constructively to project teams, assuming various roles and responsibilities to work effectively toward a common goal.			GC1.B.1	Use digital tools to collaborate with team members in a digital workspace with guidance and support.	Use digital tools to learn how to collaborate with team members in a digital workspace. (ex.: sharing and respecting digital work within a team workspace, assuming team roles and working together to create video/ green screen production, stop-motion animation, and various other forms of digital creations). Use digital tools and take on a variety of roles to contribute to team projects with guidance and support.	Select and use digital tools in diverse collaborative teams within the classroom, assuming specific roles, responsibilities, and perspectives other than your own, to contribute effectively toward a common goal.	Use digital tools to contribute to a project team, determine their role and responsibility within the group and work toward a common goal or a solution to a problem.
C. Contribute to the exchange of ideas within and beyond the learning community.			GC1.C.1	Respect the interest of others by collaborating to share ideas, experiences, and opinions (ex.: virtual collaboration, presentation, and discussion boards) with guidance and support.	Use a variety of digital resources to collaborate with mutual respect (ex.: video conferencing, commenting tools, slide decks, and documents).	Select and use digital tools in diverse collaborative teams outside the classroom, assuming specific roles, responsibilities, and perspectives other than their own, to contribute effectively toward a common goal.	Select digital tools to share and exchange interests, ideas and experiences with others from within and beyond the local learning community.
<b>2. Application</b> Use digital tools to connect with a global network of learners and engage with issues that impact local and global communities.		A. Use collaborative technologies to work with others, including peers, experts or community members, to examine issues and problems from multiple viewpoints.	GC2.A.1	Use digital tools to collaborate with others to examine problems from school, community, and beyond with guidance and support.	Use digital tools to collaborate with peers, experts, and community members to examine problems from multiple viewpoints. (ex.: video/voice conferencing).	Use collaborative technologies to connect with others - including peers, experts, and community members - to learn about issues and problems or to gain diverse local and global perspectives.	Use collaborative technologies to work with others (peers, experts, community members) to gain knowledge about issues through various perspectives and opinions and to find solutions for social change.
		B. Explore local and global issues and use collaborative technologies to work with others to investigate solutions.	GC2.B.1	Use digital tools to collaborate with school, community, and beyond to solve problems with guidance and support.	Collaborate digitally with others to understand multiple perspectives while exploring both local and global issues to solve problems with guidance and support. (ex.: project-based learning and community problem solving).	Use collaborative technologies and assume roles within digital creations while maintaining digital citizenship within the team digital workspace to investigate and develop solutions to local and global issues.	Explore and analyze local and global issues and use collaborative digital tools to investigate, develop a plan and recommend solutions.