

# KETS Master Plan For Education Technology

2024 - 2030



As approved by the Kentucky Board of Education  
August 2023

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# Executive Summary

The Office of Education Technology (OET) is responsible for:

- Creating and implementing the Kentucky Education Technology System (KETS) Master Plan every six years to provide a technology strategy that supports the school districts' education plans and digital readiness, as well as ensuring alignment with the Kentucky Department of Education's (KDE) and Kentucky Board of Education's (KBE) vision and educational goals;
- Ensuring basic, equitable, and secure anytime, anywhere, always-on access to instructional and administrative education technology (EdTech) services are provided to students, teachers, administrators, parents, and the general public;
- Creating and maximizing partnerships (student technology leadership/skills, vendors, districts, agencies, universities) as well as building and maintaining productive customer relationships;
- Staying current and open to emerging technology and trends that may assist with meeting educational needs and managing/maximizing EdTech resource opportunities;
- Managing educational technology policies and legislation; and
- Maximizing data use, continuing to improve data quality, and championing data security and data privacy best practices to all districts and KDE.

**The 2024-2030 KETS Master Plan will identify:** (a) things we already do well that we want to continue doing well over the next six years, (b) areas to improve upon, and (c) emerging items likely to occur that need to be accounted for by this Master Plan. The studies, research, standards, governance, and technology needs of the state and districts that play a critical role in executing the Master Plan are also identified.

**KETS celebrated its 30th year in 2022.** It is exceedingly rare for a K-12 state-level education technology initiative to not only survive but also thrive for 30 years through changes of education commissioners and board members, governors' administrations, and state legislators. Fortunately, KETS maintained solid support from numerous leaders throughout the entire time. In that sense, KETS is like a good band of musicians that, over the decades, stays relevant, continues putting out hits, and grows in depth. Progress in earlier years (e.g., the initial six-year Kentucky K-12 Education Technology Master Plan, Internet connectivity, and identification of a variety of sustainable funding sources) created a solid foundation for the unique accomplishments including, but not limited to, cloud-based major state-level services, digital learning initiatives, Student Technology Leadership Program and the Computer Science & Information Technology Academy (formerly Microsoft's Imagine Academy).

Kentucky K-12 has been and continues to be the pioneer and national leader in most aspects of education technology since 1992, while always looking to get better. Below are some of the highlights of those accomplishments and things we want to continue doing well; a more comprehensive and graphical view of the KETS major achievements since 1992 can be found in [Appendix G](#).

## 2023

- Student Technology Leadership Program (STLP) - Record Setting STLP State Championship Growth
- Making IT Happen Award Presented to OET Staff Member - OET staff have received ten (10) times since 2009
- MUNIS Upgrade Implemented
- Enhanced Identity Security Initiative Completed
- Statewide Implementation of Campus Analytics Tools

## 2022

- Continuation of Crucial EdTech Services Right After Historical Flooding of 2022
- One of First Five States to Implement Generate - A federal reporting solution that standardizes to improve data quality, automate reporting, and streamline data processes.
- Equity Dashboard Provides Improved Data Interaction and Visualization Inside Student Information System
- Internet Access Beyond the School Campus Expanded
- Continuation of Crucial EdTech Services Right After Tornadoes of 2021
- Launched Kentucky's First Comprehensive K-12 State Plan for Computer Science Education
- Entire Kentucky K-12 Community Recognized for Heroic Efforts
- Single Sign-On (SSO) with Kentucky Virtual Library Provided
- Largest and Most Successful Kentucky K-12 Online, High-Stakes Assessment Conducted Three Years in a Row
- Kentucky Educator Credentials System (KECS) Launch
- "The People Side of K-12 EdTech" Study Updated
- Kentucky K-12 EdTech Not Only Survives but Thrives Throughout Covid-19 Pandemic
- Preparing/Building for the Future - KDE and Kentucky school districts made record improvements to the technology components and services supporting the learning experience from the classroom, home, or in a hybrid model; these improvements will support growth, safety and improve the overall digital experience

## 2021

- Revised Academic Standards for Technology Adopted
- First Academic Standards for Library Media Adopted
- Digital Learning Coaches Exceed 550
- Kentucky Becomes First and Only State to Provide Internet Safety and Protections for 100% of Schools to Meet New Federal Requirements
- First KySTE KY K-12 CIO Virtual Summit Hosted
- Campus Learning Available to All Kentucky Schools

## 2020

- Kentucky Conducts the Largest and Most Successful K-12 Online Assessment in Kentucky History
- All Kentucky K-12 Schools Quickly Pivot to NTI
- First Totally Virtual KBE Meeting
- First Statewide Staff Password Requirements



- KY K-12 School Report Card (SRC) is Recognized as One of the Nation's Best
- Next Generation Internet Bandwidth Upgrade for Kentucky K-12 Schools
- Kentucky K-12 Further Commits to Computer Science Growth
- Online Registration Available for all Kentucky Schools
- Kentucky Expands KY K-12 Internet Safety Beyond the School Campus
- Academic Standards Become Machine Readable and Interactive with Interoperability

## 2019

- School Safety (SB 1) Anonymous Reporting Tools for Schools
- New Kentucky K-12 School Report Card (SRC) Suite Introduced
- First Academic Standards for Computer Science Adopted
- Technology Competencies Included as Minimum Graduation Requirement
- Computer Science & IT Academy Launch
- Statewide Creation and Expansion of Digital Learning Coach Network
- Library Media Statewide Leadership Selected
- Record-Setting STLP Growth

## 2018

- KY K-12 Online Testing – High School End of Course
- KDE's KY K-12 EdTech presentation to US Congress committee in Washington DC - Kentucky K-12 is the pioneer and overall national leader in most aspects of K-12 education technology
- Statewide KETS Service Desk Reaches Milestone of Service
- KY K-12 Email Upgrade/Transition to Microsoft/Google Email
- PBS Learning Media Launch
- Data Visualization Tools Launched

## 2017

- The People Side of Education Technology - First in the nation study and tool that addressed the people side of K-12 education technology
- Infinite Campus Migration to the Cloud
- First in the nation to implement a complete cloud-based firewall security service for every school district
- Successful Pilot of Future KY K-12 voice/telephone communications via the cloud by KDE the agency, KSB and KSD
- EdScoop's EdTech Heroes Award – Awarded to KDE as one of the top 25 states demonstrating innovative practices and leadership in harnessing technology to support education

## 2016

- Creation of OET's Digital Learning Coach Leadership Team
- KDE Receives Government Technology Magazine's "Doers, Dreamers and Drivers" Award

## 2015

- Established Product Standard for Internet Safety and Content Management

- Kentucky Information Highway (Version 3) - First in the nation to connect every school with high-speed fiber and meet the national standard of 100kbps for every student
- Created a National Model with KY's First IT Academy championing industry-recognized IT student certifications

## **2014**

- Data Quality Study Completed defining best practices for collection and stewardship of education data
- Non-Traditional Instructional Time Legislation Enacted – This approval provided the opportunity to conduct school through virtual or other non-traditional means on days that the district would have normally had to cancel school
- Wireless Access on School Buses Implemented
- eTranscripts - First state to use a common transcript and electronic process for college admissions statewide
- Recognized as a Top 3 State in Data Quality
- Single Sign On (SSO) - First in the country to provide the ability for every student and teacher to access Chromebooks and Google resources via their Office 365 credentials

## **2013**

- 2013-2018 KETS Master Plan for Education Technology Approved - Delivered in an online digital format for the first time
- MUNIS Transition to the Cloud - First and largest in the nation to provision cloud-based financial service for K-12 and any type of government organization

## **2012**

- First Online Statewide School Report Card
- First All State-wide Superintendent Webcast
- Paperless State Board Meetings Implemented
- Kentucky Virtual High School Grows

## **2011**

- KDE Open House Launched
- Kentucky Student Information Mobile App Launched
- Digital Driver's License for Digital Citizenship Launched
- First State Board Meeting Webcast

## **2010**

- Cloud Email - First and largest statewide implementation of cloud-based K-12 email for every student, teacher, and administrator

## **2008**

- First Stilwell Award Presented - William E. Stilwell, namesake of the KDE Technology Award, was named the first recipient

## **2006**

- Scott County Hosts First Kentucky EdTech Leaders Webcast – These monthly webcasts have continued since this time

## 2005

- First Statewide STLP Championship at Rupp Arena

## 2004

- Statewide Identity Management Service - First in the nation to provide enterprise directory services to all schools and districts allowing secure access to the Internet and web-based instructional material

## 2000

- Statewide Student Information System - First in the nation to implement a common statewide student information system
- Statewide KETS Service Desk - First in the nation to provide dedicated education technical assistance to all school districts

## 1998

- Federal E-rate Program - Kentucky was the best-positioned state in the nation to take advantage of this new federal funding opportunity and remains among the top states in the nation in E-rate funds received
- Internet Safety and Security Measures (SB 230) – Implemented Internet content safety measures for every school

## 1997

- MUNIS Established as Common Financial System for Every District - First in the nation to provide those applications deemed most critical: Accounts Payable, Personnel, Payroll, Budget, General Ledger, and Purchasing

## 1995

- First Microsoft Mail Implementation - First in the nation to have email capabilities for all students, teachers, and administrators
- Rollout of District Administrative System - First in the nation to provide a local area network, Internet, and office productivity software to every district
- Every School District Connected to the Internet - First in the nation to connect all school districts to the Internet via high-speed network connections provided by the first Kentucky Information Highway Contract (KIH 1)

## 1994

- Student Technology Leadership Program (STLP) Established
- First KDE Website Created

## 1993

- Technology Assistance Team Established

## 1992

- Birth of Kentucky Education Technology Systems (KETS)
- 1st Master Plan for Education Technology Approved

## Going forward, these will be other areas of emphasis during the next six years:

- Recognize, educate, and continue to build upon previous accomplishments - Educate others about high-quality continuing initiatives to prevent duplicative work for things that already exist and are highly successful for schools.
- Address the importance of having adequate numbers of education technology roles/positions in all districts to ensure that existing and new education technology is (a) extremely reliable and available in the classroom, (b) maximized, (c) secure and safe, and (d) provides data of the highest quality.
- Address funding required for basic cost of living increases, previous budget cuts to basic services, and projected growth by districts (e.g., Internet consumption).
- Recognize the most crucial education technology professional learning needs identified by teachers and identify who can best address the needs.
- Focus efforts on shifting basic cyber security and safety to a prime position on the radar screen of teachers and district staff members.
- A higher percentage of districts annually examine education technology investments to determine which technologies are and are not being used/maximized.
- Interoperability strategies aim to enhance user experiences and drive administrative efficiencies with education technologies. Through this Master Plan, we will implement high-quality, efficient and effective interoperability strategies with statewide, district and school EdTech systems and platforms (including integrations and data exchange).
- Data systems are first-class, but we need to continue to emphasize districts' use of data. Data available in reports and through visual data analytic tools provide more interesting views that are easier to understand for an average person who does not have a technology and data background.
- While it has gotten significantly better due to advancements in mobile hardware and software, there are still too many traditional labs filled with desktop computers (and/or mobile workstations sitting idle in carts not assigned to students) in schools. Typically, labs do not provide ease of access for students throughout the school day and for all parts of the curriculum. Labs are also problematic for large-scale online assessment within a compressed window of time. Student and teacher mobile or portable devices help address the "ease of access" issue.
- Create a deeper partnership with higher education (postsecondary institutions). Focus on giving future teachers currently in a Kentucky postsecondary college of education experience with the K-12 education technology tools and environment. As well as having STLP events better maximized by the institution (learning experiences) while we are on their campus.
- Kentucky is the most advanced state in regard to having electronic transcripts sent from a K-12 school and electronically accepted by a Kentucky higher education institution. KDE and public universities through the Council on Postsecondary Education (CPE) fund electronic transcripts to help promote college-going.
- There can be significant cost savings and increased reliability and security by continuing to move more types of services to managed (e.g., printing) and cloud-based services (e.g., phone systems).
- Continue to create a closer connection with Career and Technical Education (CTE) expanding opportunities for students to code, expand the technology and computer science courses/exams available through our Computer Science & Information



Technology Academy (CS & IT Academy), implement computer science standards, as well as implement digital citizenship skills and technology standards.

- Be a vital part of helping implement the new assessment and accountability system - This includes the implementation of the new school report card/dashboard and summative online assessment. The successes of formative and interim online assessments are now starting to be realized and duplicated with our online summative assessments.

The following list of choice resources and websites helps capture where we have been, where we currently are, and where we are going:

- Six-year KETS Master Plan for all of Kentucky K-12
- Monthly [Kentucky K-12 Education Technology Leaders' webcast](#)/written summary for all 171 districts
- [Kentucky K-12 Education Technology Infographic](#)
- [KDE Open House](#)
- [District Digital Readiness Report](#)
- [Student Technology Leadership Program](#)

The 2024-2030 KETS Master Plan includes information about the technology needs of schools, districts and the state (including projected costs); education technology-related products and standards; areas of emphasis; technology planning guidance; studies and research; and the policies and laws that affect education technology in Kentucky.

# Introduction

KETS Master Plan 2024 - 2030



 Kentucky Department of  
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# Introduction

As mandated by KRS 156.670, [\[Appendix D\]](#) a plan related to purchasing, developing, and using technology to accomplish specific purposes in Kentucky's public school systems must be developed and must cover at least a five-year period. The previous five versions of the Kentucky Education Technology System (KETS) Master Plan for Education Technology served the state very well and are the foundation for the current (sixth) 2024-2030 KETS Master Plan.

The fundamental concepts and visionary principles used in the development of the first and subsequent plans remain relevant today. They are as important today as they were 30 years ago, have withstood the test of time, and will remain as guiding principles and benchmarks for future decision-making.

To develop this plan, Kentucky Department of Education (KDE) staff gathered feedback and closely examined input from the state's 171 public school districts, the Kentucky School for the Deaf and the Kentucky School for the Blind, consulted with KDE program areas, and studied other plans such as the state plans of North Carolina and Wisconsin as well as the National Education Technology Plan and the Future Ready Framework. The KETS Master Plan is designed to build upon the state's past successes and progress while progressing toward the future. This plan illustrates the path that will enable all students, teachers, and administrators to understand and leverage technology. Education technology can provide students and teachers the opportunity to realize their full potential. It extends instructional content beyond traditional school walls and leads students to where every opportunity is open to them.

This Master Plan includes information about the technology needs of schools, districts and the state; education technology-related products and standards; areas of emphasis; technology planning guidance; studies and research; and the policies and laws that affect education technology in Kentucky.

While technology has changed over the years, the driving purpose of the planning process for the KETS Master Plan has not. The primary purpose is to ensure technology tools enhance the learning experience of students, help prepare students for post-secondary and career readiness, and further develop a competitive workforce. This has not wavered. Equity of access and expanded opportunity have roots in the Kentucky Education Reform Act (KERA) of 1990 and will continue to be a cornerstone and driving force for KDE through this KETS Master Plan. Through technology-enabled tools, the following experiences and designs will continue to be major drivers through the work identified in this plan:

- Informative, engaging, safe, and secure experience for students,
- Options addressing the different learning and teaching styles of all students and teachers,
- In depth understanding of academic content with deep learning experiences,
- Data-driven decision-making,
- Age/ability-appropriate ease of access and enhanced security and privacy protections and controls,
- Creation and production of products and content,
- Collection, analysis and integration of information, and
- Communication and collaboration with others.

The 2024-2030 KETS Master Plan addresses the technology needs of schools, districts, and the state. This portion of the plan recognizes both the ongoing operational, maintenance and replacement needs as well as the technology-enabled aspects of new strategic educational priorities, plans, and projects. A blend of federal, state, and local funding sources is combined and creatively used to address the technology needs and are identified in the budget.

## ***New in this Plan***

The 2024-2030 KETS Master Plan differs from previous versions in several ways. Some additions are:

- Since 1992, KETS has enjoyed many big wins and successes that continue to be the priorities and driving principles of the Master Plan. Inside this Master Plan, major KETS historical milestones are graphically represented in a timeline format and are updated annually (Appendix G).
- Targeted areas of emphasis are aligned with KDE strategic goals and the Future Ready Framework to help position the state and P-12 students to be future-ready. New areas of emphasis are tied to Collaborative Leadership, Robust Infrastructure and Ecosystems, Data Security, Safety, Privacy and Use, Budget and Resources, Partnerships, Digital Learning, Curriculum, Instruction, and Assessment, and Personalized Professional Learning, as well as the Use of Space and Time.
- The plan more closely aligns with the P-12 education strategic plan of the state, school districts, and national frameworks through an enhanced and detailed comprehensive education technology plan alignment design. The Kentucky Department of Education and Kentucky Board of Education Strategic Plan components are embedded throughout the Master Plan and technology-enabled products and services are used to help address specific strategies in those plans.
- While the core budget framework remains the same, several projected cost items have been modernized to capture more up-to-date education technology need strategies (including purchasing trends).
- Cybersecurity continues to be a woven core thread throughout this Master Plan. A comprehensive cybersecurity statement is newly represented in this plan for the KETS program (Appendix F).
- The plan continues to be informed by relevant studies, research, audit and survey results, and customer feedback as well as national and other state and district plans to help guide and influence the direction of the work going forward. The following new studies and research results along with many others that are included further validate initiatives and work of the Master Plan. A link to a comprehensive list can be found in both [Appendix A](#) and [Appendix C](#).
  - The People-Side of Educational Technology (*including "What is Education Technology"*)
  - Best Practice Results for Data Privacy and Security
  - Kentucky Digital Learning Guidelines
  - Comprehensive K-12 Computer Science Reports and Strategic Plan



- Forum Guide to Digital Equity and Advancing Digital Equity for All
  - Artificial Intelligence and the Future of Teaching and Learning - A 2023 policy report by the U.S. Department of Educational Office of Educational Technology
- 
- KETS standards are streamlined for display in table format to provide a summary of technology needs, and architectural, and product standards ([Appendix E](#)).
  - The technology need budget projection has been modernized to reflect the progress of districts, trending patterns, and inclusion of new technologies ([Appendix H](#)).

# The Vision - Connections to Strategic Plan

**Core Values** | Equity | Student Success | Collaboration | Innovation | Integrity

**KETS** | Equity | High-Quality | Opportunity | Access

The Kentucky Education Technology System Master Plan objective is to always align with the KDE Strategic Plan in support of KDE's mission of equipping every student for the future through a common and shared vision. The three big ideas of the vision include:

- vibrant learning experiences for every student,
- encouraging innovation, and
- collaboration with our communities.

These ideas are woven throughout the strategies and initiatives of the Master Plan referred to as the Areas of Emphasis. They are also foundational for the creation and implementation of the budgeting and planning processes that promote equity, opportunity and access for districts, staff, and students. The core values found in the strategic plan and shared in this Master Plan for Education Technology are Equity, Student Success, Collaboration, Innovation, and Integrity (Figure 1). Equally, KDE and the KETS program (from inception) have always valued equity so that each student has the opportunity to graduate from high school with the education and skills needed to be successful. KDE and KETS value student high academic achievement and support for the development of every student empowered (to learn and demonstrate what they have learned) through technology. Additionally, KDE and KETS value integrity, basing technology-empowered decisions on multiple, accurate, and applicable sources of evidence.

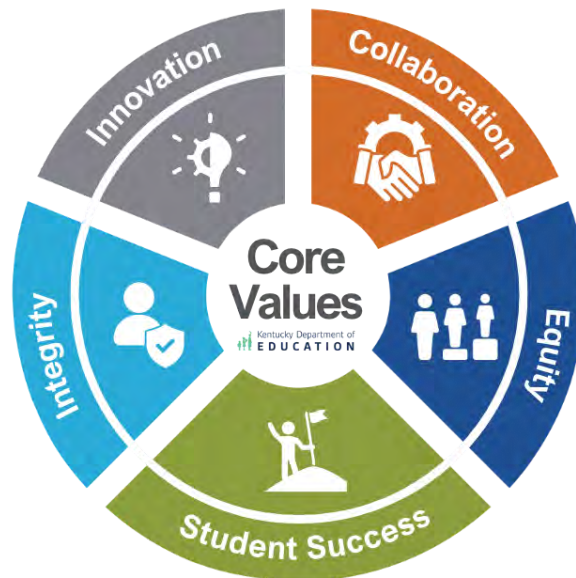


Figure 1: Core values as identified in the Kentucky Department of Education Strategic Plan

The two plans work together to create a collaborative and innovative environment where students and staff thrive. Knowing where we've been and where we are heading allows

KETS to remain true to its core values while serving Kentucky's students alongside the strategic planning process.

The KETS Master Plan and the strategic planning process both deeply value feedback which is instrumental in the creation of initiatives that further shared goals. Both plans seek to provide students with increased opportunities to showcase learning, foster innovation by districts and schools as well as improve educator access to high-quality, impactful resources for teaching and learning. This alignment creates opportunities for collaboration among partners in support of these initiatives. Additionally, it allows KDE and OET to provide guidance aimed at schools and districts making progress toward providing high-quality opportunities and access to all students (through vibrant experiences).

Both plans seek to leverage partnerships with a variety of shareholders and support district improvement efforts by building the collective expertise of educators through positioning resources to ensure opportunity and access for all students.

A shared mission and vision (Figure 2) strategically makes students the focus, further directing the work to ensure the achievement of agency and school district goals.

