



KETS MASTER PLAN

for Education Technology

2018 - 2024



Introduction	2
New in this Plan	3
The Vision: Connections to KDE Strategic Plan	5
KETS Standards & Establishing Unmet Need	8
Technology and Learning Standards	8
Enterprise Architecture, Policy, Products, and Standards	8
Architectural Design Principles	9
KETS Standards	11
Standards Community	12
Architectural Standards Committee	13
Unmet Need Budget	14
Technology Planning	16
District Technology Goals	16
District Comprehensive Planning	16
Technology Planning Requirements	16
National Education Technology Plan	18
Future Ready Framework	18
Other State Plans	19
Kentucky District Plans	19
Master Plan Goals (connected to the Future Ready Framework)	20
Studies and Research (Kentucky K12)	26
Kentucky Studies	26
External Studies	30
Surveys and Results	32
Supporting Resources	33
KETS History	36
Master Plan Governance	37
The Master Plan for Education Technology	37
Approval and Update of the Master Plan	37
Standards	37
Education Technology Trust Fund	38
Calculation of Unmet Need	38
Additional KETS Regulatory Information	40



Introduction

As mandated by KRS 156.670, 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. This is the fifth Kentucky Education Technology System (KETS) Master Plan for Education Technology. The previous four versions served this state very well and are the foundation to build the current KETS Master Plan 2018-2024.

To develop this plan, Kentucky Department of Education (KDE) staff gathered feedback and input from the state's 173 public school districts, as well as the Kentucky School for the Deaf and the Kentucky School for the Blind. The KETS Master Plan is designed to build upon the state's past successes and progress, while progressing towards the future. This plan illustrates the path that will enable all students, teachers and administrators to become capable of understanding and leveraging 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 technology unmet need for schools, districts and the state; education technology-related products and standards; acceleration or continuation and gap goals; 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 KETS Master Planning process has not. The primary purpose of ensuring technology tools enhance the learning experience of students, help prepare students for higher education, and further developing a competitive workforce, also has not wavered. Equity of access and expanded opportunity has its 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. The following experiences and designs, through technology-enabled tools, will continue to be major drivers through the work identified in this plan:

- a more informative and engaging experience for students
- addressing the different learning and teaching styles of all students and teachers
- deepening the understanding of academic content
- data-driven decision-making
- ease of access
- creation and production of products and content
- gathering, analyzing and synthesizing information
- communication and collaboration with others



The 2018-2024 KETS Master Plan addresses the technology unmet need for schools, districts and the state. This portion of the plan addresses both the ongoing operational, maintenance and replacement needs as well as the technology-enabled aspects of new strategic educational priorities, plans and projects. A variety of federal, state, local and personal funding sources are used to address that unmet need and are identified in the budget.

New in this Plan

The 2018-2024 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. For the first time, major KETS historical milestones are graphically represented in a timeline format.
- High level strategic goals statements that will help position the state and our P-12 school districts are included to align with KDE strategic goals and ensure students are future-ready. Highlighted goals are mainly targeted at strategically closing identified gaps.
- The plan will more closely align with the P-12 education strategic plan of the state, school districts and national frameworks. 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 parts in those plans.
- The plan continues to be informed by relevant studies, research, audit, and survey results, customer feedback as well as national, other state and district plans to help guide and influence the direction of the work going forward. The following new studies and research results are included to further validate initiatives and work of the Master Plan.
 - The People-Side of Educational Technology (*including "What is Education Technology"*)
 - Best Practice Results for Data Privacy and Security
 - Kentucky Digital Learning Guidelines
 - Kentucky Digital Learning 2020
 - Kentucky K-12 Data Quality Study
 - Future Ready Schools Framework
 - Building Teacher Capacity and Competency to Create Learning Experiences
 - Kentucky TELL Survey
 - Kentucky Schools Launch Statewide Cloud-based Financial Management System Study
 - And more...
- Streamlining of KETS standards displayed in table format to provide a summary of unmet need, architectural & design and product standards.
- The unmet need budget is modernized to reflect progress of districts, trending patterns and inclusion of new technologies.