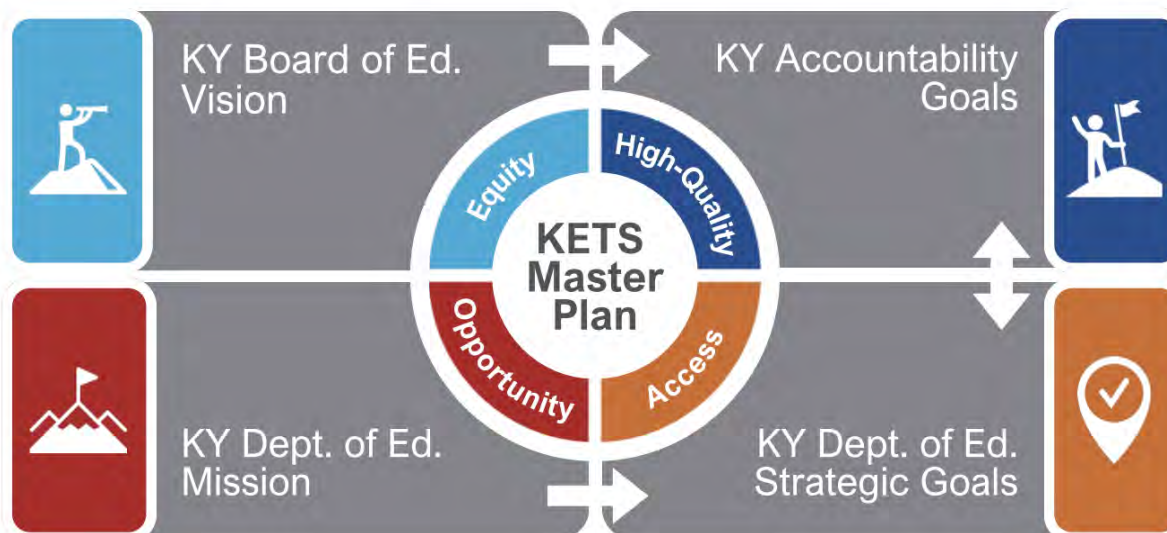


Figure 2: Connecting the Kentucky Department of Education vision, mission, and goals.

Ensuring a high-quality education that leads to a successful future for each Kentucky student is not possible without addressing key elements of high quality, opportunity, equity, and access (Figure 3). These elements drive the innovative and collaborative ecosystem needed to propel Kentucky students forward for years to come. The KETS Master Plan is built to always strengthen and be in sync with the KDE strategic plan, even as the agency-wide strategic plan modernizes and adjusts.

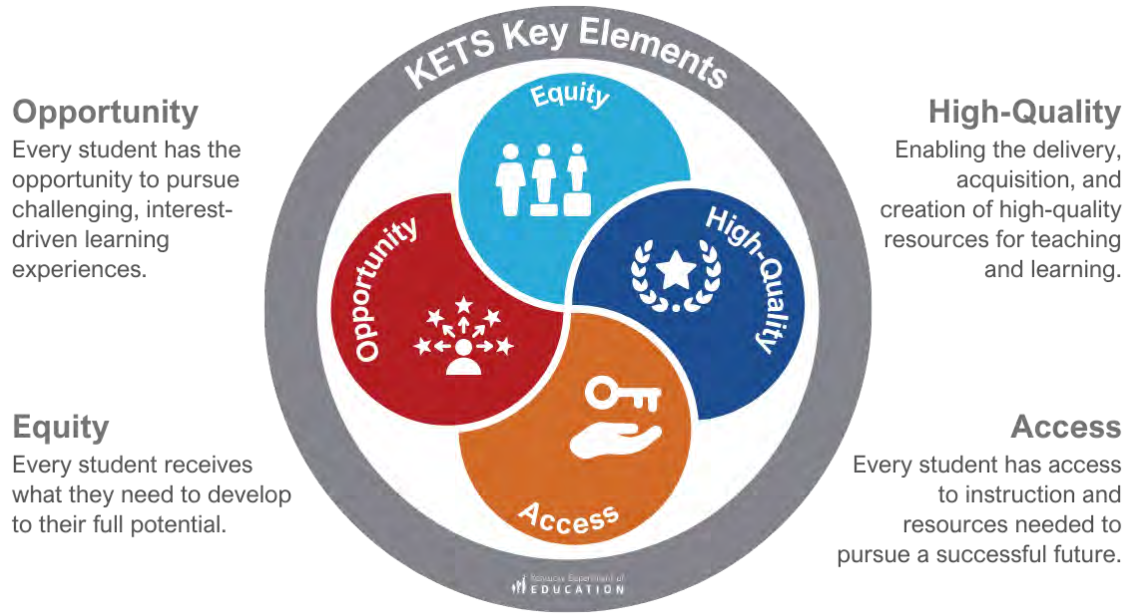


Figure 3: Key elements to all Kentucky Department of Education plans.



# Technology Planning

KETS Master Plan 2024 - 2030



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# Technology Planning

## *District Comprehensive Planning*

Kentucky's school districts collaborate on an annual basis with multiple shareholder groups to align education technology strategies with the district vision for digital teaching and learning and the KETS Master Plan. The process provides the ability to identify what's working well, where there is opportunity for growth, including new or emerging areas to address. Strategies include measurable outcomes to determine effectiveness as well as coordination of district and school funding sources for sustainability. District education technology plans should also inform and be aligned with the comprehensive district and school improvement plans. [Click here for more on comprehensive planning](#). Office of Education Technology (OET) staff review district education technology plans annually, and the information is used in Master Plan strategic planning efforts to inform technology needs and other key components.

## *District Technology Planning Requirements*

Through the legislation associated ([Appendix D](#)) with the development and maintenance of a master plan, districts are required to develop strategic technology plans that span at least one but no more than three years. Components of a district strategic technology plan include establishing specific strategies aligned to the areas of emphasis of this Master Plan. The areas of emphasis are a collection of strategies to carry out the vision of the Master Plan and aligned to the eight gears of the Future Ready Framework. The gears include:

- Collaborative Leadership
- Robust Infrastructure and Ecosystem
- Data Security, Safety, Privacy, and Use
- Budget and Resources
- Partnerships
- Digital Learning, Curriculum, Instruction, and Assessment
- Personalized Professional Learning
- Use of Space and Time

As with the Master Plan itself, the identification of funding sources is a critical component of the district strategic technology planning process. The strategies contained in district-level plans include available federal, state, and local funding sources. The Kentucky Education Technology System offer of assistance is a state-level funding mechanism intended for implementation of district technology plans.

Strategic technology plans at the district level fit into and should be informed by KDE's overall strategic planning cycle depicted in the figure below (Figure 4). There are well-defined and repeatable processes within all levels of the department that occur during specified timeframes. As this planning cycle continues, KDE strives to align all strategies and associated goals to ensure careful consideration at both the state and local levels toward continued improvement of Kentucky's education system.

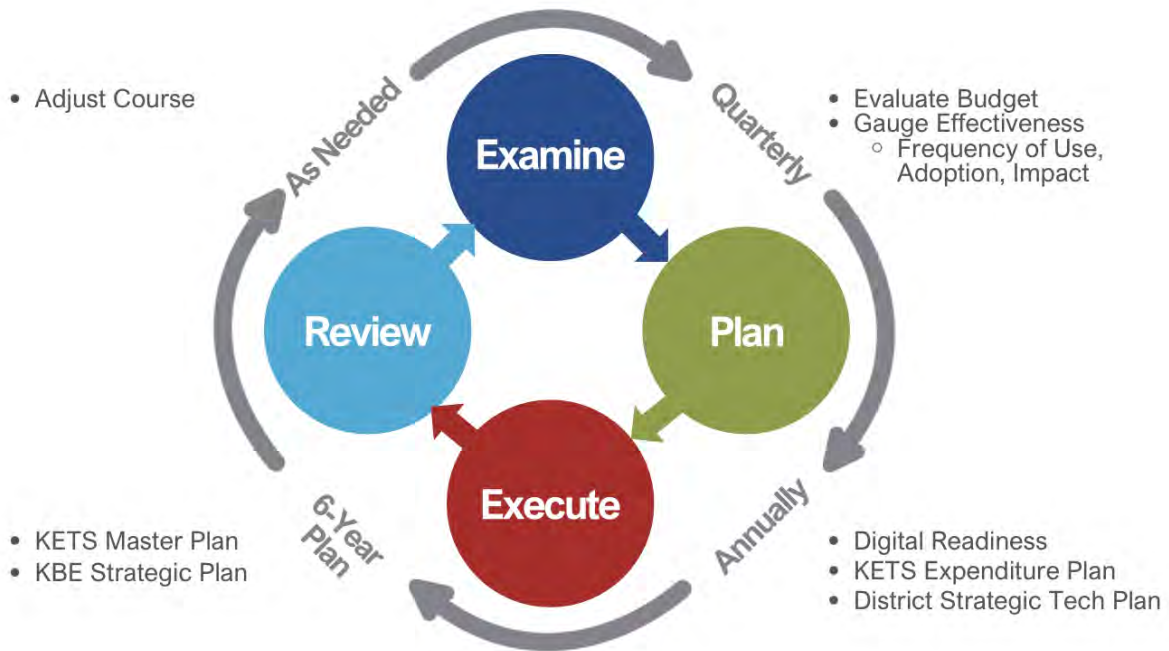


Figure 4: Strategic education technology planning cycle.

An important focus for the Master Plan is to identify leadership and support opportunities directly tied to goals and deliverables for KDE and school districts. When doing so, targeting measurable indicators presents an opportunity to gauge the overall efficiencies and effectiveness of the KETS program. Like the Master Plan, the district technology strategic planning process is intended to provide the local level with control over the decisions related to integrating technology into instruction and administrative functions, and efficiency based on the situation and capabilities such as culture, policy, and available funding sources. Just as the National Education Technology Plan cannot dictate standards and specific requirements for all 50 states, the Master Plan cannot define a step-by-step process to follow, nor can it advocate one solution over another for 171 districts.

The Master Plan can be considered a guide for districts to reference and consider when developing local (and customized) strategies for technology integration. The areas of emphasis and performance of KETS (which in turn support the strategic goals of the Kentucky Board of Education) can be measured through the technology strategic planning process.

The Office of Education Technology provides districts with a District Budget Planning tool and technology plan template for completing their district technology plans. The Office of Education Technology works with districts to provide accurate commodity codes to assist with budgeting. Both documents may be found on the [KETS Funding and Reporting webpage](#).

## Planning Alignment

The KETS Master Plan is also informed by plans, research, and policy work on a national and state level. Among the most influential for this KETS Master Plan include the National

Education Technology Plan, the Future Ready Framework, as well as state-level digital learning plans from partner states through the Council of Chief State School Officers (CCSSO) network. The following section contains a brief description and a link to each referenced publication.

## National Education Technology Plan

[National Education Technology Plan](#) - The U.S. Department of Education plan provides states with key concepts, recommendations, and examples of using technology to transform learning experiences providing learners greater equity, accessibility, and opportunities for both personal growth and to remain competitive in a global economy.

Kentucky is in sync with the three recommendations within the National Education Technology Plan:

1. Close the Digital Access Divide - Divide in access to high-speed connectivity and quality devices between historically- marginalized learners and their peers.
2. Close the Digital Design Divide - Divide between those developers and educators who understand inherent neuro variability and how to design learning experiences with that variability in mind – and those who cannot.
3. Close the Digital Use Divide - Divide wherein some students are subject to more passive uses of technology than their peers.

## Future Ready Framework

[Future Ready Framework](#) – The framework emphasizes collaborative leadership in creating an innovative digital learning environment for students. Featuring eight key areas, referred to as gears, the framework allows district leaders to create action plans using a dashboard tool that ensures smoother implementation.

Kentucky recognizes the eight gears of the Future Ready Framework. The Areas of Emphasis section of this document is organized to show the identified areas for the Master Plan linked with a Future Ready gear.

## Contributing State Plans

State-level education technology and digital learning plans provide insights, recommendations, and research to advise Kentucky's education technology and digital learning work. The following section provides summaries with links to a sample of these publications.

[North Carolina Digital Learning Plan](#) - The most recent iteration provides data, action steps, and metrics to support the North Carolina Digital Learning Initiative. This initiative drives digital teaching and learning support and resources for North Carolina Public School Units.

[Wisconsin Digital Learning Plan](#) - Utilizing the Future Ready Framework, this plan focuses on learning environments that are equitable, personalized, applied, and engaging.



# Areas of Emphasis

KETS Master Plan 2024 - 2030



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# Areas of Emphasis

## Connected to the Future Ready Framework

The following section links current successes (see executive summary) and identified areas of emphasis to the Future Ready Framework. The identified areas of emphasis are categorized as either 1) Acceleration Areas or 2) Growth Opportunity Areas.

Each Future Ready connected gear will include both categories of emphasis. The "acceleration" areas of emphasis, which are considered big wins, successes, and major milestones of the Kentucky Education Technology System are identified for continuation work. The growth opportunity areas identified below address emerging areas based on growth or decline metrics, research, needs assessments, and reporting by Kentucky school districts.

The areas of emphasis established through a strategic planning process are intended to highlight the groundbreaking progress made over KETS program history and continue placing major emphasis on this work as a primary goal. Additionally, this will help prevent duplicate initiatives, which create confusion, lost time, and initiative fatigue, while simultaneously focusing energy on growth opportunity areas in order to get better. These areas will drive a protective focus on education technology efforts during the life of this Master Plan to continue the delivery of quality, opportunity, and access to students and staff.

All the strategies represented through these areas of emphasis are unique and offer different perspectives on how to improve education technology in Kentucky. It is important to note that each of these areas is valuable in its own way and contributes to the overall goal of improving learning experiences empowered through technology in Kentucky. Area types are identified by the following symbols:



<Acceleration Area>  
(Big Wins, Successes & Continuation)



<Growth Opportunity Area>  
(Improvement Targets for this Master Plan)



## Collaborative Leadership

*Future Ready Gear*

**KETS GUIDING PRINCIPLE** – Collaborative leadership creates a shared vision of digital teaching and learning, an environment of collaboration (where partners make stuff together), encourages embracing innovation and empowerment, and a culture of evidence-based systems and processes.



**Continue** to use structures providing opportunities for feedback from shareholders and evidence of how KETS systems and processes are working or not working (360 feedback, CIO Summit)



**Continue** the fostering of strategic partnerships and collaborations among educational institutions, technology companies, policymakers, and community organizations. Develop networks that facilitate knowledge exchange, collaborative research, and resource-sharing to promote innovation and address common challenges in education technology



**Continue** the recognition and support for the crucial role of teachers as leaders in educational technology integration. Provide professional learning opportunities and resources that enable teachers to develop expertise in leveraging technology to enhance instruction and student engagement



**Improve** collaboration among educators, technologists, administrators, and researchers to foster a holistic approach to education technology development, implementation, and evaluation. Encourage open channels of communication and provide platforms for sharing best practices, ideas, and resources across different disciplines and institutions



## Robust Infrastructure & Ecosystem

*Future Ready Gear*

**KETS GUIDING PRINCIPLE** – A robust infrastructure delivers the device, identity, network, leadership, and support needs of staff and students to create personalized learning environments using digital tools and resources.



**Continue** to provide the nation's first, fastest, highest quality, most reliable, and secure on-school campus Internet access to 100% of Kentucky's public schools



**Continue** to ensure equity and standardization for delivery of device, network, data, and support creating best in class staff and student digital experiences AND provide a system of shared/brokered/managed services

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maintaining low infrastructure costs and providing support structures  
promoting the use of personalized learning environments

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**Continue** to provide digital equity and foster a culture of digital connectedness for students and staff by ensuring easy access to a 1:1 device assignment, prioritizing mobile devices over traditional computer labs, and providing consistent Wi-Fi coverage throughout schools. This approach emphasizes always-on, everywhere seamless digital opportunity and access, and includes an emphasis on empowering schools/districts to have a full understanding of digital access beyond the campus

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**Continue** to encourage the use of instructional programs and administrative processes requiring cloud-based services

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**Continue** to implement efficient and effective interoperability strategies with statewide, districts and school EdTech systems and platforms (including integrations and seamless data exchange). Interoperability strategies aim to enhance user experiences and drive administrative efficiencies with education technologies.

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**Improve** responsive EdTech support systems by securing a leadership position designed to make decisions to improve teaching and learning through technology integration. This role outlines the district's vision for education technology, implements digital learning strategies, and ensures that technology resources align with students' learning needs. Responsibilities and expectations are primarily focused on understanding the educational needs and challenges of the district with a "seat at the table." Responsibilities would likely include influencing district-level budget conversations, leading planning efforts, research, procuring state and federal program funding, and establishing overall direction and vision of using technology for school efficiencies and instruction/learning

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**Improve** formal cycles for review, refresh, and replacement - ensure upgrades, additions, and when called for, sunset/eliminations in a timely, environmentally responsible and proactive manner of devices, infrastructure, and digital tools and resources. Where possible, teams make concerted efforts to automate systems to drive effectiveness and efficiency. (This is also connected to budget gear.)

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## **Data Security, Safety, Privacy & Use**

*Future Ready Gear*

**KETS GUIDING PRINCIPLE** – Strategic use of student data is a cornerstone of digital learning and must be done securely, safely, and with a focus on maintaining privacy. Laws, policies, and procedures are enacted at the federal, state, district, and school levels that work in conjunction for this purpose. Student data are then utilized by security-aware, data-fluent, and data-informed educators for improved decision-making leading to increased learning for students.



**Continue** to support districts in securely accessing and managing key student and administrative data sets through improved user experiences, refined data collection processes, continuously updated policies and practices regarding student data security, and timely access to data sets that improve the depth and efficiency of student learning  
*(Infinite Campus, Early Warning, MUNIS, eTranscripts, School Report Card)*



**Continue** to identify key aspects of data security regularly to build upon the current systems, procedures, and policies to remain a leader in mitigating emerging threats. *(acceptable use policies, firewall updates, data privacy studies, digital citizenship, content filtering)*



**Continue** to utilize adoption metrics or trending data for planning purposes that allow EdTech and instructional leaders to identify what's working and what's not working based on data quality and evaluate current systems and solutions to determine the effectiveness and future direction. *(annual auditors, Impact Survey, Technology Activity Report, Digital Readiness, Data Quality Study, Data Quality Campaign, BrightBytes, SpeakUp) [Appendix A] [Appendix B]*



**Continue** to migrate key administrative and student services and data sets to secure cloud providers that allow everywhere, all-the-time secure access for the improvement of student learning. *(Infinite Campus, Early Warning, School Report Card, MUNIS) [Appendix A]*



**Educate and support** districts in the importance of personnel with duties related to student/staff data quality, security, and privacy as well as bringing data privacy to the “radar screen” of teachers/staff.  
*(The People Side of EdTech) [Appendix A]*





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**Improve** and enhance the tools available to maximize the use of data through enhanced reporting, tools that help improve data quality, and visual data analytic tools. Kentucky K-12 data systems are first-class, and we need enhanced data tools to create a more usable and more interesting story for the average person who may not have a technology and data background

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## **Budget & Resources**

*Future Ready Gear*

**KETS GUIDING PRINCIPLE** – The Master Plan, as well as district and school technology plans, are aligned to the vision for digital teaching and learning for students and staff. Revenue streams are aligned to account for the recurring and nonrecurring total cost of ownership to support the modernized and personalized learning experiences (and environment) in a manner that reflects good stewardship of tax dollars to include devices, infrastructure, support, data, and human capital services (i.e. The People Side of EdTech).



**Continue** to maximize local and state education technology expenditures through a system of shared/brokered/managed services



**Continue** to use long-term planning strategies that allow for continuity of initiatives and systems (e.g., *accounting for cost of ownership over the lifespan equipment so monies are allocated for repairs/upgrades*)



**Continue** to leverage all available state and federal funding opportunities to address required basic cost of living increases, previous budget cuts of basic services, projected growth by districts (e.g., Internet consumption) while maximizing education technology programs and initiatives (*Technology Need, E-rate*)



Educate districts on the ongoing cost of positions/roles requiring technology-related duties in support of technology and instruction as well as modern drivers that require differentiated and strategic staffing models (*The People Side of K-12 EdTech*)



Educate districts on how to reduce expenditures on printing/print services (*both in consolidated contract pricing as well as shifting from paper to digital experiences*)



Evaluate the need and explore new contracts that drive costs down for statewide summative online assessment, learning management systems, printing services & interim based assessments

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See an increased percentage of districts examining which education technology investments are or are not being maximized (through adoption, frequency of use, and impact)

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## Partnerships

*Future Ready Gear*

**KETS GUIDING PRINCIPLE** – Connecting students, leaders and educators to the local and global community is a key factor to student success. The Master Plan will continue to provide opportunities for trusted relationships to build those connections as well as increase communication and transparency with shareholders, including families, districts, vendors, regional education collaboratives, postsecondary institutions, and public libraries and business/industry, in support of student learning and preparation beyond K-12.



**Continue** to build trusted relationships with shareholders (families, districts, partners) to increase engagement, outreach, and connecting classroom experiences outside of the school. (*districts, vendors, higher education, regional education cooperatives, KET, KyVL*)

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**Continue** to utilize avenues of communication with shareholders allowing pertinent information and dialog to further student learning efforts. (*Webcasts, Technology Activity Report, KETS Service Desk, Office of Education Accountability studies, independent studies, etc.*)

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**Continue** to utilize tools engaging postsecondary institutions, community members, districts, and families in student learning and life after K-12. (*eTranscripts, School Report Card & Dashboard tool, Infinite Campus parent & student portal, KDE Open House, Digital Readiness Survey*)

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Partner with postsecondary pre-service teacher and principal programs to provide support in candidate preparation, especially in regard to student project-based demonstrations of technology competencies; get more students on college/university campuses while they are a K-12 student. Encourage postsecondary institutions (as well as other partners) to host STLP events and/or more fully maximize the opportunity to showcase the university and its programs while students are on campus

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**Improve** access to resources and professional learning for district-based online/virtual and remote learning programs to engage in continuous improvement in order to create high-quality online learning experiences for students

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## Digital Learning, Curriculum, Instruction & Assessment

*Future Ready Gear*

**KETS GUIDING PRINCIPLE** – A digital learning experience is fostered by a teacher or coach with the use of rich digital instructional materials that are vetted to the rigor of Kentucky Academic Standards (KAS). A robust digital environment provides students with the opportunity to assess their own learning/progress toward mastery of content/skills or utilize instructional technology to provide timely feedback that moves learning forward. Digital curriculum and instruction can also provide students the opportunity to create digital products showcasing a deep understanding of core competencies of every subject, demonstrating mastery of Kentucky Academic Standards for Technology, and utilizing digital collaboration tools that provide a realistic connection to postsecondary and career readiness.



**Continue** to provide access to high-quality learning experiences which further align with the Kentucky Digital Learning Guidelines



**Continue** to promote, for ALL students, the use of Kentucky-approved/adopted KAS for Technology, KAS for Computer Sciences, and KAS for Library Media Learning (*all-based on national and international learner standards*)



**Continue** to provide opportunities for students to demonstrate learning connected to and through Kentucky Academic Standards (KAS) for Technology, KAS for Computer Sciences, and KAS for Library Media (*empowering students through technology with STLP, CS/IT Academy, etc.*)



**Continue** to provide efficient and effective access to online assessment tools that allow teachers and administrators to assess student learning, provide timely feedback to students, and make curriculum decisions. (*online formative assessment tools, interim-based assessments, and summative assessments*)



**Continue** to provide districts/classrooms access to high-quality and effective digital instructional materials through an equitable and robust digital experience



**Continue** to support teacher efforts in taking ownership of digital citizenship skills and educating their students in the same skills to foster a responsible, safe, secure, and empowered digital learning environment



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**Continue** to play a vital role in implementation of summative online assessment and school report card

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**Continue** to Create a closer connection with Career and Technical Education to expand computer science career pathway offerings specifically related to computer programming/coding and increase valuable industry-level certifications and exams available through the CS & IT Academy

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Identify high-quality digital content and tools (curriculum, instruction and assessment) designed to have the highest impact and value (e.g. Is the technology making or not making an instructional and learning difference?), including frequency of use by teachers and students

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Encourage, engage and empower the safe and responsible uses of Artificial Intelligence (AI) into school efficiency and the learning space by teachers and students (ensuring humans remain in the loop with strong AI implementations)

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## **Personalized Professional Learning**

*Future Ready Gear*

**KETS GUIDING PRINCIPLE** – Digital learning expands the access to quality strategies and experiences for educators beyond the traditional methods of professional development. A culture of digital collaboration, workflow, and relationships allows educators to build skill sets and instructional best practices with colleagues globally. This approach of increased access and flexibility for professional learning ultimately leads to greater success for students.



**Continue** to build a culture of digital collaboration and connected digital relationships that allow administrators to support and encourage the use of digital tools by staff for professional learning

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**Continue** to promote and support the design and implementation of coaching models as a high-quality professional learning strategy (digital learning coach network, STLP coach network, etc.)

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Provide districts with guidance and support to determine the learning needs of teachers resulting in high-quality professional learning opportunities related to digital curriculum and learning tools

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## **Use of Space & Time**

*Future Ready Gear*

**KETS GUIDING PRINCIPLE** – The personalized learning environment for students requires reimagining the use of school space and time. Virtual instruction, cloud-based learning tools, digital instructional material, digital collaboration, digital workflows, digital efficiencies, and digital relationships, etc., assist in providing the vehicle for everywhere, all-the-time teaching and learning.



**Continue** to provide guidance, support, and resources for districts in the development and application of high-quality online, virtual, and remote learning programs as well as the implementation of learning management systems



Educate and support districts in the implementation and facilitation of digital learning tools and portable/mobile technologies that foster everywhere, all-the-time, always on, and 'always on you' access for staff and students



# Projected Costs For KY K-12 Technology Needs

KETS Master Plan 2024 - 2030



 Kentucky Department of  
**EDUCATION**



# Projected Costs for Kentucky K-12 Technology Needs

The 2024-2030 Master Plan Budget for Education Technology represents a statewide budgetary projection outlining the total cost of ownership for the primary technology components, services, and people needed to ensure ease of access to an equitable, modernized, and personalized learning environment. Under KRS 156.670, this budgetary projection establishes the baseline education technology **need** for all Kentucky public schools and districts, and includes the annual costs to sustain the education technology shared services provided by KDE to all schools and districts statewide.

Each Master Plan Budget item represents an industry-standard "best practice" approach as opposed to a requirement and carries the expectation that a wide variety of local, state, and federal funding sources should be leveraged to address the ongoing need to implement and incrementally replace all technology components and services (701 KAR 5:110). The fiscal year 2018-2024 Master Plan budget reflected an annual overall baseline need of \$366,331,442 compared to the newly projected annual need of \$430,984,768.

Contributing factors and basis for the Master Plan Technology Need Budget calculations including, but not limited to, the following:

- The unit variables are available to use as the basis for the calculation such as the number of students, adults, teachers, staff members, classrooms, schools, buildings, and districts.
- Multiple empirical data sources such as, but not limited to, information from the state standard financial tracking system used by districts to record education technology expenses and produce the annual Technology Activity Report (TAR). We also utilize the annual Digital Readiness Survey.

Each district is required to report overall implementation progress for all baseline technology components, services, and staffing on an annual basis. The annual statewide reporting cycle consists of the following required components in order to participate in the statewide funding program:

1. District Technology Plan
2. Digital Readiness Survey
3. Technology Activity Report
4. Annual KETS Feedback Process

This budget projection does not reflect the additional technology components and/or services that districts choose to implement above and beyond the baseline need (*security cameras, video surveillance systems, environmental technology, personal data storage devices, smartphones, etc.*) but are recognized as flexible priorities that districts may address exclusively with available local and/or federal funding sources.

The delta between that which is outlined in the Master Plan Budget as targeted projections, when compared to actual implementation progress as identified in statewide reporting data

determines the remaining unmet need for all Kentucky public schools and districts. The state funding program, subsequent annual offers of assistance, and education technology shared services provided by KDE to all schools and districts statewide are specifically targeted at reducing the remaining district-level unmet need.

The Master Plan budget also anticipates that as technology components and services continue to evolve, innovation will continue to reduce costs and/or possibly even reduce the dependency on a particular technology component. As an example, it is expected that as end-user access to digital content increases, the reliance on printing services will naturally decrease over the six-year span of this plan. Conversely, as the expectation of high-speed access to digital content continues to escalate, it is anticipated that the costs associated with Internet access will continue to increase at a moderate rate. The technology need budget projection line item worksheet is found in [Appendix H](#).

The following frequently asked questions allow for further understanding of the education technology need calculation as well as provide a common language when addressing district-level technology budget planning:

### Question 1: What is considered "technology"?

**Answer:** Technology is usually something that has electricity flowing through it (plugs into something). However technology is always something that (1) connects to or through the Internet or any network by a wire or wireless, and/or (2) has data, information, voice, sound, images, or video created, entered, displayed, stored or flowing back and forth and/or (3) involves digital (i.e., learning/teaching, training/PD, decision making/analysis, communications, reporting or online assessment). OET and district EdTech staff must be involved at the very beginning (i.e., concept phase) and throughout initial implementation and ongoing service for anything EdTech, regardless of (a) the funding source/method (including "free") that acquires the EdTech product/service and (b) who builds/provides the EdTech product/service.

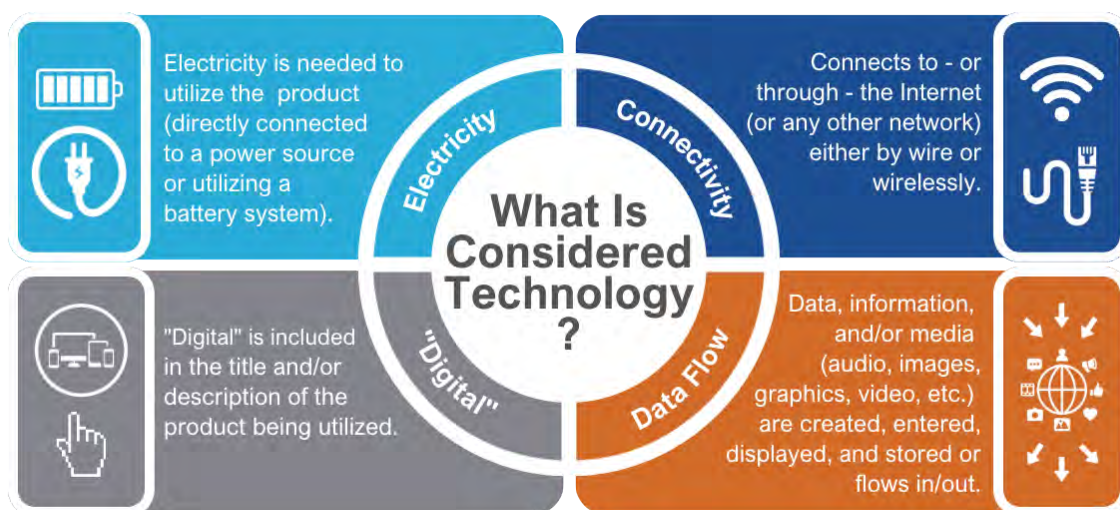


Figure 5: Key factors for "what is considered technology."

## **Question 2: What is considered a Kentucky K-12 Enterprise System?**

**Answer:** Any technology-enabled system that (1) has more than one KDE division using it, (2) is a pilot and has great potential to be used by more than 10 districts after the pilot, or is already used by more than 10 districts, (3) is a data source that will be used by one of our "big data" systems and/or (4) is very high profile/mission critical. Typically, it is designed and implemented to handle scale, to ensure it is reliable and to be very easy to use as well as a great customer experience by the average person.

## **Question 3. Why are OET and district EdTech staffs so insistent on being involved with any type of enterprise EdTech product/service initiative no matter who is funding it (including free) building it /or directly providing the EdTech product/service to the school or program areas?**

**Answer:** Ninety-five percent of the nation's CEOs (including superintendents) blame the KDE CIO and/or the district CIO for any failure or major issues/controversy of any Kentucky K-12 EdTech enterprise system. In addition, OET and district EdTech staff have up to 30 years of experience/wisdom in successfully implementing hundreds of large-scale, high-visibility, EdTech systems. This experience proves to be extremely helpful during the implementation of successful budget planning, deploying, integrating, maintaining, and providing cyber security for all enterprise-level EdTech products/services in KDE and/or school districts.

## **Question 4: What is total cost of ownership (TCO)?**

**Answer:** Typically, the initial purchase price to build or buy a technology-enabled product/service only represents 20% of its true cost over its life. The other 80% is the people, software, and hardware costs of initial/ongoing training, conversion, integration, telephonic/onsite repair/break-fix, ongoing maintenance and incremental upgrades, and its relationship to and impact on other Kentucky K-12 data systems (aka change management). Fully embracing and understanding TCO requires strategic discussions around a combined commitment to building AND maintaining education technology (projects and implementations).

## **Question 5: What is KDE's process for acquiring initial and ongoing funding of KY K-12 education technology enabled enterprise systems/product standards for KDE program areas and/or school districts?**

**Answer:** KDE, almost always, implements a full RFP process. However, a sustainable funding source first needs to be identified for the initial purchase, plus at least six years of TCO recurring costs. Even if the cost is "free," consideration must be given to TCO over six years and have written agreements.



# Summary

KETS Master Plan 2024 - 2030



 Kentucky Department of  
**EDUCATION**

# Summary

We recognize and celebrate that today's learners must be prepared to flourish in a continually changing digitally rich landscape. To prepare our students to redefine what is possible and for future success (postsecondary and career readiness), both students and teachers will need access to infrastructure, devices, digital tools and resources, digital curriculum and assessment, personalized learning applications, and digital experiences that reshape the use of space and time that can be embedded seamlessly into powerful learning experiences.

This KETS Master Plan represents statewide guidance for the next six years. The Master Plan standards, budget projections, and areas of emphasis are intended to be carried out over time with progress reported annually to the Kentucky Board of Education (specifically focused on budgeting unmet need and offers of assistance). Ultimately, the goal of this plan is to provide each Kentucky student with the skills, understanding, and confidence she or he needs to be successful and lead in the digital age. It is intentionally designed to meet the requirement for providing equitable access to educational opportunities. A collaborative effort from all partners is essential to continue to accelerate and grow upon the areas of emphasis outlined in this plan — from Pre-K–12 to postsecondary, classroom teachers to local and state policymakers, libraries to businesses, and students to parents — it will take everyone partnering and working side-by-side.

This KETS Master Plan led with an executive summary and an introduction which was immediately followed by details connecting this plan with 1) the KDE strategic planning process, 2) national education technology planning (including frameworks and models from other states), and 3) school district technology planning. Finally, highlighted are key areas of emphasis that spell out areas of acceleration (initiatives going well that need to be continued) and growth opportunity areas (initiatives to get better), and the technology need budget projections for the next six years.



## **FURTHER INFORMATION: KETS Master Plan Website**

*To prepare this sixth edition of the KETS Master Plan, the Kentucky Department of Education team, along with many partners, analyzed relevant research and data, reviewed many national and state reports, and prepared summaries of relevant findings. Also published were studies, models, and other resources that provide more background and details for a number of the recommendations in this plan.*

# Appendix

KETS Master Plan 2024 - 2030



 Kentucky Department of  
**EDUCATION**

# Appendix

## Appendix A - Studies and Research

Studies and initiatives at national and local levels have been conducted that are integral to education technology in Kentucky. Several studies yield recommendations that directly impact the strategic direction of the Kentucky Education Technology System. This section contains a brief summary of each related connection with a link to the full study and publication. These connections collectively drive our efforts on a daily basis.

### *Kentucky Studies*



**Kentucky K-12 Data Quality Study** (*revised July 2016*) - The Kentucky Department of Education completed the most comprehensive study on K-12 data governance, data quality, and data stewardship in U.S. history in 2014. The study identified 10 major findings and produced recommendations that greatly impact data quality work in KDE and Kentucky K-12 school districts.



**The People Side of K-12 EdTech** (A Human Capital Call to Action) - An important element in the success of any Education Technology (EdTech) program or initiative is the people that help to establish and support digital access for students, teachers, and staff. As access to digital content and resources brings expectations of reliability, flexibility, security, and affordability, the responsibilities placed upon our instructional and operational technology staff to ensure that the experience for all shareholders is positive and supports the mission and culture of the local district continue to grow. Across the nation, including Kentucky, the demand for access to digital content and subsequent growth in technology investments continue to outpace the growth rate of the human capital or staffing required. Kentucky Department of Education's (KDE) annual Digital Readiness survey continues to track and forecast an ever-growing deficit in what we describe as the "Human Capital" element of the success equation. KDE partnered with BrightBytes to create this study to help highlight the current landscape and identify best practice guidance as opposed to a requirement.



**Broadband in Kentucky** - Conducted by the Legislative Research Commission, the report reviews broadband development in Kentucky, with emphasis given to legislative and agency-driven efforts to assess, plan, and fund last-mile broadband deployment. The resulting report provides perspective on both the history and current landscape of broadband technology, infrastructure, funding, availability, and adoption in Kentucky. It also highlights some of the most significant challenges facing state broadband development and recommended solutions.



**Comprehensive K-12 Computer Science Plan** - The state's first comprehensive plan to address the growing educational needs of Kentucky students demanded by a 21st Century workforce. The plan's primary focus is the alignment of resources to increase access to computer science learning for all K-12 students.



**Annual Comprehensive K-12 Computer Science Reports** - This legislatively mandated report (SB 193, 2020) provides enrollment numbers, demographics of computer science learners, and the status of teacher computer science certifications in Kentucky's public schools.

- [2022 Annual CS Report](#)
- [2021 Annual CS Report](#)
- [2020 Annual CS Report](#)



**Dataseam Audit Report** - The Finance and Administration Cabinet's Office of Policy and Audit completed an audit of the Kentucky Dataseam Initiative with submission of this report on August 14, 2020. The general objective of the audit was to determine the costs and benefits of the contractual arrangement by which Apple computers are provided to Kentucky school districts in exchange for the use of available computer processing power for cancer and other research. The timeframe for OPA's audit work and analysis was from FY 2007 through FY 2020.



**Data Security, Breach, and Privacy Best Practice** - Originating in 2006 from House Bill 341 and updated in 2015 to meet House Bill 5 provisions, this document provides guidelines and recommendations to KDE, school districts, and vendors concerning basic measures to protect and prevent the access of restricted personal information by any person who does not have the proper access rights, authority or the "need to know." It also provides considerations and protocols for notifying any affected individual.



**Digital Learning 2020** - 2011, OpenEd Solutions presented to the Kentucky Board of Education (KBE) a report titled Digital Learning 2020 that outlined 11 recommendations related to various aspects of digital learning. Closely aligned with Breaking New Ground: The Final Report of the Governor's Task Force on Transforming Education in Kentucky (BNG) and considering the 10 Elements of the Digital Learning Now report (DLN), the following recommendations build on the interviews, summit discussions, and the strengths and weaknesses:

1. All students should be eligible for digital learning. Eligibility for full and part-time learning options is key to a number of BNG recommendations including advanced courses, world languages, special needs, credit recovery, and dual credit.
2. Authorize multiple statewide online learning providers to expand full and part-time options – Like recommendation #1, a multiple providers environment fulfills the BNG vision.
3. Allow students to personalize their learning
4. Support customized learning pilots
5. Support competency-based learning pilots
6. Plan for a shift to online instructional materials by 2013-14
7. Support the shift to blended instruction Assessment and Accountability (DLN 8, BNG 8)
8. Plan for online assessment by 2013-14
9. Create a statewide online/blended learning authorizer/contractor



10. Develop a fractional and performance-based funding model
11. Create a program management office and fund the transition



**Kentucky Digital Learning Guidelines** - A shift to online textbooks, digital instructional materials, and online/virtual courses in Kentucky schools prompted the Kentucky Department of Education Digital Learning Team, along with many shareholders, to design the Kentucky Digital Learning Guidelines as guidance for schools, districts, and digital providers when selecting or creating developmentally appropriate digital learning resources for instruction. The Kentucky Digital Learning Guidelines highlight five ready-to-implement guiding principles.



**IT Assessment and Optimization Gartner Study** - Performed in 2004, this study detailed key findings as well as provided implementation recommendations to KDE to increase cost efficiency and enhance the effectiveness of IT services and investments. Recommendations from this study are evident in the foundations of many current OET processes and initiatives.



**Kentucky Impact Survey** - Kentucky teachers must have confidence in education technologies to continue to design and implement digitally enhanced learning experiences. In 2022, Kentucky teachers reported (Impact, 2022) continued growth in confidence as 62% and 56% responded favorably to the current state of school technology resources, including computers, software, and internet access. This confidence drives usage and adoption. Kentucky teachers participate in the Impact working conditions survey every other school year. The most recent survey helps ensure we are supporting our teachers and providing them with opportunities to thrive digitally. Teaching conditions relate to student learning conditions as well as opportunities for digital learning experiences. When our teachers succeed digitally, Kentucky's children succeed. Specifically in the Kentucky Impact Survey, there are intentional and connected questions that inform the KETS Master Plan. The following visual identifies key questions and corresponding teacher agreement percentages.