The Vision

The Vision: Connections to KDE Strategic Plan

Equity | Achievement | Integrity | Quality | Opportunity | Access

As in past plans, a KETS Master Plan objective is always to align with the KDE Strategic Plan to further the vision of each and every student empowered and equipped with the knowledge, skills, and dispositions to pursue a successful future. The core values found in the KDE Strategic Plan and also shared in this Master Plan for Education Technology are: Equity, Achievement, and Integrity. Equally, KDE and KETS value equity so that each and every student has the opportunity to graduate from high school with the education and skills they need to be successful. KDE and KETS value high academic achievement and support for the development of every student empowered through technology. Additionally, KDE and KETS value integrity basing technology empowered decisions on multiple, accurate, and applicable sources of evidence.



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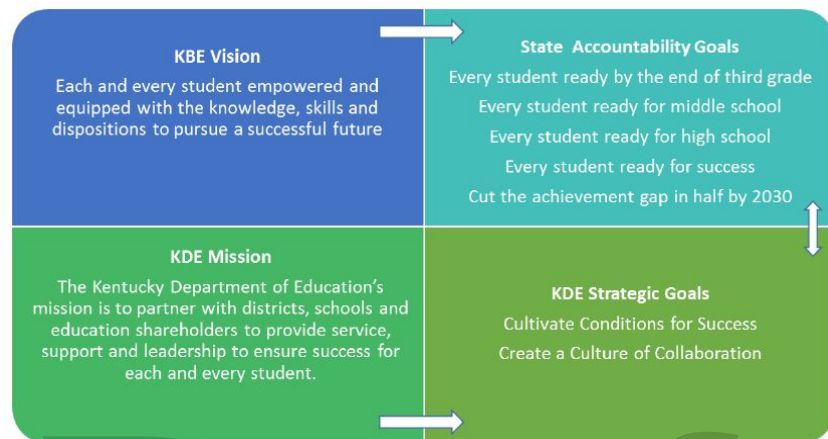
Quality, opportunity, and access permeate the goals of the Master Plan as well as parallel the KDE Strategic Plan in many areas. Together the two plans aim to create conditions for student success. These areas of emphasis serve as guide points or map markers to help keep KETS on track and ensure that we know where we've been and where we are heading.

One objective in particular from the Strategic Plan targets the introduction of an updated School Report Card (SRC) to reflect tenets of the new accountability model. The KETS Master Plan sets conditions that allow KDE and OET to provide guidance to shareholders aimed at understanding how schools and districts are making progress toward providing opportunity and access to all students.

Additional connections exist in the objectives and identified strategies of the Strategic Plan and Master Plan. Both plans 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 strategically move students to the center, further directing the work to ensure achievement of agency and school district goals.



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Ensuring a high quality education that leads to a successful future for each Kentucky student is not possible without addressing key elements of opportunity and access. These elements partnered with rigorous instruction and quality resources provide a foundation that will propel students and the state forward for years to come.



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KETS Standards & Establishing Unmet Need

KETS Standards & Establishing Unmet Need

Technology and Learning Standards

The Kentucky Academic Standards 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 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's Academic Standards and will be updated during the life of this master plan. While the current technology standards were based on previous International Society for Technology in Education (ISTE) standards, newly updated standards are slated to be based on the new, modernized [ISTE Standards](#).

Additionally, Kentucky is developing statewide, comprehensive [K12 Computer Science Standards](#) (future hyperlink to the KDE website). These standards are based on the the Computer Science Framework and are designed for all students with identified cross-curricular connections. The Kentucky Computer Science standards will help establish a new emphasis for all, exposing all students to computational thinking and problem solving skills through five concept areas (Computing Systems, Networks and the Internet, Data and Analysis, Algorithms and Programming, and Impacts of Computing).

Enterprise Architecture, Policy, Products, and Standards

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 information technology (IT) solutions to serve both instructional and business functions.

An information technology architecture and related set of standards are vital to ensure the compatibility of the current IT projects and future IT 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 move between schools or districts and lessen the annual support required after implementation. In a Kentucky K-12 study, the Gartner Group noted the architectural standards approach saves Kentucky millions of dollars annually.