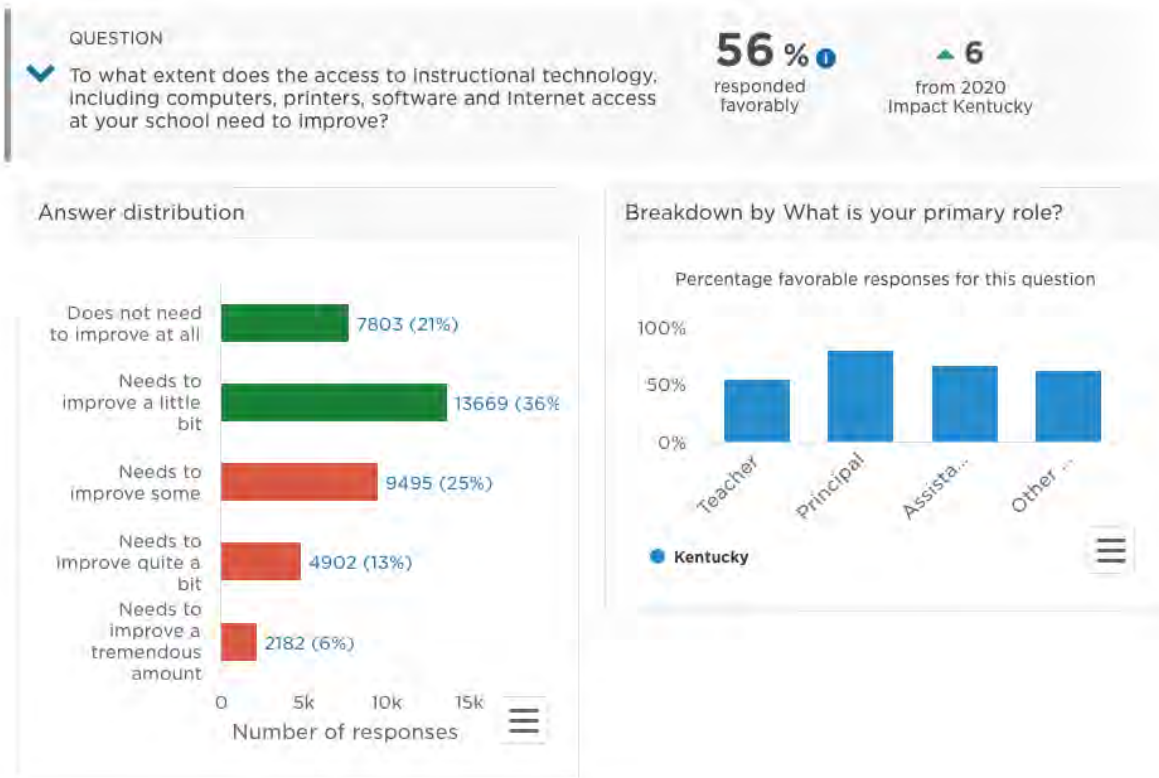


Figure A1. Instructional technology favorable responses from IMPACT KY teacher working conditions

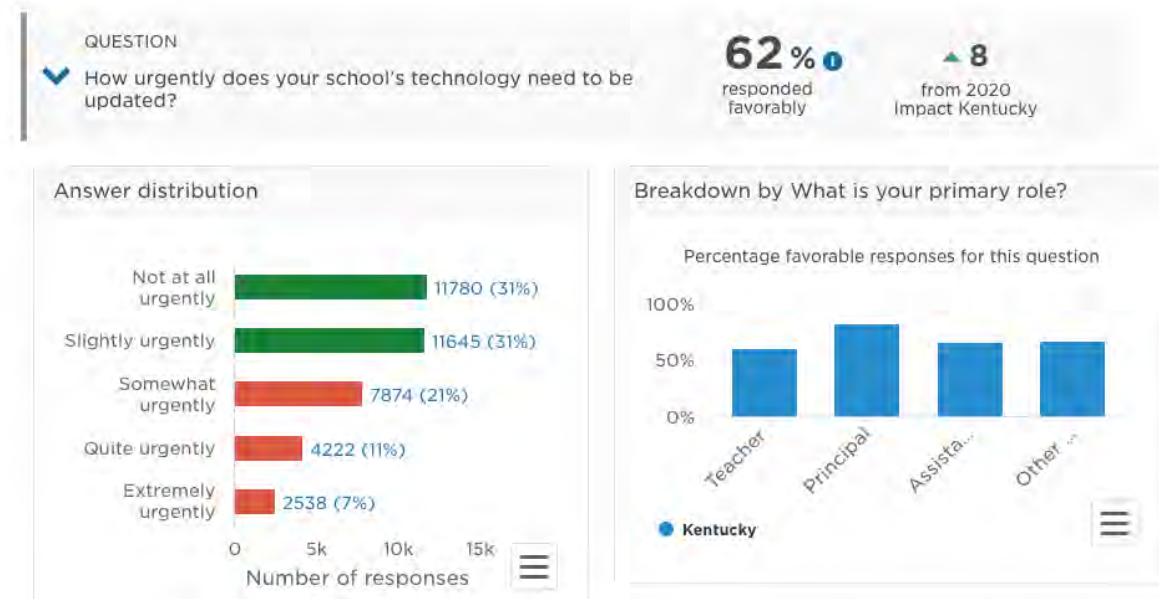


Figure A2. Instructional technology modernization favorable responses from IMPACT KY teacher working conditions



**Kentucky Broadband Task Force Report** - Created in 2004, the KBTF charge was to examine expanding broadband service in Kentucky and report findings to the governor and Legislative Research Commission. A key recommendation was the creation of the Kentucky Education Network.



**Office of Education Accountability Study of Educational Technology Initiatives** - This 2009 publication is the result of the Office of Education Accountability's (OEA) review of Kentucky's education technology, inclusive of funding, governance, and status of related initiatives and projects. The study names several accomplishments as well as some areas in need of improvement.



**Security and Privacy Best Practice** - Created in 2010, the Office of Educational Technology established standard security guidelines for Kentucky's 173 K-12 districts to ensure the availability, integrity, and confidentiality of information required for normal education operations.



**KSBA Review of Cloud-Based Technologies and Student Data Privacy** - Authored in 2014, the Kentucky School Board Association worked with KDE while taking an interest in cloud-based technologies and services where data may be accessed from almost anywhere if a person has a Web-capable device and Internet access.



**Statewide System of Support (SSoS)** - This study summarizes perceptions of the KDE Self-Assessment Team and additional KDE staff about strengths and areas of need in Kentucky's SSoS as well as major themes that emerged during the two-month self-assessment process.



**Task Force on Student Access to Technology** - The Task Force on Student Access to Technology was established by the 2012 General Assembly with the enactment of Senate Bill 95. The task force was charged with considering strategies for providing fifth and sixth-grade students with access to computing devices for school and home use and reviewing the statewide availability of broadband technology necessary for using the devices. To achieve the goals of the task force, the members chose to examine what Kentucky schools are already doing in the area of mobile computing devices, national trends, digital curriculum, and access to broadband.



**Governance of Education Data Security in Kentucky** - In December 2012, the Education Assessment and Accountability Review Subcommittee approved a research agenda for the Office of Education Accountability that included a review of the security of Kentucky's education information systems. The review discovered many best practices were in place but made recommendations in six key disciplines to ensure district-level security plans are created, implemented, audited, and enforced.



**Office of Education Accountability Study of Textbooks and Instructional Materials** (Instructional Resources Study) – This 2018 research report is the result of the Office of Education Accountability (OEA) study of the laws governing the adoption and purchasing processes for instructional materials for public schools in the commonwealth, a breakdown of instructional materials purchases across the state over a 10 year period, and highlights the shifting landscape of instructional materials from primarily print sources to technology-related sources. The study resulted in four major findings and also provides an overview of education technology resources in Kentucky school districts, primarily using technology information from the Kentucky Technology Readiness Survey.



**Auditor of Public Accounts (APA) Examination of the Kentucky Communications Network Authority (KCNA)** - The APA initiated a special examination of the KCNA in December 2017. The focus of the examination was to evaluate contracts, procurement, financing structure, and other areas of concern related to KCNA and the KentuckyWired project. The conclusions, detailed findings and recommendations, and opinions expressed in this examination report are those of the APA as provided for in KRS 43.050. This report was presented and delivered by the APA to the Program Review and Investigations Committee on June 14, 2018.



**Program Review and Investigations Committee KentuckyWired Investigation Status Report** - During their June 7, 2019, meeting, the Legislation Research Commission's Program Review and Investigations Committee brought forth a status report/update to the KentuckyWired Investigation. This was a follow-up and continuation of the Auditor of Public Accounts report completed and presented to this committee during their October 2018 meeting. The report outlines conclusions that Program Review staff view as the most significant along with the detailed findings that support these conclusions.

## External Studies

This section consists of studies created by external entities, which have proven to play a role in developing KETS Master Plan strategies.



**[The Technology Factor: Nine Keys to Student Achievement and Cost Effectiveness](#)** - Project RED, the group responsible for this study, seeks to understand and define the specific implementation strategies that are successfully transforming schools with technology. Project RED has identified nine key implementation factors that are linked most strongly to the education success measures.



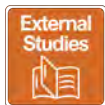
**[The New 3 E's of Education: Enabled, Engaged and Empowered](#)** - Released in 2011 by Project Tomorrow, this report utilizes data findings from the Speak Up national survey to determine how students are using emerging technologies to learn. The three key trends of mobile learning, blended learning and e-textbooks directly address the vision of students that are enabled, engaged, and empowered to learn.



**[Project Tomorrow: Building Teacher Capacity and Competency to Create Learning Experiences for Students](#)** - A report released by Project Tomorrow and Blackboard using the Speak Up initiative fall 2016 survey utilizes data points to examine the readiness of teachers to use digital tools to transform the learning process. Additional [annual Speak Up data findings and reports](#) continue to be relevant to the Master Plan.



**[Building Technology Infrastructure for Learning](#)** - In June 2017, the U.S. Department of Educational Office of Educational Technology released a comprehensive look at delivering broadband connectivity to schools for the purpose of student learning. The guide provides examples of how to connect a school district to broadband, connect students and staff inside the school building, roll out devices to staff and students, as well as responsible use and privacy considerations.



**[Kentucky Schools Launch Statewide Cloud-based Financial Management System](#)** - A two-year project completed in 2013 made Kentucky the largest school system in the United States utilizing a cloud-based financial system. The move provided districts with more reliable access to MUNIS services, significant cost savings, and disaster recovery capability that could not be achieved with a traditional on-premise solution.



**[2019 Education Superhighway \(ESH\) Kentucky Connectivity Snapshot](#)** - The ESH report tracks progress toward the K-12 connectivity goals established by the Federal Communications Commission (FCC). The report, published annually, highlights national and state progress toward achieving connectivity goals and the key requirements for meeting future connectivity needs: access to fiber or equivalent high-speed infrastructure, sufficient Wi-Fi equipment in classrooms to support 1:1 digital learning and affordable pricing.



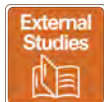
**[CoSN EdTech Trends and Funding](#)** - EdTech Trends and Funding: A CoSN Member Survey 2022, summarizes the responses of CoSN members to a short survey on edtech trends and funding, first conducted in 2020 to gauge the impact of the Covid-19 crisis.



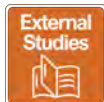
**[Artificial Intelligence and the Future of Teaching and Learning](#)** - This 2023 policy report by the U.S. Department of Educational Office of Educational Technology provides insights and recommendations for the use of artificial intelligence (AI) in education.



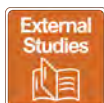
**[Advancing Digital Equity for All](#)** - Developed using the insights gathered from community-based organizational leaders and families during the Digital Equity Education Roundtables (DEER) Initiative hosted by the U.S. Department of Education's Office of Educational Technology in 2022, this guidance resource encourages leaders to create digital equity plans outlining strategies for increasing access to technology for learning and closing the digital divide.



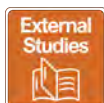
**[Forum Guide to Digital Equity](#)** - A 2022 resource published by the National Forum on Education Statistics seeks to assist federal, state, and local education leaders' understanding of digital equity and how it can be achieved through the collection of high-quality, comparable digital equity data.



**[Education Superhighway's Affordable Connectivity Program \(ACP\) Report and Toolkit](#)** - EducationSuperHighway's Affordable Connectivity Program Toolkit for local and school district leaders contains a step-by-step action plan, information on our enrollment assistance tool, and a resource hub with templates and customizable resources. The materials and data dashboards are designed for school districts of all sizes and provide lessons learned and best practices to make your efforts as impactful as possible.



**[State EdTech Trends Survey](#)** - The 2022 State EdTech Trends survey and report is the first attempt to track how state education agencies and policymakers are adapting to a digital world post-pandemic while also identifying state priorities relating to technology and education. KETS continues to leverage national EdTech trends to further align and gauge priorities.



**[How States Measure Digital Equity \(SETDA\)](#)** - From December 2020 through January 2021, SETDA and Dell Technologies (along with partnership work from the Council of Chief State School Officers - CCSSO) researched and published a report to better understand the data that states have captured related to digital equity. Thirty-four (34) states and the territory of Guam responded. Questions on the survey focused on data collected during the 2020 – 21 school year by state education agencies (SEAs). Kentucky is highlighted as a model for “How States Measure Digital Equity” with current and proposed benchmarks.



## Appendix B - Surveys and Results

[Digital Readiness Reports](#) - Key results of the District Digital Readiness collection are represented within the graphic below in conjunction with complementary elements obtained from multiple sources. This approach is designed to provide a meaningful story of the ways in which technology is both supporting and forming the education landscape within Kentucky. In addition to the detailed responses by region and district, the Digital Readiness portal provides an interactive map of the [top technology trends](#) within Kentucky on an annual basis. Additional sources of information used to triangulate the infographic story below are adoption metrics, BrightBytes Technology and Learning tool, IMPACT KY survey, and Project Tomorrow's Speak Up tool.

# Kentucky's K-12 Digital Readiness

We are headed toward greater and more meaningful digital interactions between family, school and community. We believe digital and future-ready foundations can:

- Help empower student personalized learning experiences and preparedness for college and the workforce
- Increase teacher productivity and digital workflows
- Enhance communications and invaluable collaboration models
- Expand data enhanced decision making, and provide a robust infrastructure for endless possibilities



## Digitally Ready Learning Environments

Digital access at school and at home helps us understand how "plugged in" and "connected" our learners are during the school day and beyond. Students without access to technology in school and at home are less likely to engage in 21st century learning skills. Ease of access is a precursor to the desired shifts in student outcomes powered by digital tools and resources. Strategies such as 1:1 and Bring Your Own Device (BYOD) are being adopted across Kentucky to help meet this need.



**100%**

of Kentucky K-12 public schools and district offices are connected by the most reliable, highest speed and quality fiber internet services in the country.

Greater than **332 kilobytes** per second bandwidth per student available through statewide fiber network service.



School fiber internet total usage increased **+247%** over the past 24 months\* while maintaining uptime of

**99.98%** \*October 2020-October 2022



**98%**

of students have internet access for school work beyond school campus



**95%**

of students report internet access at home



**87%**

of students feel as though their school encourages technology use for learning



**85%**

of teachers rate the speed of Internet at their schools as Average or Above Average

**.63 to 1**

Student to digital device ratio  
*that's better than 1 device per student*

Down **.04** compared to last school year

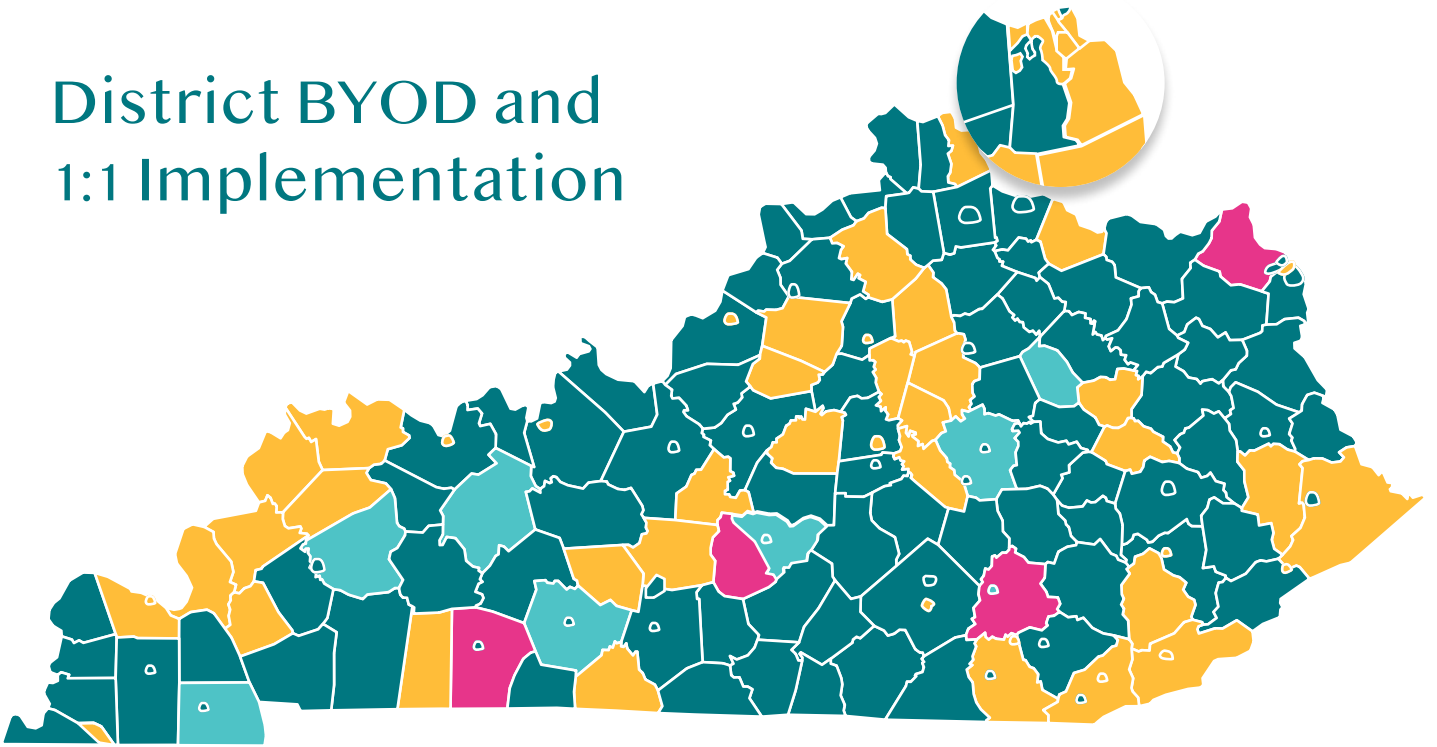
**970,000**

Student instructional devices

**1,110,351**

Student and staff devices

# District BYOD and 1:1 Implementation



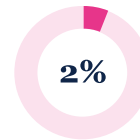
107 Districts with both BYOD and 1:1



52 Districts with 1:1 only



9 Districts with BYOD only



4 Districts without BYOD or 1:1



**100%** of schools provide Wi-Fi access to students.

Of these, **99%** of schools have implemented dense Wi-Fi networks capable of supporting BYOD or 1:1 initiatives.

## Digitally Empowered Learners

Strong online skills, such as confidence using shared digital workspaces, have been correlated with increased collaboration in the classroom. Students can think about concepts and interactions in more varied ways with the affordances of multimedia and multimodal representations. Students who have access to computers and the Internet are more likely to use technology more frequently and have better technology skills.



### Digital Communicator

**68%** of students are asked to write online regularly during the school year.

**69%** of students are asked to post and/or share their work online.

## Digital Designer

**88%**

of students use technology to demonstrate knowledge by creating videos, slide presentations, art, music, podcasts, etc.

**78%**

of students are asked to use digital tools to conduct experiments and/or take measurements.

## Digital Collaborator

Developing a level of comfort with digital collaboration outside of school helps students be more successful when collaborating with classmates, teachers, and other experts.



**85%**

of students are asked to collaborate using online documents.

**68%**

of students are asked to work with other classmates online.

**>53%**

of students in Kentucky utilize technology to engage with experts outside of the classroom

## Digital Citizen

Students 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.

**87%**

of student say their teachers talk with them about how to act respectfully while online.

**71%**

AREA FOR IMPROVEMENT

of students say their classmates always or usually treat each other with respect when collaborating online.

*Less than 5.2% say their classmates never treat each other with respect.*

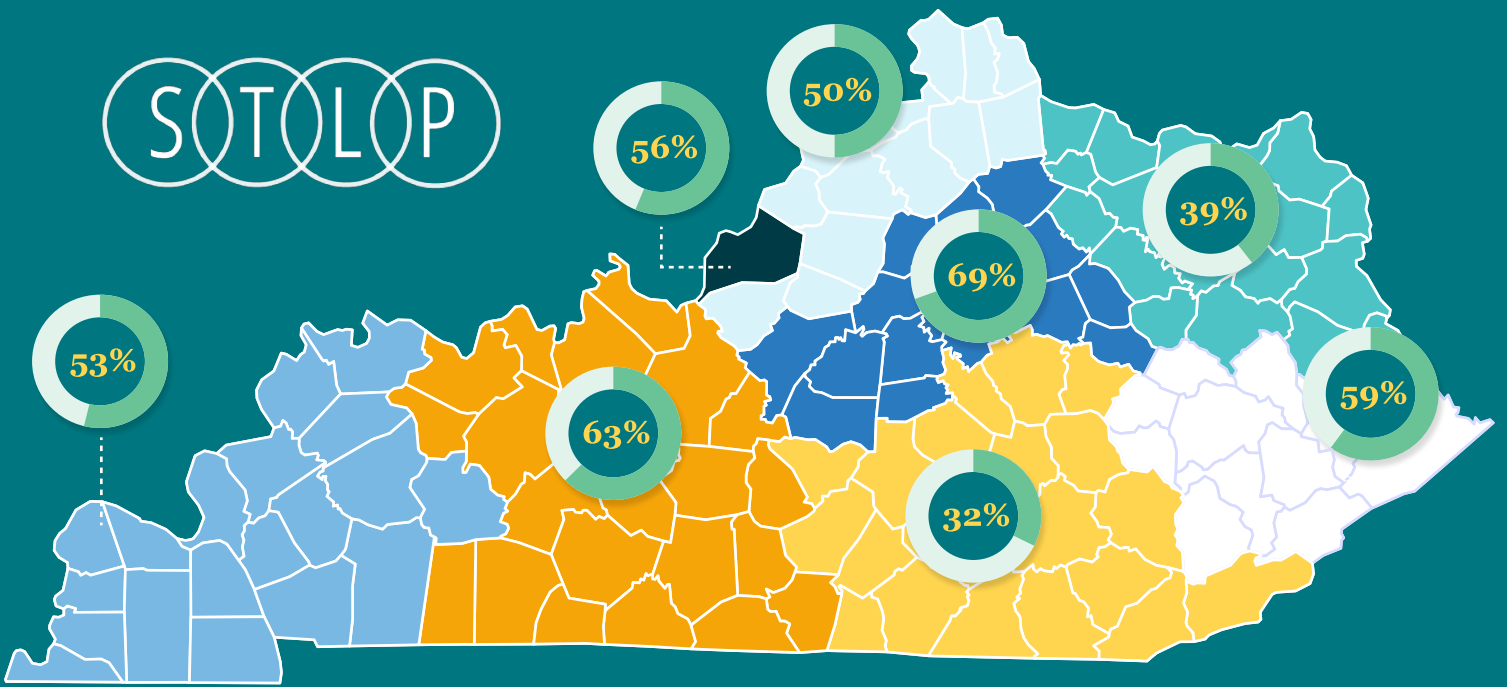
**97%**

of districts report having a strategic plan for teaching digital citizenship skills.

**90%** of students are easily able to find out if online content is trustworthy.



# SOTLOP



Percentages represent the number of schools in the region reporting an active STLP

Greater than **50,000** students from **751** schools in **129** districts.



program integrated into content



after school program or club only

## Digitally Empowered Educators

Teachers with strong foundational skills are able to handle administrative classroom tasks easily, including attendance and grading. Further, teachers who are confident in their ability to use foundational skills are often able to use them when learning new online and multimedia skills.

### Digital Learning Designer

Educators design engaging, learner-centered digital learning experiences and environments enabled by high quality digital content and resources providing student voice, choice and path.

How are Kentucky's teachers frequently engaging with students for instructional purposes?



**88%** of teachers have students use a device for learning at least a few times weekly.



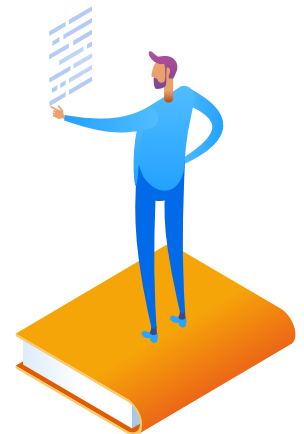
**75%** of teachers create and utilize instructional videos, discussion board posts, use digital curriculum, or lead online learning experiences.



**81%** of teachers create digital resources such as instructional videos, hyperdocs, choiceboards.



**84%** of teachers facilitate digital content usage by students through educational apps and websites.

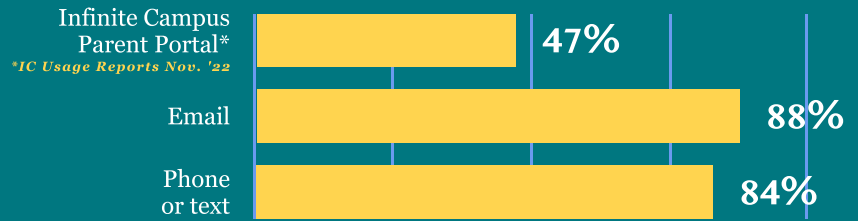




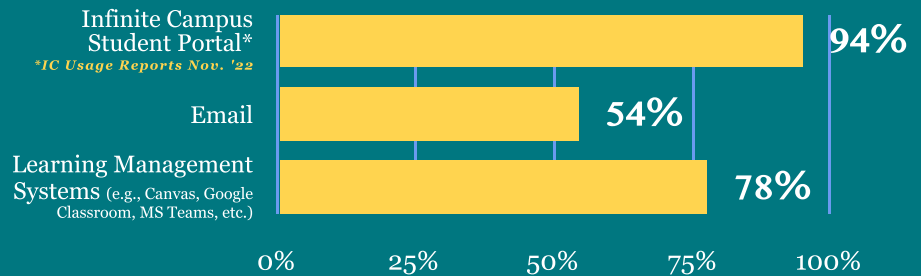
# Digital Communicator

## Kentucky's Educators Use a Variety of Ways to Stay Connected with Students and Their Families

### Methods for connecting with Parents



### Methods for connecting with Students



**94%** say communicating with students in-person happens most frequently.



KY is cited as a **top 3** state in teachers accessing and using quality data to raise achievement for all students (Data Quality Campaign).

## Digital Learning Collaborator

Educators are intentional to collaborate with peers, students, and experts outside the school to improve practice, discover and share resources and ideas, and solve problems.



**71%** of teachers report using social media, blog posts, etc. as a means of informal professional learning to discover new ideas and improve digital teaching practices.



**75%** of teachers collaborate with other teachers to design learning experiences using technology.



97%

of teachers have access to a part or full-time digital learning coach (DLC).

*Third year in a row with an increase in both full-time and part-time DLC roles and positions.*

**1,034** Library Media Specialists employed at the district or school level. Of these, **83%** report intentional collaboration and support of digital strategies for teaching and learning.



92%

of teachers feel highly confident managing students who are using technology.

79%

feel learning is more engaging when using technology.

### Digitally Empowered School Leader

81%

of school leadership feel learning is more engaging for our students when they're using technology.

97%

of school leadership feel strongly that they encourage teachers to try new things with technology.

92%

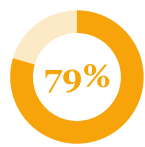
of school building leaders report regularly discussing technology during teacher evaluations.

## Tech Trends

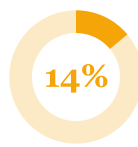
**1,176** large-scale, organized network attacks aimed at denying internet access to all Kentucky schools and districts were successfully mitigated.

### School Digital Device Footprint

*Totals may not equal 100% due to rounding*



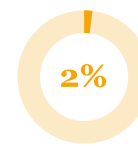
Chrome



Windows



iOS



Mac OS



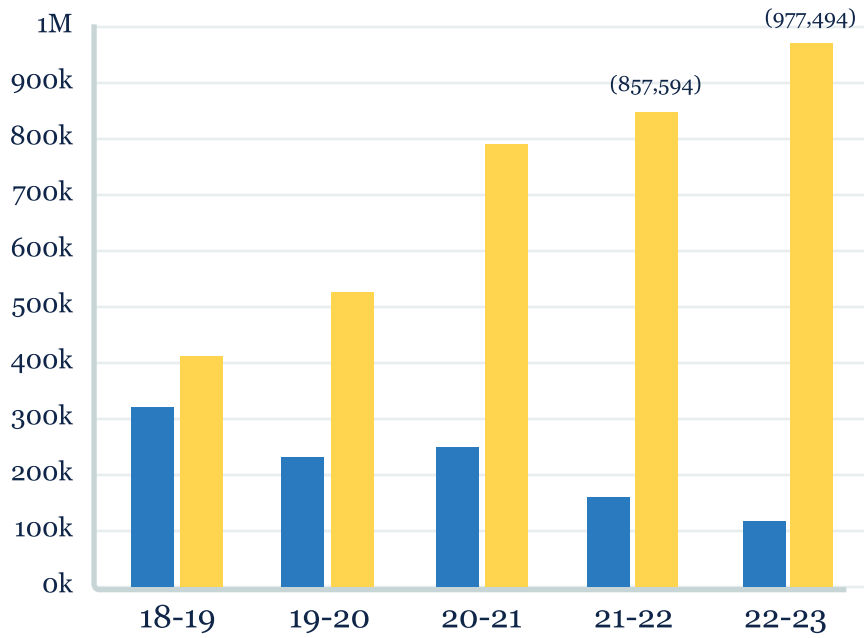
Android

**97%** of districts are using Google for Education. Of these, greater than **83%** integrated with Office 365 & Active Directory.

More than **4 Billion** unauthorized connection attempts against school networks are blocked annually by statewide security services.

# Traditional vs. Mobile/ Next Generation Devices

● Traditional Devices    ● Mobile Next Gen Devices



## Online & Virtual Learning

**88%** of districts report students taking online or virtual courses. Of these, **74%** offer a full-time enrollment option.

**45** districts offer online or virtual courses to students in other districts.

## Learning Management System

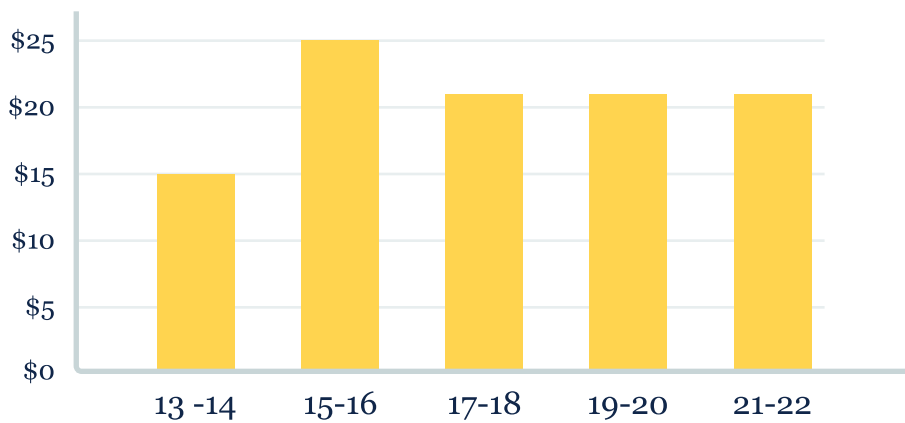
**92%** of districts sponsor a learning management system (LMS). The majority of adoption is with free cloud services. However, there is an upward trend toward paid solutions.

## K-12 Online Assessment

In 2022, **405,182** 3rd - 12th grade students in **100%** of Kentucky school districts successfully participated in high-stakes statewide testing, accounting for more than **1.6 million** testing sessions - resulting in the largest and most successful online assessment efforts of its kind.

## KETS Offer of Assistance

School Year Per Student



### Sources

**Kentucky Digital Readiness Report:** [https://applications.education.ky.gov/trs\\_reports/](https://applications.education.ky.gov/trs_reports/)

**Kentucky School Report Card:** <https://www.kyschoolreportcard.com>

**BrightBytes:** <http://brightbytes.net>

**Digital Driver's License (DDL):** <http://iDriveDigital.com>

**Google Analytics**

**Open House:** <http://openhouse.education.ky.gov>

## Appendix C - Supporting Resources and Guidance

Several state and national initiatives provide guidance and recommendations that directly influence the KDE's strategic direction and the Kentucky Education Technology System Master Plan. This section contains summaries of initiatives that collectively guide our daily efforts with links to the full publication or website.



**[U.S. Department of Education](#)** – The U.S. Department of Education (USDE) Office of Educational Technology implements policies and guidance on issues relating to statutory and regulatory compliance. The USDE Privacy Technical Assistance Center (PTAC) makes recommendations and provides resources for education stakeholders on issues around data privacy, confidentiality, and security practices related to student-level data systems and other uses of student data. OET aligns internal and district student privacy and data use guidance to USDE recommendations.



**[Kentucky Auditor of Public Accounts](#)** – While KDE may participate in various audits throughout the year, the largest in scale, and perhaps most beneficial, is the annual statewide audit by the Kentucky Auditor of Public Accounts (APA). OET addresses APA findings and implements required measures to ensure appropriate technology controls and procedures are in effect in daily operations.



**[Data Quality Campaign](#)** – OET has made great progress to collect useful data and make it available to educators at all levels. The Data Quality Campaign (DQC) is the nation's foremost organization advocating for effective data policy and use. OET participates in DQC initiatives and uses DQC resources to identify best practices to advance the continued development, refinement, and implementation of systems and processes that advance the effective use of data.



**[Council of Chief State School Officers](#)** – KDE leadership joins other state education agency heads in the Council of Chief State School Officers (CCSSO) to share and learn about best practices to support local education agencies in meeting the needs of each student in Kentucky's schools. CCSSO provides leadership, advocacy, and technical assistance on major educational issues. CCSSO seeks member consensus on major educational issues and expresses their views to civic and professional organizations, federal agencies, Congress, and the public.



**[Future Ready Schools](#)** – Future Ready Schools® helps education leaders plan and implement personalized, research-based digital learning strategies so all students can achieve their full potential. Future Ready Schools provides resources and support to ensure that local technology and digital learning plans align with instructional best practices.



**[Kentucky Center for Education Statistics \(KYStats\)](#)** was established in 2012 and developed a new Kentucky Statewide Longitudinal Data System (KSLDS) through a grant from the United States Department of Education, Institute for Education Sciences Statewide Longitudinal Data Systems program. This project is 2nd generation KSLDS and provides a repository that extends beyond K-12 education and data available on the KDE [Open House](#) data repository site that was developed as a more economical solution for public data reporting. The



KYStats collects and links data to evaluate education and workforce efforts in the Commonwealth. KDE is a partner and supports this work.



**Project RED** – Project RED conducted the first and only national study of education technology to focus on student achievement and financial implications. In their research of nearly 1,000 schools, Project RED discovered a replicable design for successfully introducing technology into the classroom - one that leads to improved student performance and cost benefits. Now in Phase III of the Project RED work, the team is focusing on 20 "signature districts," of which, Kentucky has a representative district included in the research. The latest research results are released in the form of a series of Project RED briefs. The original Phase I and Phase II research findings will continue to inform the KETS Master Plan.



**Guide to Implementing Digital Learning** – The State Educational Technology Directors Association (SETDA) provides strategic planning resources in the areas of planning, professional learning, digital content, broadband, devices, and tech support to assist leaders in preparing for digital learning experiences for students.



**Evaluating 1:1 Computing Programs in Elementary and Middle Schools** – Published December 2014, Hanover Research Group reviews 1:1 computing programs in elementary and middle schools to ascertain best practices. The review also recommends goals and provides guidance on how to measure progress toward implementation.



**Three Lessons from Rigorous Research on Information Technology** – The Massachusetts Institute of Technology conducted a study to determine relevant studies on the use of educational technology and its effects on student learning. The study identifies three key findings through studies that are scientifically rigorous.



**Mobility and Cloud** – The Center for Digital Education examines key components of digital learning such as mobility, devices, security, and cloud-based resources as well as training for educators and how these tools are transforming campus and classroom spaces.



**Personal Data Security Study (HB 341)** – House Bill 341, passed by Kentucky Legislature in 2006, directed KDE to perform a study of the requirements for data security and the notification process if a breach were to occur. This study provided the basis for the Data Privacy Best Practice Guidelines highlighted in [Appendix A](#).



**Gartner: 7 Cloud Computing Security Risks** – A study by Gartner published in 2008 reports the seven risks to cloud computing as being privileged user access, regulatory compliance, data location, data segregation, recovery, investigative report and long-term viability. The study provides recommendations to where the risks are and how to prepare for them ahead of time.



**CoSN's Annual Infrastructure Survey** – The 2016 version of the CoSN E-rate Infrastructure survey addresses five key components of affordability, network speed, network capacity, reliability, digital equity, security, and cloud-based services. Trend data from the survey results is presented to assist technology leaders with planning. The key finding of this survey was the growth in required

Internet bandwidth due to the number of students with devices. [CoSN Action Toolkit - June 2018](#)



**DDL - Digital Citizenship** – Published in 2016 by the Kentucky School Boards Association, this article highlights KDE and district efforts to train students in digital skills to prepare them for not only digital interactions within the school but outside of the building in an increasingly connected world. These additional publications have highlighted this work: [ISTE Learning and Leading](#) and [The Journal](#).



**Kentucky Long-term Research Policy Center** – Created by the Kentucky General Assembly in 1992, the KLTPRC was envisioned as an independent research entity that would be able to help the Commonwealth take advantage of opportunities and avoid problems. Funding for the KLTPRC was suspended in 2010 due to an overall dire budget situation, but most of the work, a great deal of which centers on education, has been preserved on the Kentucky Department for Libraries and Archives website.

### Evaluating and Measuring EdTech Investments -

The following figures from Gartner are used as strategic resources when researching technologies to implement throughout Kentucky K-12 schools and districts.

[Accessible descriptions of charts on this page](#)

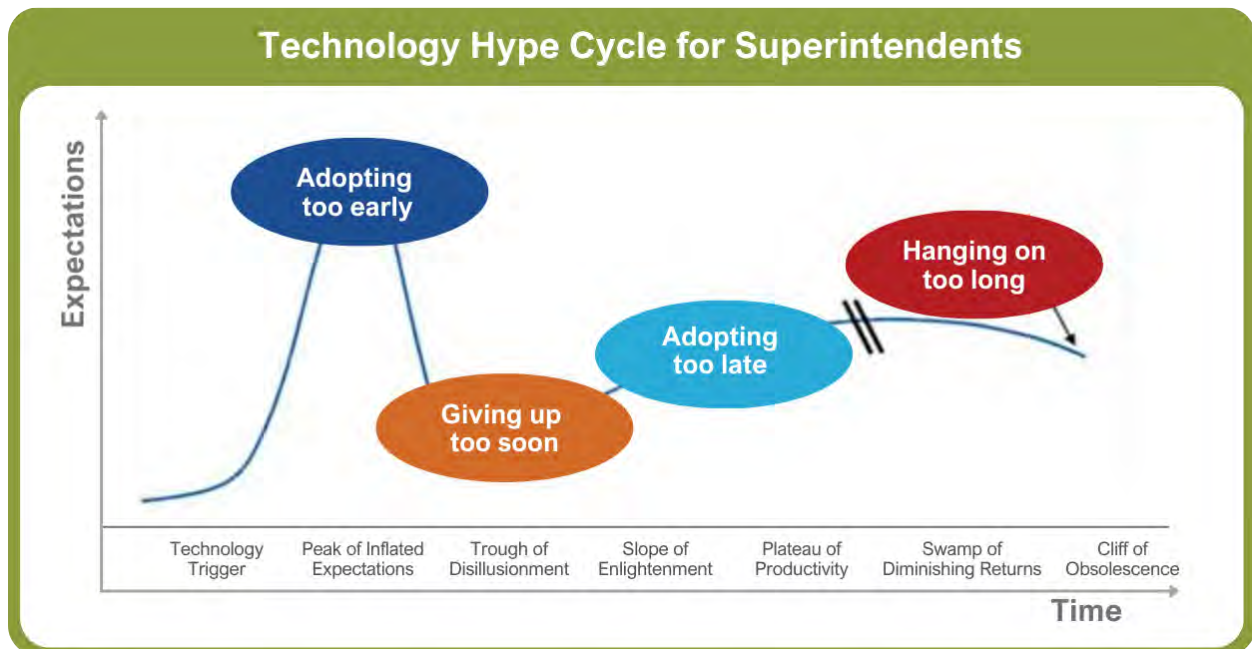


Figure C1. Correlation of time and expectations related to technology adoption

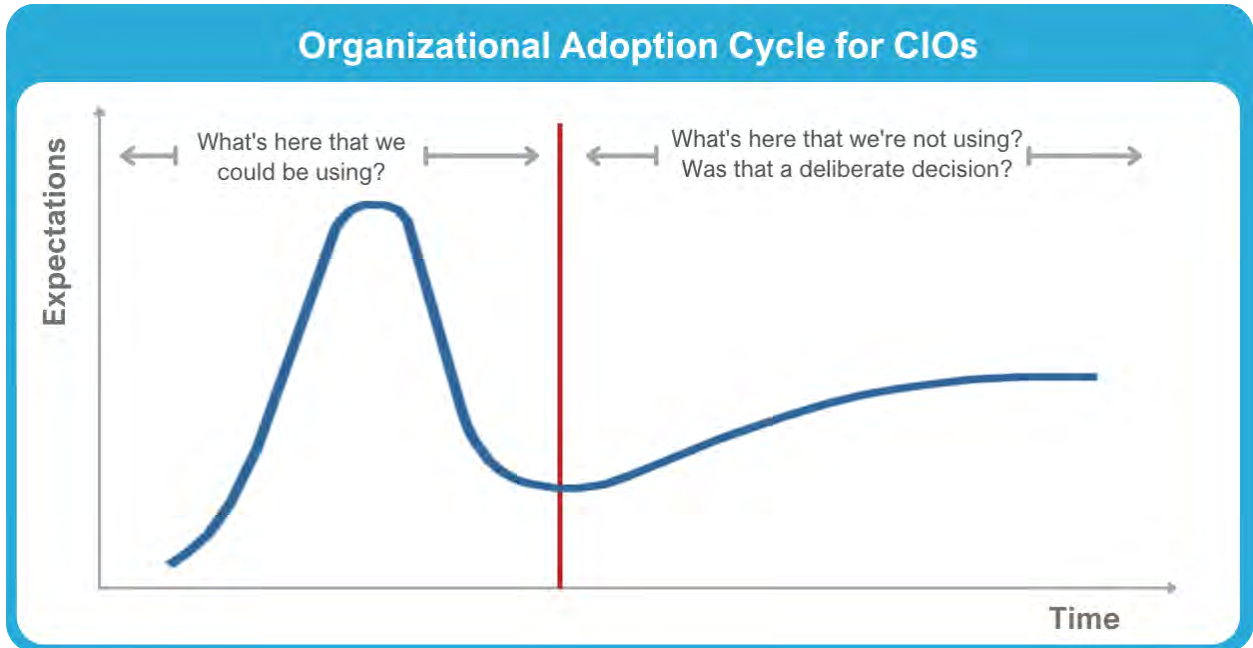


Figure C2. Technology adoption cycle considerations for chief information officers

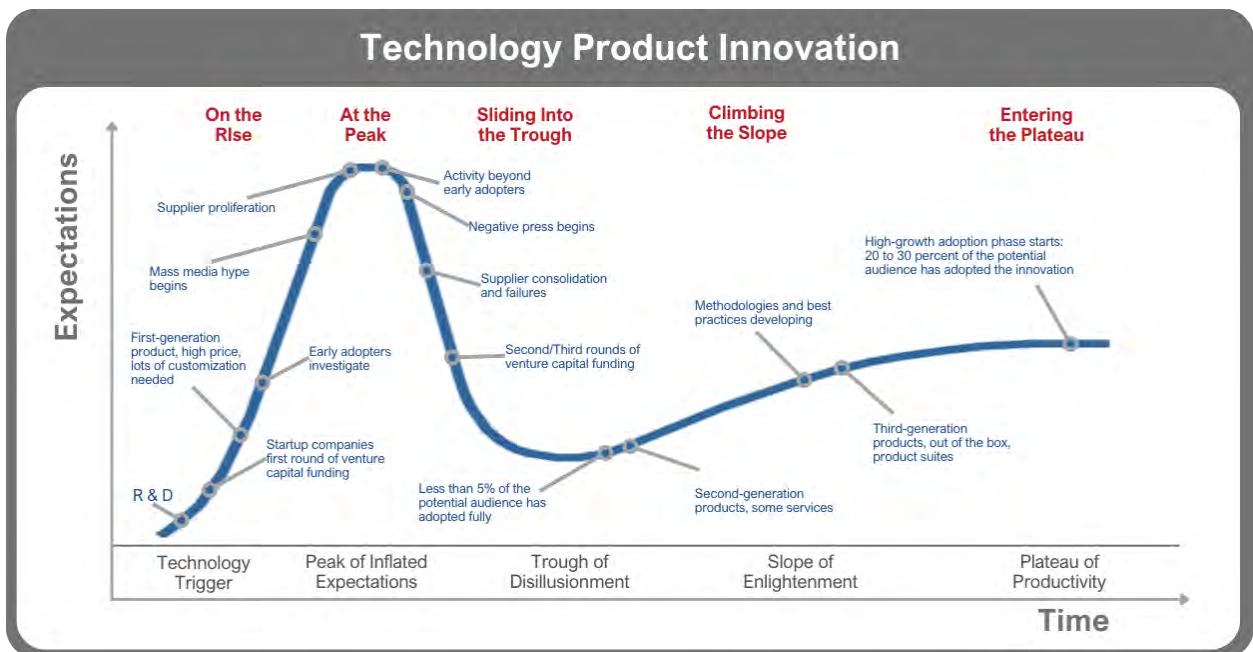


Figure C3. Private sector technology product innovation

## Appendix D - Master Plan Governance

[Referenced Kentucky Revised Statutes \(KRS\) and Kentucky Administrative Regulations \(KAR\) may be found here.](#)

### ***The Master Plan for Education Technology***

With the beginning of the Kentucky Education Technology Systems (KETS) program, KRS 156.666 established the Council for Education Technology as an advisory group to the Kentucky Board of Education. This council was responsible for providing guidance on the development of the Master Plan for Education Technology. Over time, the responsibility for guidance and development of the Master Plan transitioned to the Office of Education Technology within the Kentucky Department of Education (KDE).