Unmet 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 three 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 equitable 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
- Component standards (architectural design/configuration specifications and products) – while promoting the uniquely diversified education technology needs at school and district levels to further capitalize on the advantages of a standards based technology environment, some Unmet Need Standards are further defined with architectural specifications which may result in the establishment of a product standard. All published architectural design/configuration technical specifications and associated products are considered KETS Unmet Need Standard Components.

Architectural design and configuration standards represent a uniform set of specifications and guidelines that support system interoperability and reduce operational complexity, therefore reducing the overall total cost of ownership.

KETS has established and maintains core architectural design and configuration standards to ensure enhancement, maximization and security of the education technology environment in Kentucky. These standards include:

- a. Internet Access
- b. Directory Services
- c. Internet Content Management
- d. Security Services (Virus / Malware Protection, Patch Management, Firewall)
- e. Electronic Mail
- f. Application and Database Platform
- g. Common Student Information System
- h. Common Financial Management System

These are best described in the [KETS Technical Environment Information](#) reference document for local school districts, which is provided to our vendor partner community to support the bidding, contract and procurement processes that serve Kentucky school districts and KDE.

Architectural Design Principles

The following [12 Architectural Design Principles](#) 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, be accessible from a wide range of devices, and be 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 in business terms.
- 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).

The purest alignment and maximizing of efficiencies occurs within KETS when KETS product components are utilized. These technology components embody architectural design/configuration specifications and are established with the award of KETS vendor contracts resulting from a formal bid request issued by an open, competitive solicitation or a request for proposal (RFP). Contracts are then 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 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 Kentucky Department of Education 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 Kentucky Education Technology System unmet need standard is established, regardless of whether the item is used to reduce the unmet 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 Technology Activity Report and Digital Readiness Collection).

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

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

Standards Categories

The following table lists KETS Standards categories and those that are further defined with a Component Standard.

KETS Standards			
Category	Unmet Need	Architectural Design & Configuration	Product
Student Instructional Devices(workstations)	✓	✓	✓
Faculty/ Staff Devices(workstations)	✓	✓	✓
Assistive and Adaptive Technology	✓		
School and District Printing Services			
Servers/ Storage <i>Data Storage-Hardware/Services</i>	✓	✓	✓
School and District Networking	✓		
-Wiring (<i>Voice, Data, Video</i>)	✓	✓	
-Components	✓	✓	✓
School and District Phone System <i>Voice/Hardware Services</i>	✓	✓	✓
Software, Apps and Instructional Digital Content <i>Administrative/Instructional Software/Service</i>	✓		



-Student Information Software or Services	✓	✓	✓
-Financial Information Software or Services	✓	✓	✓
-Internet Safety/Security Management Solutions	✓	✓	✓
People Side of Education Technology	✓		
STLP Leadership & Services	✓		
Statewide Network	✓		
-School to District Internet Hub Fiber Connection	✓	✓	
-Wired-Wireless Internet Services	✓	✓	✓
-School to District Telco Voice Lines	✓		
Professional Development <i>Teachers, School & District Staff</i>	✓		
Classroom Instructional Technology <i>Hardware</i>	✓		
Directory Services	✓	✓	
Electronic Mail	✓	✓	
Security	✓	✓	
State Shared Services for Schools and District Offices	✓		

Standards Community

A standards organization, also referred to as standards development organization (SDO), is any entity whose primary activities are developing, coordinating, promulgating, revising, amending, reissuing, interpreting, or otherwise maintaining standards that address the interests of a wide base of users outside the standards development organization.

KETS standards are derived and/or subsequently adopted with either input from or as a directive of a variety of these entities:



- Industry standards organizations such as American National Standards Institute (ANSI), Institute of Electrical and Electronics Engineers (IEEE), Internet Engineering Task Force (IETF), SysAdmin, Audit, Network and Security (SANS), The International Information System Security Certification Consortium (ISC)².
- Legislative organizations such as the Kentucky General Assembly, and the Kentucky Board of Education.
- Educational organizations such as International Society for Technology in Education (ISTE), Southern Regional Education Board (SREB), CCSO, and NECC.
- State organizations such as the Commonwealth Office of Technology (COT), Kentucky Standards for Technology in Education (KySTE), and Kentucky Department of Education (KDE).
- Research organizations such as Gartner
- KETS Architectural Standards Committee

The KETS Architectural Standards Committee (KASC) was formed to participate in the overall governance aspects of architectural standards adoption and/or modification. This committee is comprised of both local school district and KDE representatives, and is chartered to provide guidance, input, and recommendations into the overall process of standards adoption.

The KASC meets on an as-needed basis and submits recommendations to the Office of Education Technology. Once the request is accepted, members, at times when appropriate, may work very closely on various action teams to provide content for the recommended standards.

KETS enterprise standards, architecture design and configuration, and products can be located at the following URL:

<https://education.ky.gov/districts/tech/kpur/Pages/KETS%20Technology%20Standards%20and%20Purchasing.aspx>





Unmet Need Budget Projection

Unmet Need Budget

Talking points for Master Plan Special Webcast

(to be removed in final draft)

The 2018-2024 Master Plan Budget for Education Technology represents a budgetary projection of the total cost of ownership for all technology components, services, and people needed to insure ease of access to, and management of, an equitable 21st century learning environment. This projection establishes the annual baseline Need for all Kentucky public school districts, and in conjunction with the annual statewide reporting cycle (Digital Readiness Survey and Technology Activity Report) defines the annual remaining statewide unmet need which determines the annual KETS Offer of Assistance.

The budgetary projections for each Master Plan line item represent a “best practice” approach as opposed to a requirement, along with clear recognition that a wide variety of local, state and federal funding sources are required to address the ongoing need to implement and incrementally replace all technology components and services. Clear understanding of the logic, projections, and funding diversity should be reflective in each district’s technology plan.

The 2018-2024 Master Plan Budget is based upon evidence and trends as gathered from:

- *Annual Digital Readiness Survey results*
- *Annual Technology Activity Report results*
- *Quarterly/annual KETS Partner reports and projections (both state and local partners)*
- *Ancillary Data provided by District EdTech Leaders*
- *Analysis provided by KETS Field Staff and Frankfort-based OET staff*
- *Annual eRate Data (filings, funding commitments, etc).*

Changes in new Budget:

1. *Recognition and inclusion of:*
 - *Greater degree of ease of access*
 - *Lower cost devices*
 - *Significant cost of Printing Services*
 - *Full inclusion of People Side of EdTech*
 - *Dense Wireless across all areas*
 - *Expanded Software, Apps, and Digital Content*
2. *Simplistic grouping to drive more efficient reporting (TAR/Commodity Codes)*
3. *No longer separating of District Office Expenditures from School Expenditures*
4. *No longer separating teachers from staff (now adults and students)*



5. *Additional “Category” to recognize technology components and services that do not have an unmet need standard, cost, or quantity fully defined, but still represent varying costs and priorities that district EdTech leaders are expected to address with the variety of available funding sources.*

Draft





Technology Planning

Technology Planning

District Technology Goals

District Comprehensive Planning

Kentucky's school districts perform comprehensive planning activities to determine long-range measurable goals for each school with identified indicators. The process encompasses identification of strengths and weaknesses with each school and developing strategies to leverage the strengths and mitigate weaknesses. The coordination of applicable funding sources to support activities and strategies is a key component of this initiative.

District technology plans should also inform the comprehensive district and school improvement plans. [Click here](#) for more on Comprehensive Planning.