KDE's responsibility was further codified with KRS 42.746, clarifying that technology services to local school districts fall completely under the Kentucky Department of Education. The services include, but are not limited to, developing, implementing, and maintaining the direction, standards, and architecture of the K-12-focused technology infrastructure.

### ***Approval and Update of the Master Plan***

The Kentucky Board of Education and the Legislative Research Commission shared initial approval authority for the Master Plan pursuant to KRS 156.670 (1).

KRS 156.670 (7) places responsibility for updating the plan, as necessary, with the council and the board. Updates are to be reported to the Legislative Research Commission.

### ***Standards***

KRS 156.160 (1) stipulates that the Kentucky Board of Education has a statutory mandate to prescribe standards, that school districts shall meet. Among these are standards for the "acquisition and use of educational equipment for the schools as recommended by the Council for Education Technology" (KRS 156.160 (1)(c)).

KRS 156.670 (3) states that the Master Plan shall "establish and implement a uniform and integrated system of standards and guidelines for financial accounting and reporting which shall be used by all school districts."

KRS 156.670 (4) requires that the education technology system provide "comprehensive, current, accurate, and accessible information relating to management, finance, operations, instruction, and pupil programs which are under the jurisdiction of the Department of Education." The chief state school officer must certify these data to support the administration of the Support Education Excellence in Kentucky (SEEK) fund, which provides funding to support the public school system in accordance with KRS 157.330. The guaranteed base funding level for each district is computed based on the prior year's average daily attendance (KRS 157.360 (1)), which is calculated based on data collected within the school and accumulated at the district level. To support this funding process, the Kentucky Board of Education has the obligation and authority to establish standards for administrative systems at the district and school level, including, but not limited to, uniform codes, processes, and software systems. The statutes do not restrict the standards-setting



responsibilities noted above to any particular source of funds. The Kentucky Board of Education, therefore, has the authority and obligation to specify standards for education technology to which school district acquisitions of hardware and software are subject regardless of source of funds. The board may specify, as it deems necessary, a standard for any line item in the Master Plan budget.

These standards are set forth in the Master Plan for Education Technology and incorporated by reference into Kentucky Administrative Regulations (KARs) pursuant to 701 KAR 5:110 and in compliance with KRS 156.160 (1).

701 KAR 5:110 requires districts to procure only those technologies that meet KETS standards, if a standard for that category has been established, regardless of source of funds.

## ***Education Technology Trust Fund***

The Education Technology Trust Fund is established in the Finance and Administration Cabinet by KRS 157.665 (1) to provide education technology for the public school system.

Funds are appropriated to the trust fund in each biennial budget. All interest earned on money in the fund is retained for reinvestment in the fund. All money credited to the fund, including interest, is to be used for education technology as defined by the Kentucky Board of Education's Master Plan and does not lapse (KRS 157.665 (2)).

The School Facilities Construction Commission, within the Finance and Administration Cabinet, is responsible for distributing state funds to local districts through the education technology funding program (KRS 157.650).

To participate in the education technology funding program, a local public school district must have a technology need described in the district plan and approved by the Kentucky Board of Education (KRS 157.655 (3)).

The base level of assistance to each district is determined by dividing the total amount available in the trust fund by the total of the prior year's average daily attendance of the eligible districts times the individual district's prior year's average daily attendance (KRS 157.660 (1)).

Funds transferred to each district are to be used only for the projects included in the district's plan (KRS 157.660 (2)).

Trust funds are transferred to a local district after the School Facilities Construction Commission certifies the district's need for assistance. All other expenditures from the fund require the approval of the Kentucky Board of Education (KRS 157.655(3)).

## ***Calculation of Technology Need***

Any technology procured or secured by a district, in a category for which a KETS technology need standard is established, regardless of whether the item is used to reduce the technology need or not, must meet or exceed the KETS standard in compliance with 701 KAR 5:110.

There are four categories of technology need including the required People Side of EdTech:

1. operations
2. maintenance
3. incremental replacement
4. new technologies

Expenditures in operations and maintenance are necessary to sustain current levels of service. If technology need within the operations and maintenance categories are not addressed in accordance with program guidelines, the integrity, sufficiency, and capacity of the district technology infrastructure will degrade until services are seriously curtailed or eliminated. These include items such as workstation repair, instructional software improvements, school printing services repair, instructional file server repair, school management software improvements, initial/ongoing technology integration, professional development, student technology leadership services, Internet services, telephone communications to parents, distance learning service, help desk services, email services, enterprise data system access, and school financial management services.

The technology need for incremental replacement constitutes a framework for the replacement of various technology components on a scheduled basis over time, in accordance with the life cycle of each item or service. These include items such as instructional devices, instructional servers, assistive and adaptive technology, school laser printers, classroom color printers, wireless networks, student handheld devices, and high-speed fiber networks.

The technology need for new technologies also includes products and services that are more discretionary in nature (e.g., customizable district-by-district based on local priorities, plans, and needs) – products and services that are today only marginally available or affordable and products and services that are perceived as needs in the planning horizon.

The Kentucky Board of Education will acknowledge and approve the technology need for each district. In the KETS Operational Plan, the board will also be reviewing the amount of funds available to go toward and specifically considering approval of using KETS funds to help address that technology need. Districts must continue to secure alternative funding sources beyond the KETS funds, using federal funds, local grants, or other sources, to fully fund the technology need. Budgeting skills will be required to sustain and implement KETS.

Approval of the technology need amounts for local school districts is the first step required to allow local school districts to receive state funding to assist them in funding hardware, software, personnel, professional development, and other technology initiatives that will support students in achieving academic excellence.

Staff certify that districts recommended by the Commissioner of Education have met all the statutory requirements of KRS 157.655 and KRS 157.660 required to adequately describe

their technology need and current KETS inventory before Offers of Assistance are distributed.

The following must occur before a district receives its funding:

- Kentucky Board of Education approves technology need for districts;
- School Facilities Construction Commission (SFCC) approves technology need;
- The district successfully meets all of the statutory requirements of KRS 157.655 and KRS 157.660;
- The district verifies its final ADA count to KDE's Division of School Finance; and
- KETS staff calculates Offers of Assistance based on these variables.

The districts must follow the requirements of the SFCC by receiving approved board action and proof of deposit of funds into a local interest-bearing technology account. The SFCC will then wire funds to the district's technology account.

## ***Additional KETS Regulatory Information***

[Referenced Kentucky Revised Statutes \(KRS\) and Kentucky Administrative Regulations \(KAR\) may be found here.](#)



### **701 KAR 5:120 Prevention of Sexually Explicit Materials Transmitted to Schools Via Computer**

KRS 156.675 (enacted during the 1998 General Assembly via SB 230) requires the Kentucky Board of Education to promulgate administrative regulations to prevent sexually explicit material from being transmitted via education technology systems; directs each local school district and school to use the latest available filtering technology to ensure that sexually explicit material is not made available to students; requires the Department of Education to make filtering technology available to every school without cost; and, requires each local school district to establish a policy regarding student Internet access.

The resulting administrative regulation, 701 KAR 5:120, fulfills the requirements. At the school district level, the regulation requires that each school district adopt and implement an acceptable use policy in every school that conforms to the guidelines issued by the Department; specifies school district responsibilities for implementing and maintaining filtering capabilities in every school; and prohibits the use of electronic mail systems which do not meet state product standards.



### **702 KAR 1:170 School District Data Security and Breach Procedures**

In 2006, the Kentucky General Assembly passed House Bill 341, which mandated KDE to conduct a study of the requirements for data security and a notification process when a data breach occurs. Since that legislation, the threat and occurrence of data breaches has only increased.

While the House Bill 341 study remains an effective cornerstone of guidance for data security, new bills (KRS 61.931, et seq. or "House Bill 5" and KRS 365.734 or "House Bill 232") went into effect in 2015 and added clarity, definition, and direction.

KRS 61.932 protects personal information in three particularly important ways:

1. Requires the safety and security of personal information held by state agencies, including the Kentucky Department of Education (KDE), public school districts, colleges, and universities AS WELL AS any entity/vendor/organization with which they have a contract;
2. Requires notification of specific state agencies and victims of a data breach; and
3. Sets up some basic time limitations and procedures that **MUST** be followed in the event of a data breach involving personal information.

KRS 365.734 specifically protects student data by limiting what a cloud service provider can do with student data and by requiring cloud computing service providers that have contracted with Kentucky public schools and districts to maintain the security of student data.

In conjunction with these two state laws, the Kentucky Board of Education (KBE) promulgated 702 KAR 1:170. This KAR requires the Kentucky Department of Education (KDE) and school districts to annually acknowledge to their respective boards, by August 31 of each year, that they have reviewed guidance from the [Data Security and Breach Notification Best Practice Guide](#), [\[Appendix A\]](#) and implemented appropriate security for each data system for which they are responsible or provide reasons why safeguards have not been put in place, such as lack of resources.

## ***Learner-Connected Technology Standards***

The Kentucky Academic Standards (KAS) for Technology contain the minimum required technology standards that all Kentucky students should have the opportunity to learn before graduating ([minimum graduation requirements](#)) from a Kentucky high school.

The [technology standards](#) address what is to be learned, but the standards do not address how learning experiences are to be designed, what resources should be used, or how the standards are to be demonstrated. The current technology standards are included in Kentucky Academic Standards (KAS) and will be updated during the life of this KETS Master Plan.

Additionally, Kentucky has developed statewide, comprehensive [K-12 Computer Science Standards](#) and Library Media Standards. These standards are based on national frameworks and are designed for all students with identified cross-curricular connections. All three sets of academic standards will help establish a new emphasis for all learners connected to education technology and this Master Plan.



### **704 KAR 8:010 Kentucky Academic Standards for Computer Science**

[Kentucky's Academic Standards for Computer Science](#) were envisioned standards that would afford students the opportunity to engage in critical thinking, computational thinking, and problem-solving through computer science. The writing team wanted standards that would:

- Initiate cross-curricular connections to enhance the understanding of computer science skills and concepts;
- Establish a continuum of computer science competencies K-12;
- Provide opportunities for ALL students to engage in computer science experiences and advanced coursework to prepare them for future success; and
- Prepare students to address a critical workforce need related to computer science knowledge and skills.

Kentucky defines 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. The computer science standards focusing on this academic discipline outlined in this document provide foundational opportunities essential to the preparation of students for post-secondary education and careers. This regulation was adopted by the Kentucky Board of Education in October 2018.





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

704 KAR 8:090 incorporates by reference the Kentucky Academic Standards for Technology, which contain the general courses of study and academic content standards of technology, for use in Kentucky's common schools. [Kentucky's Academic Standards for Technology](#) is now available at [KYstandards.org](https://www.kystandards.org). These standards identify and define 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.

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. The 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.

Kentucky officially recognized Technology Academic Standards in 2008 initially, but as a result of the passage of Senate Bill 1 (2017), the standards were revamped and adopted by the Kentucky Board of Education in August 2020.



## 704 KAR 8:100 Kentucky Academic Standards for Library Media

[Kentucky Academic Standards for Library Media](#) is now available at [KYstandards.org](https://www.kystandards.org).

KRS 158.102 requires boards of education for each local school district to establish and maintain library media centers in every school to promote information literacy, and technology in the curriculum, and to facilitate teaching, student achievement, and lifelong learning. KRS 158.791 details the provision of high-quality library media programs to support reading proficiency. This administrative regulation incorporates by reference the Kentucky Academic Standards for Library Media, which contain the general courses of study and academic content standards of Library Media for use in Kentucky's common schools.

704 KAR 8:100 incorporates by reference the Kentucky Academic Standards for Library Media, which contain the general courses of study and academic content standards of

library media for use in Kentucky's common schools. Although these standards do not have a connected graduation requirement, they are, by law, the standards that must be used if a school has a library media program or elective (which includes all K-12 public schools in Kentucky). The Kentucky Academic Standards for Library Media are included in the same 6-year cycle of review and revision as all other content area standards.

After a nearly 2-year design and writing process, these standards were presented and approved by the Kentucky Board of Education in October 2020.



### **704 KAR 3:535 Full-Time Enrolled Online, Virtual, and Remote Learning Programs**

704 KAR 3:535 establishes minimum requirements for the operation of full-time enrolled online, virtual, and remote learning programs in school districts for grades Kindergarten through grade 12. This regulation formalizes a path to full-time enrollment for students in grades Kindergarten through Fourth. It additionally creates a second design option and formal funding model (paralleling seat-time funding) for full-time enrollment in online, virtual, and remote learning programs (alongside the legacy Virtual/Performance-based models for grades Five through Twelve).

This most recent regulation was presented and adopted by the Kentucky Board of Education in August 2022.

# Appendix E - KETS Standards and Establishing Technology Need

## *Enterprise Standards*

From the inception of the Kentucky Education Technology System, the existence of standards has provided Kentucky with "the edge" over all other states. Standards represent a uniform set of specifications and guidelines that are leveraged to ensure system interoperability and reduce operational complexity, therefore reducing the overall Total Cost of Ownership. Our approach is an enterprise design in which all districts are working toward common objectives. Kentucky is committed to the guiding principle of viewing technology investments from an enterprise perspective. The Enterprise Architecture and subsequent standards represent the overall plan and a living process for designing and implementing education technology (EdTech) solutions to serve both instructional and administrative functions.

An information technology architecture and related set of standards are vital to ensure the compatibility of the current education technology projects and future education technology initiatives. The Enterprise Standards are important for defining the rules by which technology is envisioned, implemented, and managed.

Since 1992, enterprise standards have anchored all instructional, administrative, and technical aspects of Education Technology. These standards have afforded the state a) significant savings in the initial procurement of technology equipment, b) equitable supportability regardless of geographic location, c) a foundational infrastructure to provide for secure, global ease of access, d) statewide collaboration via various forms of electronic mediums (email, telephonic, video-conferencing), e) statewide adoption of the Internet as an instructional resource, and f) uniform education technology applications to address both student management and financial management. All Commonwealth of Kentucky public school districts share in the benefit of each of these efficiencies due to a common set of standards. Standards minimize the retraining required when staff moves between schools or districts and lessen the annual support required after implementation. In a Kentucky K-12 study, the Gartner Group noted the enterprise standards approach saves Kentucky millions of dollars annually. The KETS enterprise standards are formalized into three different categories of standards: Technology Needs Standards, Architectural Standards, and Product Standards, with the first two (technology need standards and architectural standards), commonly referred to as "technical standards."

**Technology Need Standards** represent the equitable baseline of all technology components required to adequately address both the education technology instructional and administrative needs of K-12 and involve the following two separate but complementary criteria.

- Component ratios (quantities) – Expectation that all districts maintain minimum ratios, based on average daily attendance, total number of schools, total number of teachers or total number of classrooms, for each technology component to effectively address equity and ease of access for all instructional and administrative activities.

- Component refresh cycle (years) – Replacement of components on a scheduled basis over time, in accordance with the useful life cycle of each item or service.

**Architectural Standards** (sometimes referred to as Technical Standards) are vendor-neutral Information technology specifications and guidelines that define system interoperability into the KETS enterprise. These are in place to enforce supportability, cost-effectiveness, security, usability, availability, and accessibility.

The following [13 Architectural Design Principles](#) underlie the Architectural and Product standards and are used to guide KETS solution design by helping ensure that KETS is "doing the work right." They serve as standard requirements and are considered in combination with the specific functional requirements of each project. Any given solution may not fully meet one or more of these principles. However, if that is the case, there should be solid rationale and explicit understanding prior to moving forward with the design or solution.

1. Equitable – Solutions should provide equal value and benefit to schools and districts regardless of local budgets, existing equipment and software, geographical location, or organization size.
2. Always On, Anywhere, Anytime, Any Device – Solutions should be available and supported 24/7, accessible from a wide range of devices, and accessible from any physical location.
3. Supportable – Solutions should use equipment, software, and services that are efficiently supportable and manageable by both KETS staff and the responsible vendors.
4. Learning First – Solutions should prioritize instructional and learning needs above administrative needs.
5. Partners Involved – Solutions should maximize partner accountability by making all possible use of partner capabilities for development, infrastructure, ongoing operations, and support.
6. Education Driven – Solutions should cost-effectively meet a well-defined educational/programmatic/administrative need of school districts and/or KDE.
7. Up-to-date: Solutions should use leading-edge technologies and offerings.
8. Measurable: Solutions should provide easy-to-use mechanisms to report on system usage.
9. Integrated – Solutions should integrate with existing KETS infrastructure while aligning with KETS strategy for the future.
10. Usable – Solutions should be easy, efficient, and pleasant to use for their target user populations.
11. Secure – Solutions should protect confidential data, their own integrity, and the KETS environment against accidental or malicious damage.
12. Cloud – Solutions should be based on cloud offerings (ideally SaaS).
13. Extensible: Solutions should allow tailoring for unique per-district requirements.

Kentucky K-12's education technology product and design standards are "the" big edge that Kentucky K-12 has over the other 49 states and a big reason KETS is viewed as a national leader in education technology. Kentucky K-12 is the national leader in having education technology products and design standards/policies for all our schools, districts, and the Kentucky Department of Education (KDE) program areas. This allows Kentucky K-12 to (1)

significantly reduce costs, (2) provide equity of price and service to all districts, (3) make all the technology-enabled components work reliably together on a large scale with smaller EdTech staffs, (4) quickly integrate different large EdTech systems together and (5) provide great cyber security.

**Product Standards** provide the purest alignment and maximizing of efficiencies within KETS when KETS product components are utilized. These technology components embody architectural design/configuration specifications established by the award of a KETS vendor contract that resulted from a formal bid request issued by open, competitive solicitation or a request for proposal (RFP). Contracts are awarded in accordance with the Kentucky Model Procurement Code through the Kentucky Finance and Administration Cabinet, Office of Procurement Services. These contracts are intended to provide the most impressive levels of interoperability, minimal support complexity, and the most conservative total cost of ownership across K-12. In addition, the purchasing power of the state is maximized by leveraging the weight of the entire organization to buy a product standard. Specific technology (hardware or software) deemed by either the KDE or Commonwealth Office of Technology as an enterprise component made available via a statewide procurement vehicle (state or KETS contract) are considered KETS and/or State Product Standards.

Any technology procured or secured by a district, in a category for which a KETS technology need standard is established, regardless of whether the item is used to reduce the technology need or not, must meet or exceed the KETS standard in compliance with 701 KAR 5:110 and must be reflected in statewide reporting (through the Technology Activity Report and Digital Readiness Collection).

The following technology will not be used to reduce the technology need of the district for calculating the amount of offers of assistance for which the district is eligible.

- secured through a local initiative that is not procured with public revenues
- procured with federal categorical funds

The following table lists KETS Standards categories and those that are further defined with Technology Need, Architectural, and/or Product Standards.



KETS Standards			
Category	Technology Need	Architectural	Product
Basic End-User Workstations (formerly student workstation)	✓	✓	
Advanced End-User Workstations (formerly teacher/staff workstation)	✓	✓	✓
Assistive and Adaptive Technology	✓		
School and District Printing Services	✓		
File Servers and Storage	✓	✓	✓
School and District Network Wiring	✓	✓	
School and District Network Components	✓	✓	✓
School and District Voice Services	✓	✓	
School and District Voice Lines	✓		
Software, Apps and Digital Content	✓		
Student Information System	✓	✓	✓
Financial Accounting System	✓	✓	✓
People Side of Education Technology	✓		

STLP Leadership & Services	✓		
<b>The Internet</b>	✓	✓	
- KY K-12 District Internet Hub Fiber Connection to the Internet (KDE provided).	✓	✓	✓
- School to KY K-12 District Internet Hub Fiber Connection	✓	✓	
Professional Development <i>Teachers, School &amp; District Staff</i>	✓		
Classroom Instructional Technology ( <i>projectors, interactive displays, etc.</i> )	✓		
Identity & Directory Services ( <i>defines who you are, what you have access to, and under what conditions</i> )	✓	✓	✓
Electronic Mail	✓	✓	✓
<b>Cybersecurity (protecting people, data, and systems)</b>	✓	✓	
- Virus Protection	✓	✓	✓
- Software Update Services	✓	✓	
- Firewall	✓	✓	✓
- Internet Safety/Security	✓	✓	✓

Management Solutions (web filter)			
- Virtual Private Network (VPN)	✓	✓	✓
- Distributed Denial of Service Protection (dDoS)	✓	✓	✓
- Private Internet Protocol (IP) Services	✓	✓	✓
- Domain Name Services (DNS)	✓	✓	✓
State Shared Services for Schools and District Offices	✓	✓	✓

[Accessible version of the KETS Standard Chart](#)

**Data Standards** help districts and the KDE to ensure data is consistently entered statewide and allow accurate responses to various reporting requirements and the sharing of data between systems. Specific data elements must be collected to ensure that information is available for federal and state reporting and other data sharing. KDE has established standards for various categories of data, including many collected through the [Kentucky Student Information System](#) and the District Financial System (MUNIS). Additionally, Figure E1 calls out the five essentials of having and using high-quality data that KDE continues to work on with partners and stakeholders. These essentials also help push on the understanding of the specific data elements that can be expected to be accurate and complete, as well as the data elements that have lower expectations (of being accurate and complete).