Technology Planning Requirements

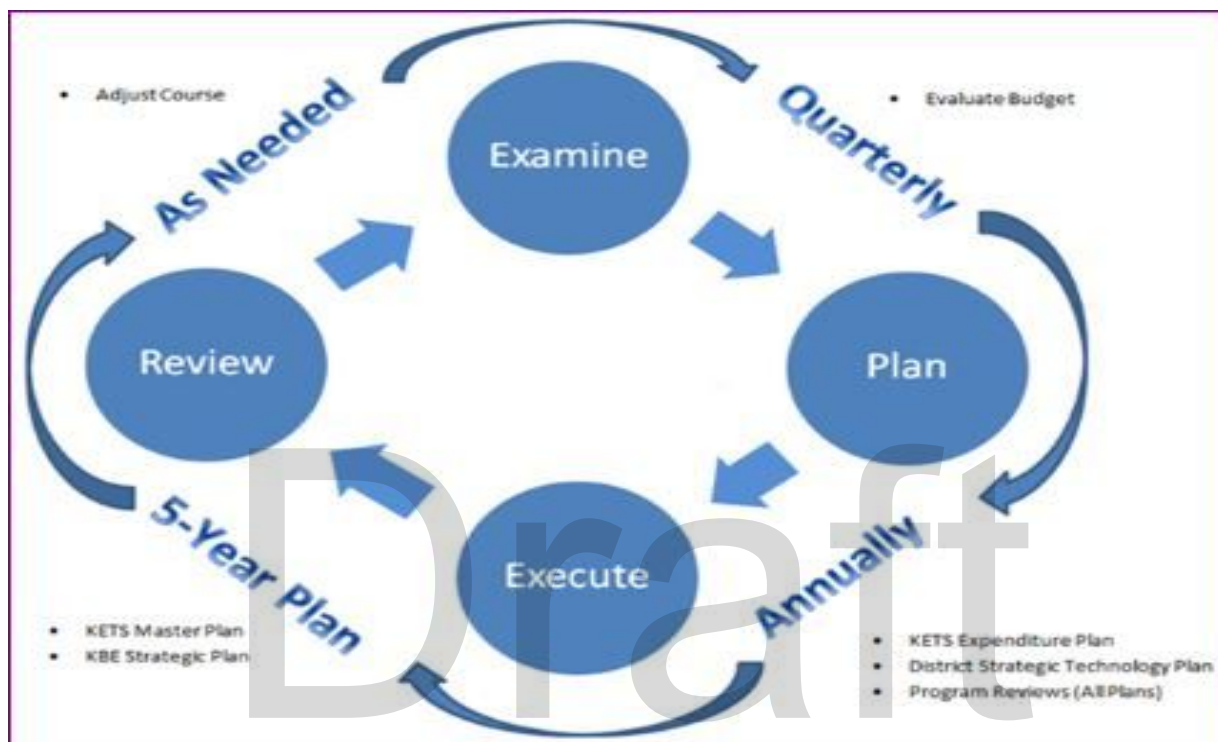
Through the legislation associated with the development and maintenance of a Master Plan, districts are required to develop Strategic Technology Plans that span at least one but no more than three years. Components of a district strategic technology plan include establishing specific goals related to the following categories.

- Curriculum & Instructional Integration – Identification of curriculum and instructional strategies that promote effective integration of technology into classroom instruction, leading to improved student academic achievement
- Student Technology Literacy - Clear goals and specific implementation plans detailing how technology will be integrated into curriculum and daily instructional practice
- Professional Development - Strategy for administrators and teachers to ensure awareness regarding the use of new and existing technologies to improve education
- Technology – Planned initiatives to meet the goals of the district through the identification of technology solutions designed to provide ongoing support to the educational environment, both academically and administratively
- Program Review – An evaluation process is required to be incorporated in the plan to enable the district to monitor progress toward the specified goals and make mid-course corrections in response to new developments or opportunities
- Budget Summary - Planned professional development purchases along with funding source to be acquired each year of the plan in support of the district's technology planned initiatives

As with the Master Plan itself, the identification of funding sources is a critical component of the district strategic technology planning process. The plans must include a budget that describes all available resources at the federal, state and local levels. KETS is a state level funding source for district plans.



Strategic Technology Plans at the district level fit into KDE's overall strategic planning cycle depicted in Figure 3 below. 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 that careful consideration is made at both the state and local levels toward continued improvement of Kentucky's education system.



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An important focus for the Master Plan is to identify leadership and support opportunities directly tied to goals and deliverables for the KDE and for school districts. When doing so, targeting measurable indicators presents the 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 school business, 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 173 districts.

The Master Plan also can be considered a guide for districts to reference and consider when developing their own strategies for technology integration. The goals 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. These templates ensure that points are covered to meet all federal funding questions. The Office of Education Technology also works with districts to provide accurate commodity codes to assist with budgeting. Both documents may be found by [clicking here](#).