# 5 ESSENTIALS OF HIGH-QUALITY DATA



## 1 Does a law require this data?

Is there statutory, regulatory, or policy language requiring the collection and/or reporting of these data?

1

2

## 2 Is there district value for its use?

Are districts and schools collecting these data for operational or strategic purposes in order to build connections, deeper knowledge and drive decisions?



## 3 Is the data verified locally?

Are school or district data stewards checking for completeness, accuracy and referencing common data standards?

3

4

## 4 Is the data verified at the state-level?

Are state-level data stewards checking for completeness, accuracy and referencing common data standards to support a state-wide healthy data diet.



## 5 Are there incentives or penalties?

Are funding allocations, accountability, or student/school/district/state eligibility determinations based on the data? Is the data connected to goals such as student progress? If reported inaccurately, what fallout would there be?

5

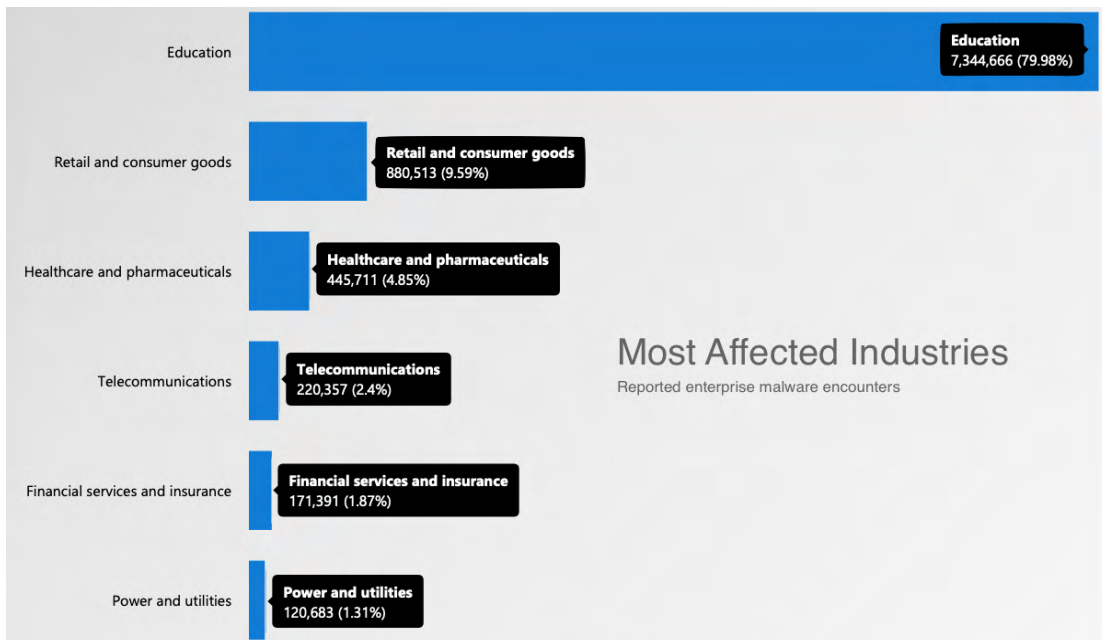
Figure E1. Essentials for High-Quality Data.

# Appendix F - Cybersecurity Statement

Just like we have over the past 30 years, KDE will continue to promote, recommend, and potentially require tools and processes to be put in place as needed to protect, as much as possible, students, staff, and our K-12 learning environment. We pursue this path with the intent of preserving and safeguarding the quality of learning experiences and educational opportunities. These elements, which encourage universally available access to high-quality resources and information, are crucial in bridging educational gaps and improving the learning process as a whole. The coming years will require us to be vigilant, flexible, and forward-thinking to ensure that we minimize risk while at the same time not over-emphasizing security to the point that it endangers learning.

School districts and state departments of education across the nation, including in Kentucky, continue to face ever-increasing cybersecurity threats. K-12 Education has been heavily targeted by cybercriminals ranging in size and sophistication from single individuals to nations/states. Evidence shows that attacks are coming from nearly every nation including the U.S.A. where bad actors, with malicious intent, have exercised the ability to purchase, for a few dollars, sophisticated attacks aimed against our schools and districts. In fact, the number of unauthorized connection attempts against Kentucky K-12 networks that are blocked annually by statewide security services has increased from 4 billion annual attempts to over 76 billion attempts.

The chart below was provided to us by Microsoft. Based on their data from May of 2023, it clearly shows that education is the leading target for malware and ransomware attacks by a wide, wide margin. While these data represent a snapshot, it is a picture that has looked the same for several years and there's no evidence it will change or that the attacks will lessen. In the face of such attacks, it makes sense that Kentucky's schools and districts would respond by placing a priority on cyber-defenses.





*Figure F1. A report detailing the most affected industries in terms of cybersecurity attacks. [Source](#)*

Today's Master Plan for Technology recognizes the need for adequate and appropriate cybersecurity as well as how cybersecurity is not a separate requirement to be implemented on its own but rather integrated with the educational process.

## Appendix G - KETS Timeline



Kentucky Department of  
**EDUCATION**



# The History of Education Technology in Kentucky Schools

*Kentucky K-12 has been and continues to be the pioneer and national leader in most aspects of education technology since 1992.*

## Kentucky Department of EDUCATION

### Technology Assistance Team

A Technology Assistance team was established in every geographic region of the state consisting of a KETS Engineer (KE) and an instructional leader. This team played a crucial role in establishing the awesome customer relationship that KDE has with districts today.

### Student Technology Leadership Program (STLP)

First in the nation to establish and provide a spotlight for students using technology to learn or help their school/community

### Model Districts Selected

Eight model sites, strategically located across the state, selected to demonstrate how KETS would bring life to the vision of the Kentucky Education Reform Act (KERA)

### First KDE Website

Created to provide enhanced communications to schools, districts, parents, researchers, other organizations and the general public

### KETS Standardized on Ethernet

Adopted the Ethernet networking standard over Token Ring as the primary standard for school and district technology networks due to Ethernet components being much more affordable

### Federal E-rate Program

Kentucky was the best-positioned state in the nation to take advantage of this new federal funding opportunity because of the state and district education technology plans and existing statewide education technology contracts for eligible components. Kentucky schools have received over \$545 million for telecommunication lines, Internet access and networking components since 1998 and remains among the top states in the nation in E-rate funds received. State level E-rate reimbursements funnel to districts as KETS offers of assistance (where they are matched 1:1) to support district eligible E-rate services thus creating a unique 3 to 4 bang for the dollar that assist districts' purchase of other instructional technologies.

### Internet Safety and Security Measures (SB230)

Internet content safety measures for every school

### KETS Phase 1 Completion

Provided a basic set of administrative and instructional education technology tools for every K-12 classroom, school and district office

### 2001-2006 KETS Master Plan for Education Technology

The 2001 Master Plan kicked off Phase 2 of the KETS, building on the basic EdTech toolset and focusing on the ongoing costs of maintaining and incremental replacement, the people costs needed, and the concept and value of shared services.

### Instructional Device Upgrade (IDU)

Legislators appropriated \$50m to replace aging student and teacher workstations.

### Kentucky Information Highway (Version 2)

Provided increased high-speed data and Internet capacity for every school and school district office

### First KY EdTech Leaders Webcast

Scott County Schools hosted KETS leadership for the first district EdTech leaders webcast. This is a monthly event that has continued since then.

1992

### Birth of Kentucky Education Technology Systems (KETS)

A direct result of the 1990 Kentucky Education Reform Act (KERA), KETS ensured basic and equitable anytime, anywhere, always-on access to instructional and administrative education technology services for all students, teachers and administrators.

### 1st Master Plan for Education Technology

The first Master Plan addressed instructional challenges of the 90's and beyond, as educators prepared Kentucky schools for the great changes to come as the world entered into the digital age.

### First Microsoft Mail Implementation

First in the nation to have email capabilities for all students, teachers and administrators

### Rollout of District Administrative System

First in the nation to provide a local area network, Internet and office productivity software to every district · Shelby County schools were the first pilot site in 1994-1995.

### Every School District Connected to the Internet

First in the nation to connect all school districts to the internet via high-speed network connections provided by the first Kentucky Information Highway Contract (KIH 1)

1995

### MUNIS a Common Financial System for Every District

First in the nation to provide those applications deemed most critical: Accounts Payable, Personnel, Payroll, Budget, General Ledger and Purchasing

1997

### Statewide Student Information System

First in the nation to implement a common statewide student information system

### Statewide KETS Service Desk

First in the nation to provide dedicated education technical assistance to all school districts

### Kentucky Virtual High School Launch

Every Kentuckian seeking high school level coursework provided opportunity to enroll in for-credit, enrichment or college preparatory classes taught by Kentucky certified teachers and receive credit from their local high school; courses delivered online to schools, homes and other places with Internet access available anytime and anywhere--meeting the needs of students

2000

### Statewide Identity Management Service

First in the nation to provide enterprise directory services to all schools and districts allowing secure access to the Internet and web-based instructional material

### Statewide Software Update System

Provided a uniform and timely method to download and distribute Microsoft software and security updates for all K-12 Windows workstations and servers

2004

### Statewide Antivirus System

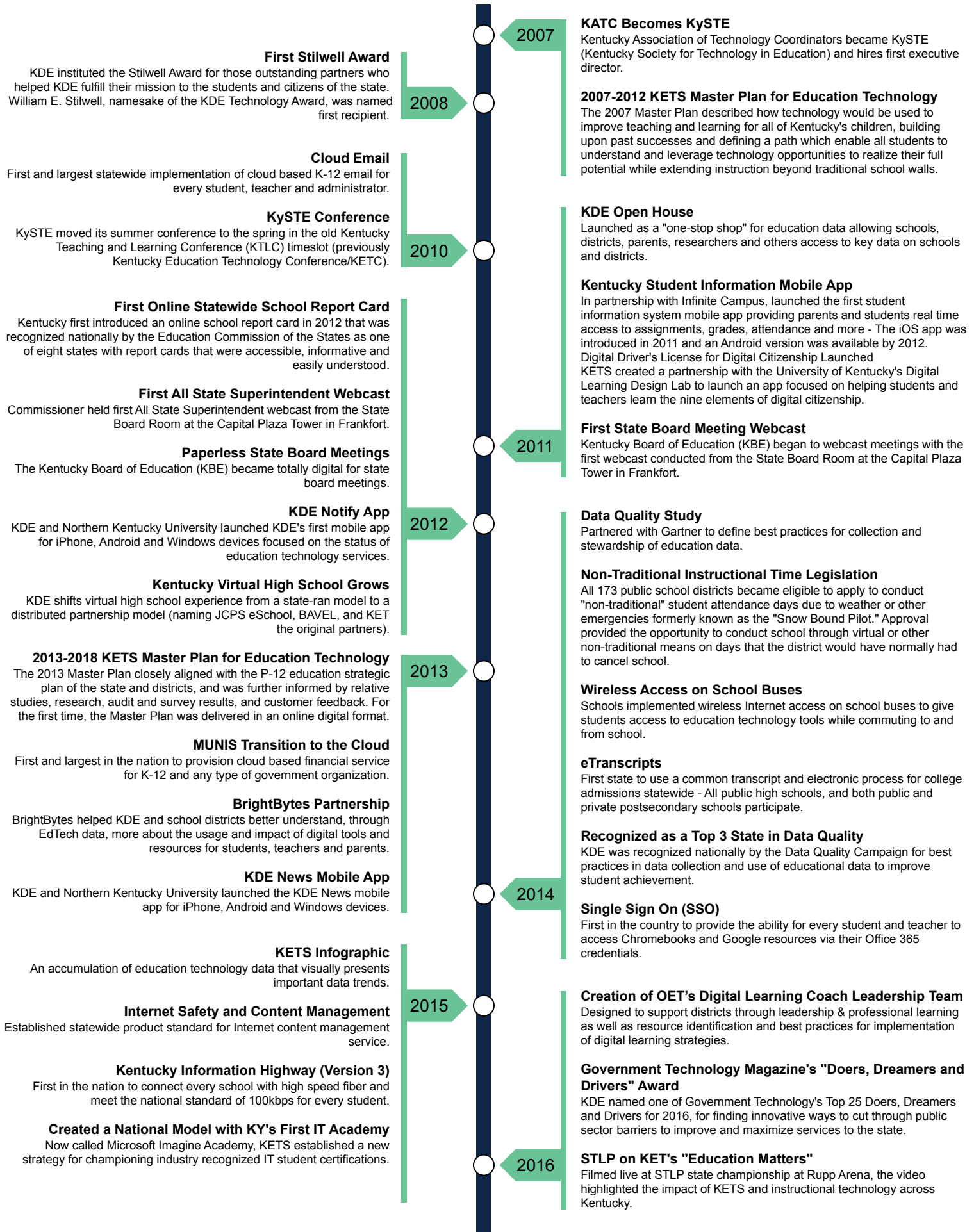
Provided antivirus licensing and management services for every district and school including all K-12 Windows and Apple computers and servers

2005

### First Statewide STLP Championship at Rupp Arena

Started as statewide celebration and competition of student technology use-- By 2017, attendance has grown to 14,000.

2006





2017

### The People Side of Education Technology

First in the nation study and tool that addressed the people side of K-12 education technology.

### Infinite Campus Migration to the Cloud

Partnered with Infinite Campus to add security, improve efficiency and reduce statewide costs by leveraging a private cloud environment for the Kentucky Student Information System.

### School Cloud Firewall

First in the nation to implement a complete cloud based firewall security service for every school district.

### William T. Nallia Award

KDE received the William T. Nallia award from the Kentucky Association of School Administrators that reflects a spirit of innovation and cutting-edge leadership while bringing higher levels of success to all children.

### Successful Pilot of Future KY K-12 voice/telephone communications via the cloud by KDE the agency, KSB and KSD.

### EdScoop's EdTech Heroes Award

KDE received the EdTech Heroes Award as one of the top 25 states making a difference in "EdTech Heroes: 25 State Leaders Making a Difference," a project that highlights states that demonstrate innovative practices and leadership in harnessing technology to support education.

### Largest Statewide MUNIS Disaster Recovery Test

Successful completion of first statewide disaster recovery test of cloud-based KY K-12 financial services (MUNIS) used by all school districts.

### KY K-12 Online Testing – High School End of Course

Highly successful first, large-scale "field test" of online testing in KY K-12. A total of 131,442 test sessions were administered to 97,747 students representing 169 school districts. This included end of course assessments for grades 9 through 12 in biology, Algebra II and English II.

### KDE's KY K-12 EdTech presentation to US Congress committee in Washington DC; KY K-12 is the pioneer and overall national leader in most aspects of K-12 education technology

KDE was chosen by Chief Counsel of State School Officers (CCSSO) to present KY K-12 EdTech successes over the past 25 years and to represent the other 49 states on recommended approaches to K-12 cybersecurity.

### Statewide KETS Service Desk Reaches Milestone of Service

Reached major milestone of 250,000 service requests by our in-house, dedicated education technical assistance team to all school districts.

2018 – 2024 KETS Master Plan for Education Technology  
This next phase of the Master Plan builds upon the successes of the previous plans back to 1992 and includes items KY K-12 continues to do well, areas to improve upon and new items to be integrated. The studies, research, standards, governance and technology needs for the state and districts that play a critical role in executing the Master Plan are also identified.

### KY K-12 Email Upgrade/Transition to Microsoft/Google Email

Based upon feedback from KY K-12 district EdTech leaders, students and teachers, added Gmail as a KY K-12 product standard to our existing KY K-12 e-mail standard of Microsoft Office 365 e-mail for a better experience using Microsoft's Education tools and Google's G-Suite. Two-thirds of districts chose to upgrade to the current version/design of Microsoft Office 365 and one-third of the districts chose to transition to Google's Gmail.

### PBS Learning Media Launch

Created a new partnership between KET and PBS bringing more than 100k standards-aligned video resources free to Kentucky school districts.

### Data Visualization Tools

Enhanced the overall value and intuitiveness of the Student Information System (Infinite Campus) through use of interactive data visualizations created in Tableau to provide school and district administrators easier access to real-time actionable data.

2018

2019

### Federal E-rate Rebate Program Maximized

\$50M applied for by KY K-12 for federal E-rate eligible products and service, which could lead up to \$120M in KY K-12 edtech buying power.

### KY K-12 Online Testing – High School K-PREP

Large scale online summative K-PREP testing success of 180,000 tests for 90,000 of KY high school students that goes beyond the 2018 EOC test.

### School Safety (SB1) Anonymous Reporting Tools for Schools

Voice and digital anonymous reporting tools mandated in 2019 school safety legislation (SB1) are in place.

### Kentucky Educator Certification and Ethics System RFI

Request for Information (RFI) is in place to begin transition for the aging, unsupported systems with a single, modern, cloud-based solution.

### Updated KY K-12 Internet Services Capabilities for all 173 KY K-12 Districts

Using a different approach, upgrade/replace the aged electronics in each of the 173 KY K-12 Internet hub sites in school districts, which help all KY K-12 schools better connect to the existing KDE provided fibered on-ramp service to the Internet (aka, KIH3).

### 2019 Making IT Happen Award

KETS leaders recognized for multiple years with the International Society for Technology in Education (ISTE) award honoring outstanding educators and leaders who demonstrate extraordinary commitment, leadership, courage and persistence in improving digital learning opportunities for students - (2009, 2011-2013, 2015, 2016, 2018 and 2019).

### New KY K-12 School Report Card (SRC) Suite

Introduced a new SRC having four components, with the primary focus of providing data that KY K-12 students and parents are most interested in seeing/knowing. The SRC is conveniently accessible through a mobile app and provides data that is easily understood by the average person. The card includes a near real-time portal for students and parents to securely access their current daily info (e.g., grades, academic assignments, class schedule, and attendance) and publicly accessible annual snapshots of school and district-level data.

### First Academic Standards for Computer Science

Adoption by KY Board of Education and approved by legislature. Marks the first time academic standards for computer science have been developed and redefines Computer Science education in Kentucky. Technology Competencies as Minimum Graduation Requirement Beginning for students entering high school in the fall of 2020, graduation requirements include the ability to demonstrate performance-based technology competencies.

### Computer Science & IT Academy Launch

Creation of a joint venture with OET and CTE to support rigorous computer science professional learning for teachers as well as teacher and student course support in the demonstration of computer science standards and industry certification exam vouchers in ALL computer science courses and pathways.

### Statewide Creation and Expansion of Digital Learning Coach Network

With further commitment to the OET/ KETS' People Side of K-12 EdTech study, districts across the state began identifying Digital Learning Coaches (DLC) to provide support to administrators, teachers, students and parents and KDE launched the first ever statewide DLC support network. Their focus is to assist teachers in maximizing the effective use of technology for learning, differentiating instruction, and providing rigorous, relevant and engaging learning experiences for all students. Digital Learning Coaches provide a vital, real-time professional learning role for district-by-district customized digital learning experiences design, digital workflows, digital relationships, digital collaboration and student-design digital products (all of which are tied to remote and distance learning). Due to the strength and quickly proven value of this network prior to a global pandemic, district leaders are swiftly tapping more learning leaders to join the KY K-12 DLC Network.



### Library Media Statewide Leadership Selected

Kentucky becomes one of only a handful of states to establish a dedicated Library Media leadership role. This new role will continue to push Kentucky K-12 public schools to nation leading boundaries and set new expectations for the role of library media leadership, instructional technologies, literacy, and learning.

### Record Setting STLP Growth

The 2019 STLP journey began with 1800 STLP school team projects and close to 60,000 KY K-12 STLP students competing in November and December. Student participation in regional events grew beyond capacity and at such a high rate, a 9th STLP regional event was added to accommodate the increased participation in the nation's best and largest Student Technology Leadership Program.

2019

### Kentucky Conducts the Largest and Most Successful K-12 Online Assessment in Kentucky History

KY once again broke new ground completing by far the most successful and largest "Field Test" to date of the KY K-12 online summative testing initiative and distinguishing KY from the nearby states that had failed.

The numbers speak for themselves with 771,767 tests completed by 390,373 students across 3rd-8th and 10th-11th grades, and 172 KY school districts with near zero issues. No other state has come close to experiencing this level of success with deploying online testing for their K-12 students.

2020

2020

### All KY K-12 Schools Quickly Pivot to NTI

In response to a global pandemic and due to KY's nation leading digital readiness, 100% of Kentucky public schools quickly pivoted to implement plans for continuation of learning through the statewide Non-Traditional Instructional (NTI) time program with heavy digital connectedness and technology enabled services tied to digital, remote and distance learning. Digital learning and collaboration saw new heights in KY K-12, due to our nation leading digital readiness. Had we not been putting the right things in place for the past 25 years, there would have been no way that we could have pivoted to nearly 100% digital experience options in all 172 school districts overnight. KY K-12 is "the" pioneer and "the" national leader in most aspects of education technology. Therefore, KY K-12 is in a much better position and prepared for online, digital, distance, virtual and remote teaching and learning due to more cloud based services than the other 49 states. Because of NTI, KY was able to not only keep going but finish the school year versus shutting down way early like other states.

### First Totally Virtual KBE Meeting

The Kentucky Board of Education (KBE), in an effort to practice social distancing, held its first ever virtual meeting using Microsoft Teams where every KDE staff member, KBE member and other presenters were physically at different locations. It was streamed live and accessible to the public on the Kentucky Department of Education's YouTube channel meeting all requirements of KY's open meetings law. Kentucky's successful implementation is either the first or one of the nation's first 100% virtual board meetings complying with all provisions of open meetings law. Our model quickly set an example that KY school districts, other KY state agencies and other states across the nation recognized and requested our assistance in replicating for their virtual board meeting needs.

### STLP State Championship Quickly Pivots to 100% Virtual Competition Instead of Cancelling

In response to the global pandemic, STLP quickly pivoted to host a 100% virtual state championship experience. Student participation was higher than expected and demonstrations were judged by virtual panels and countless volunteers. The live broadcast awards show had thousands of viewers with a record social reach. The journey to KY K-12 STLP State Championship began with 1800 STLP school team projects and close to 60,000 KY K-12 STLP students competing in November and December at our 9 regional competitions throughout Kentucky.

### First Statewide Staff Password Requirements

First in the nation to implement a uniform strong password baseline for 100% of staff accounts within all K-12 districts and the Kentucky Department of Education

### KY K-12 School Report Card (SRC) is Recognized One of the Nation's Best

Kentucky's School Report Card provides students, parents, schools, districts and communities access to the data needed to evaluate performance, plan for the future and celebrate successes. Data Quality Campaign recognized Kentucky's SRC as one of the best in the nation.

### KDE First in KY State Government and One of the First In the Nation to Quickly Pivot to a 100% Telework/Telecommuting Service

KDE staff and all 172 school districts made the fast mass quality transition to telecommuting, virtual meetings, distance digital learning, and virtual cloud operations services. However, had we not been putting the right things in place for the past 25 years, there would have been no way that we could have pivoted to nearly 100% virtual across an entire Department of Education and for all 172 school districts overnight. KY K-12 is "the" pioneer and "the" national leader in most aspects of education technology so KY K-12 is in a much better position and prepared in telecommuting, virtual operations, virtual resources, virtual meetings and cloud based services than the other 49 states since we've been doing all of these for over a decade. All 172 of our KY K-12 school districts are already connected by high speed, high quality, reliable fibered Internet service and all schools already have dense Wi-Fi within each school building. KY was the first state to have all of this in place for every school district throughout a state. All of this uniquely positioned KDE staff and our KY K-12 school districts to quickly transition and continue to provide services and instruction in light of the COVID-19 pandemic all while simultaneously further fortifying our already rock solid security posture.

### Next Generation Internet Bandwidth Upgrade for KY K-12 Schools

KDE staff and AT&T moved KY K-12 schools to a 200 Gbps Internet platform in May. This upgrade provides K-12 students and staff in Kentucky access to a very safe and reliable Internet experience to support direct or distance teaching and learning. The amount of computers in KY K-12 and KDE is 8 times larger than the rest of KY state government and all local county governments combined and thus it should be no surprise given KY is "the" national leader in cloud based computing that we use 20 times more Internet bandwidth than the rest of KY state government and local county governments combined. We know of no other educational entity, worldwide, that has this amount of quality, safe Internet resource to support teaching and learning.

### Kentucky K-12 Further Commits to Computer Science Growth

Kentucky continues to lead surrounding states and the nation in its dedication to expanding access to Computer Science (CS) for all students. Kentucky supports more Girls Who Code (GWC) clubs and co-curricular groups than any other GWC partner. Kentucky is also one of 18 states with seven or more of the Nine Policies to Make Computer Science Foundational for all students. Not even California, who boasts industries of innovation in technology, has met as many statewide CS policies as Kentucky. KDE has added a statewide dedicated K-12 CS Lead to organize professional learning programs for teachers, meet the requirements of the newly signed Senate Bill 193 to report on CS implementation efforts annually, and ensure that Kentucky's graduates compete in the 21st Century workforce. This dedication to CS will not merely guarantee that Kentucky graduates compete in the job market but will also empower them to rout their competitors.

### Online Registration Available for all KY Schools

Utilized CARES Act funds to make online registration (OLR) available statewide to help combat the COVID-19 pandemic and ease back-to-school challenges. OLR allows parents and guardians to enroll their child from home, allows staff to process enrollments from home, and eliminates many of the paper forms passed between parents and staff. Infinite Campus worked in partnership with KDE to roll out OLR Prime in an expedited 30-day approach for the 2020-2021 school year.

### Kentucky Expands KY K12 Internet Safety Beyond the School Campus

In response to the COVID-19 global pandemic and due to KY's nation leading digital readiness, Kentucky became the first and only state to leverage Internet Safety technologies on behalf of all schools and districts by expanding the K-12 partnership with Lightspeed Systems to ensure that 100% of all students, teachers, and staff have safe and protected access to internet resources while at school or at home. This statewide implementation helps districts manage distance learning programs more efficiently while effectively meeting both state and federal requirements as a technology protection measure.

### Academic Standards Finally Become Machine Readable and Interactive with Interoperability

Kentucky Academic Standards (KAS) are now available for import into Infinite Campus and other digital platforms. KDE partnered with IMS Global and Infinite Campus to import KAS to all districts in July 2020. This interactive digital companion can provide direct support and vital linkage for teachers utilizing features such as progress monitoring, standards-based assignments (grading), and lesson planning in IC.

### Revised Academic Standards for Technology

Kentucky again reaffirms the value of education technology to transform learning experiences through the adoption of revised Kentucky Academic Standards (KAS) for Technology. The adoption of 704 KAR 8:090 by the KY Board of Education was also approved by the legislature with an effective date of March 2, 2021. The KAS for Technology are required standards as they define the competencies that are tied to minimum graduation requirements, where all Kentucky graduates must demonstrate performance-based competencies in technology.

### First Academic Standards for Library Media

For the first time ever, the Kentucky Board of Education (KBE) adopted and the legislature approved the Kentucky Academic Standards (KAS) for Library Media learning, 704 KAR 8:100, with an effective date of May 4, 2021. This marks the first time KAS for Library Media have been developed to further define the required learning standards when students are engaged through library media related learning. These standards are comprehensive and cross curricular as they fit into learning inside of other content areas. These new learning standards fit tightly into every school as every public school in Kentucky is required to have a library media center with a certified school library media leader.

### The Year of 100% Virtual STLP

STLP responds to COVID-19 pandemic by shifting to an all digital format for an entire year. Thanks to years of foundational development, STLP was poised to take full advantage of district digital learning leadership, 1:1 initiatives, and KETS resources to overcome a pandemic to still provide relevant opportunities for students to participate. 100% of all STLP student-focused events/activities were successfully conducted virtually.

### Digital Learning Coaches Exceed 550

A critical component of any successful digital learning initiative is the support provided by Digital Learning Coaches (DLC). Districts with these support structures in place are ready to collaboratively support digital learning strategies and workflows across grade levels, content areas and job classifications. Through the pandemic, districts realized the importance of these support roles, through the "People Side of K-12 EdTech in KY" and the network grew to exceed 550 DLCs -- a 285% growth.

### Emergency Virtual Attendance Waiver Approved

The Kentucky Board of Education (KBE) officially approved a waiver of 702 KAR 7:125, Pupil Attendance for full time enrolled virtual students, on May 18, 2021. Not only did this provide necessary flexibility for districts seeking to provide virtual learning options for the 2021-2022 school year but it officially reaffirmed the value of virtual learning and provided some necessary measures and assurances detailing the anatomy of high-quality online and virtual schools, programs and academies.

### Kentucky Becomes First and Only State to Provide Internet Safety and Protections for 100% of Schools to Meet New Federal Requirements

With the launch of new Emergency Connectivity federal funds for school districts (ECF), for the first time, the Federal Communications Commission (FCC) details a new requirement for CIPA (Children's Internet Protection Act) relating to every district-owned student device. This new requirement states that the CIPA technology protection measure applies to all student computers no matter where the student is located (anywhere, anytime, and always on). To date, almost 700K school and district devices are now loaded with a modern internet safety and protection tool and the ability to monitor and manage Internet usage for every district device. Kentucky K-12 becomes the first state nationally to have every school implement this new federal requirement for every student.

### First KySTE KY K-12 CIO Virtual Summit Hosted

OET, in conjunction with our Kentucky Society for Technology in Education (KySTE) partnership, held our first 100% virtual CIO Summit on April 20 continuing our annual summit for the 8th year. Attendance and participation were outstanding with 87% of our districts (140 unique districts along with KSB and KSD) joining virtually to engage in facilitator-led conversation on upcoming edtech topics/strategies/approaches to gain the experience, knowledge and wisdom of our chief information officers.

2021

2021

### Campus Learning Available to All KY Schools

Expands tools available to align Kentucky Academic Standards to curriculum and enhance communication tools available to all students, remote and in-person. Provides interoperability solution to districts to link Infinite Campus to other Learning Management Systems, including Google Classroom. Other tools include: Curriculum Planner, Unit/Lesson Plan/Assignment Library, Quick Assessments, Standards Portfolio and Progress Monitor and Score analysis tools. CARES Act funding utilized to offer a premium product to all schools and districts beginning with the 2020-2021 school year.

### Equity Dashboard Provides Improved Data Interaction and Visualization inside Student Information System

The new Equity Dashboard suite provides visualizations of under- or over-representation of various demographic groups on several indicators and is designed to offer a "big picture" look to help schools and districts identify areas needing further attention. OET leveraged the existing Infinite Campus contract to build out the dashboard versus building a brand-new data system.

### Internet Access Beyond the School Campus Expanded

At no other time has more progress and funding been available for Internet access beyond the school campus for KY K-12 students than the past two years. Ninety-eight percent had enough bandwidth available to regularly do their schoolwork beyond the school campus—two percent still don't. Similar progress has also been achieved with modernized Wi-Fi access in the buildings and other school campus locations (e.g., a school's parking lots).

### Continuation of Crucial EdTech Services Right After Tornadoes of 2021

In the six months prior to the pandemic, throughout the pandemic and with the recent western Kentucky tornadoes, all KY K-12 cloud based Internet services (financial management services through MUNIS, school information management services through Infinite Campus, e-mail services through Microsoft 365 and Google, etc.) have been up and available to all 171 districts 99.999% of the time. Since 1995, Kentucky is the only state in the nation that has a KY K-12 product standard for both the Internet and financial management system services for all its districts. Being the national leader in cloud services is an edge that KY K-12 has on the other 49 states, which comes in very handy both in normal conditions and during recent disaster recovery situations. This provided the ability for all districts to immediately continue payroll services during a disaster by going to a neighboring district or any location with Internet access.

### Launched Kentucky's First Comprehensive K-12 State Plan for Computer Science Education

The Kentucky Department of Education (KDE) continues ongoing support for strong computer science education with the creation of a dedicated K-12 Computer Science Program Manager within the Office of Education Technology, the annual computer science growth report and the development of a, first of its kind, Comprehensive K-12 State Plan for Computer Science Education.

### Entire Kentucky K-12 Community Recognized for Heroic Efforts

The 2022 Stilwell Honorary Meritorious Service Medal was awarded to KY K-12 education technology district team members and the Office of Education Technology team members in KDE for going far above and beyond to help through the pandemic as technologies were thrust into the spotlight to keep school and learning services operating at the highest possible levels. The honorary medal reads: "In Recognition of Heroic Efforts March 2020 to March 2022--Presented By The Office of Education Technology, Kentucky Department of Education"

### Single Sign-On (SSO) with Kentucky Virtual Library

For the first time in state history the KDE provided access to the Kentucky Virtual Library (KyVL) through a safer, more secure login for students and teachers with Single Sign-On (SSO) technologies for improved ease of access to the KyVL resource library.

2022

## **Largest and Most Successful Kentucky K-12 Online, High-Stakes Assessment Conducted Three Years in a Row**

KY had its third exceptional year with our K-12 Online Summative Testing initiative, setting new records by charging our way through yet another year by completing the largest testing cycle to date with stellar results returned exceptionally fast to teachers and school leaders. 1,647,395 tests were completed in the Spring 2022 test window by students in 3<sup>rd</sup> through 11<sup>th</sup> grades across all 171 KY school districts with near zero issues. This includes additional online testing sessions from CTE, vocational and ACT. No other state has come close to experiencing this level of success with deploying online testing for their K-12 students to this scale.

## **Student Technology Leadership Program (STLP) State Championship Reconvenes In-person with over 14,000 in Attendance.**

The Kentucky STLP State Championship was hosted on April 20, 2022. This was the first large-scale event at the new Central Bank Center with every area of the facility being maximized for student demonstrations of learning through technology infused project-based learning. For the first time in the STLP state championship history, the Kentucky Board of Education and the KDE Executive Leadership Team were on-site to experience this annual event.

## **Kentucky Educator Credentials System (KECS) Launch**

In early May 2022, KDE's Education Professional Standards Board (EPSB) support organization transitioned to KECS, a new teacher/principal licensing system. Kentucky grants or renews ~34,000 professional teaching and administrative licenses every year. With RANDA Solution's cloud-based workflow system, the effort required to apply or renew an application has been cut in half, the process streamlined, and several home-grown, in-house written applications were retired and replaced with a modern, cloud-based solution. 171 Superintendents, ~200 District HR Reps, and ~35 college personnel, along with ~16 KDE staff were trained or given access to training and are now using the system to process renewals and new license requests, with thousands of teachers and principals using the system to renew or apply for new licenses.

## **Updated "The People Side of K-12 EdTech" Study**

Presented major updates to the original study to account for the new proposed "People Side Formula". This update also includes new considerations for education technology staffing and role strategies, as well as considerations for time, talents and tools.

## **Kentucky K-12 EdTech Not Only Survives but Thrives Throughout Covid-19 Pandemic**

KDE staff and the KY K-12 environment remained uniquely poised to quickly pivot to virtual meetings, distance digital learning, and virtual cloud operations services as we successfully navigated through a second one of a kind school year. KY K-12 is "the" pioneer and "the" national leader in most aspects of education technology so KY K-12 is much better positioned and prepared for telecommuting, virtual operations, virtual resources, virtual meetings and cloud based services than the other 49 states since we've been doing all of these for over a decade. These past few years have put an unprecedented load on all our systems and major services, yet we thrived and did so while continuing to implement new projects, upgrade services and provide connectivity and availability with 99.98% uptime.

## **Largest Digital Learning Coach Summit Conducted**

OET, in partnership with Kentucky Education Television (KET), held the annual Digital Learning Coach Summit. Attendance and participation were outstanding with over 250 leaders connecting and sharing.

## **Preparing/Building for the Future**

During the COVID years, KDE and Kentucky school districts made record improvements to the technology components and services supporting the learning experience from the classroom, home or in a hybrid model. We more than doubled the Enterprise Internet capacity from 80 to 200 Gbps and increased district Internet connections for 145 districts. We improved the service to district firewalls to support four-hour same day replacement, replaced aging Internet access equipment at school districts, and improved Internet safety for students, teachers and administrators while they worked remotely. We also launched a comprehensive effort to further improve Internet security/safety including identity protection measures for every student, teacher, and administrator. These improvement will support growth, safety and improve the overall digital experience.

2022

2022

2023

## **One of First Five States to Implement Generate**

Generate is the federal system for ED Facts reporting. KDE is a national pioneer for implementation and development of the new state-driven and managed solution that improves data quality, automates reporting, and standardizes and streamlines data processes.

## **Continuation of Crucial EdTech Services Right After Historical Flooding of 2022**

Between July 25th and July 30th, 2022, unprecedented rainfall brought severe and historic flooding to parts of Southeastern Kentucky and severely impacted multiple school districts with some school buildings being completely submerged. Loss of power and other wire-delivered services lasted for days and sometimes weeks. During the flooding and afterwards, impacted districts remained with quality Internet services and cloud-based financial management and school information services to support ongoing payroll and student support/learning services.

## **Statewide Implementation of Campus Analytics Tools**

Partnered with Infinite Campus, using ESSER funding, to enhance tools readily available to teachers and school leaders for data driven decision making. Enhanced analytics to support Early Warning, Assessment, Behavior and Attendance visualizations along with a personalized dashboard for monitoring key data.

## **Enhanced Identity Security Initiative**

The education environment, including K12, continues to be the most targeted by cybercriminals, far outpacing other industries such as healthcare, banking and manufacturing. As a statewide response to these threats in Kentucky, all public school districts were provided the training, licensing, and implementation assistance to ensure that staff and teacher access to online technology resources is protected with multiple layers of enhanced account security functionality.

## **MUNIS Upgrade**

Kentucky School District Finance Officers completed a significant security project to improve overall security and user experience of the MUNIS application. One less password for the district Chief Financial Officer (CFO) to remember results in a better, more secure password by applying Multi Factor Authentication (MFA), consistent password strength, and Azure AD monitoring of account threats. This is an overall move into the Connected User Experience.

## **2023 Making IT Happen Award**

KETS leaders have been recognized for multiple years with the International Society for Technology in Education (ISTE) award honoring outstanding educators and leaders who demonstrate extraordinary commitment, leadership, courage and persistence in improving digital learning opportunities for students - (2009, 2011-2013, 2015, 2016, 2018, 2019, 2020 and 2023).

## **Student Technology Leadership Program (STLP) - Record Setting STLP State Championship Growth**

The 2023 STLP journey began with over 1800 STLP school team projects and more than 60,000 KY K-12 STLP students competing in the numerous, yet expanding STLP categories. Participation in the State Championship broke all previous records with 114 school districts (10% increase), 488 schools (20% increase), 13,256 students (63% increase) attending and participating LIVE! The 2023 state championship event also saw the first ever event using every available square foot for student demonstrations at the new Central Bank Center and Rupp Arena in Lexington, where a record number of school buses were ushered in to drop students off at the championship to compete. The STLP State Championship event is proving to push the scale and capacity as the largest student facing event in the state of Kentucky.



## Appendix H - Projected Costs for Kentucky K-12 Technology Needs (BUDGET)



Kentucky Department of  
**EDUCATION**

# Appendix H - Projected Costs for KY K-12 Technology Needs (BUDGET)

## 2024-2030 KETS Master Plan Budget Summary

	Average Cost per Unit	Unit Variable	Units of Sustained Need	Annual Unit Cost	Annual Replacement Cost	Refresh Rate (Years)	Master Plan 6 Year Replacement Cost
<b>School/District Expenditures</b>							
<i>End-User Access</i>							
Basic End-User Workstations	\$320	90% of per student/adult total	648,743	\$80	\$51,899,440	4	\$311,396,640
Advanced End-User Workstations	\$1,000	10% of per student/adult total	72,083	\$250	\$18,020,750	4	\$108,124,500
Assistive and Adaptive Technology	\$600,000	per year	1	\$600,000	\$600,000	1	\$3,600,000
<b>End-User Access Subtotal</b>					<b>\$70,520,190</b>		<b>\$423,121,140</b>
<i>Classrooms Digital Learning and Environment</i>							
Software, Apps, and Digital Content	\$105	per student (ADM)	631,660	\$105	\$66,324,300	1	\$397,945,800
STLP Leadership & Services	\$1	per student (ADM)	631,660	\$1	\$631,660	1	\$3,789,960
Classroom Instructional Technology	\$5,500	per classroom	44,356	\$688	\$30,494,750	8	\$182,968,500
<b>Classrooms Digital Learning and Environment Subtotal</b>					<b>\$97,450,710</b>		<b>\$584,704,260</b>
<i>School/District Administrative Technology</i>							
* School and District Printing Services	\$20	per student (ADM)	631,660	\$20	\$12,633,200	1	\$75,799,200
File Servers and Storage	\$15	per student/adult	720,826	\$3	\$2,162,478	5	\$12,974,868
School and District Voice Systems	\$155	per teachers/staff	89,166	\$155	\$13,820,730	1	\$82,924,380
Financial Accounting System (Munis)	\$7	per student (ADM)	631,660	\$7	\$4,421,620	1	\$26,529,720
Student Information System (Infinite Campus)	\$10	per student (ADM)	631,660	\$10	\$6,316,600	1	\$37,899,600
<b>School/District Administrative Technology Subtotal</b>					<b>\$39,354,628</b>		<b>\$236,127,768</b>
<i>School/District Internet Access</i>							
School and District Network Components	\$200	per student/adult	720,826	\$40	\$28,833,040	5	\$172,998,240
School to Kentucky K12 District Internet Hub Fiber Connection	\$22	per student (ADM)	631,660	\$22	\$13,896,520	1	\$83,379,120
<b>School/District Internet Access Subtotal</b>					<b>\$42,729,560</b>		<b>\$256,377,360</b>
<i>Technology Leadership and Personnel</i>							
People Side of Education Technology and Professional Development	\$188	per student (ADM)	631,660	\$188	\$118,752,080	1	\$712,512,480
<b>Technology Leadership and Personnel Subtotal</b>					<b>\$118,752,080</b>		<b>\$712,512,480</b>
<b>School/District Expenditures Total</b>					<b>\$368,807,168</b>		<b>\$2,212,843,008</b>
<b>State Shared Services for Schools and District Offices</b>							
KETS State Shared Discounted Services	\$27,000,000	per year	1	\$27,000,000	\$27,000,000	1	\$162,000,000
* Internet Access for all Kentucky K12 Districts	\$18,377,600	per year	1	\$18,377,600	\$18,377,600	1	\$110,265,600
Other KDE and State Sponsored Programs	\$16,800,000	per year	1	\$16,800,000	\$16,800,000	1	\$100,800,000
<b>State Shared Services for Schools and District Offices Total</b>					<b>\$62,177,600</b>		<b>\$373,065,600</b>
<b>GRAND TOTAL</b>					<b>\$430,984,768</b>		<b>\$2,585,908,608</b>