National Education Technology Plan

[National Education Technology Plan](#) - The U.S. Department of Education plan provides states with key concepts, recommendations, and examples on 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 five recommendations within the National Education Technology Plan:

1. Learning – Engaging and Empowering Learning Through Technology - All learners will have engaging and empowering learning experiences in both formal and informal settings that prepare them to be active, creative, knowledgeable and ethical participants in our globally networked society.
2. Assessment – Measuring for Learning – Our education system at all levels will leverage the power of technology to measure what matters and use assessment data to improve learning.
3. Teaching – Teaching with Technology - Educators will be supported by technology that connects them to people, data, content, resources, expertise, and learning experiences that can empower and inspire them to provide more effective teaching for all learners.
4. Infrastructure – Enabling Access and Effective Use - All students and educators will have access to a robust and comprehensive infrastructure when and where they need it for learning
5. Leadership – Creating Cultures and Conditions for Innovation and Change- Embed an understanding of technology-enabled education within the roles and responsibilities of education leaders at all levels and set state, regional, and local visions for technology in learning.

Future Ready Framework

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



Kentucky aligns to the seven gears of the Future Ready Framework. The Goals section of this document is organized to show the identified goals for the Master Plan in alignment with a Future Ready gear.

Contributing State Plans

A pair of digital learning plans at a state level provides insight, recommendations and research to advise Kentucky's digital learning work. The following section provides brief summaries with links to the publications.

[North Carolina Digital Learning Plan](#) - Prepared by The Friday Institute for Educational Innovation at North Carolina State University with input from educators and stakeholders, this plan offers recommendations and goals in six areas: *technology, infrastructure and devices, human capacity, content, instruction and assessment, local digital learning initiatives, policy and funding, regional and state support systems.*

[Wisconsin Digital Learning Plan](#) - Utilizing the Future Ready Framework, this plan focuses on learning environments that are equitable, personalized, applied and engaging (2016)

Kentucky District Plans

Each of Kentucky's 173 school districts perform long-range technology planning to identify trends, strengths and areas for growth. They are reviewed by OET staff annually and information is used in Master Plan strategic planning efforts to inform unmet need and other key components.





Master Plan Goals

Master Plan Goals (connected to the Future Ready Framework)

The following section focuses on goals organized around the seven gears of the Future Ready Framework as well as a guiding principle statement for each of the focused gears. Each heading will include areas that are considered to be major wins, successes and milestones of KETS and an area of emphasis identified in the strategic planning process considered a gap goal. The intent is to highlight the groundbreaking progress made over KETS program history and continue placing major emphasis on this work as a primary goal. In addition, identified goals addressing emerging areas based upon metrics, research, needs assessments, and reporting by Kentucky school districts are included. The new gap goals will focus efforts during the life of this Master Plan to continue delivery of quality opportunity and access to students and staff. Identification of goal types are represented in the following section by a blue icon for Acceleration Goals and a red icon for Gap Goals.


Acceleration Goals
(Big Wins, Current Successes)


Gap Goals
(for this Master Plan)



Robust Infrastructure ***Future Ready Gear***

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



Provide nation's first, fastest, highest quality, and most reliable Internet access to 100% of Kentucky's public schools (*Kentucky Education Network, KEN*)



Ensure equity & 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 maintaining low infrastructure costs and provide support structures promoting the use of personalized learning environments



Create a culture of digital connectedness through all the time, everywhere, always on digital opportunity and access (*home access, wifi buses, school / classroom wifi, etc.*)





Increase use of instructional programs and business processes requiring cloud-based services



Increase the number of districts reporting 1:1 initiatives for k-12 for students in appropriate grade-levels AND realize overall progress toward a 1:1 student to computer ratio



Data & Privacy

Future Ready Gear

KETS GUIDING PRINCIPLE – Security and privacy of student data sets are cornerstones of digital learning. Policies and procedures are enacted at the state and district levels that work in conjunction for this purpose. These data sets are then utilized by data fluent educators for decision-making that leads to a personalized learning environment for students.



Further support districts in securely accessing and managing key student and business 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)



Evaluate 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)



Utilize adoption metrics or trending data for planning purposes that allow EdTech leaders to trend up work based upon data quality and evaluate current systems and solutions to determine effectiveness and future direction.

(annual auditors, TELL survey, TAR, Digital Readiness, Data Quality Study, Data Quality Campaign, BrightBytes, SpeakUp)



Migrate key business and student data sets to cloud-based services that allow anywhere, anytime secure access for the improvement of student learning. *(Infinite Campus, Early Warning, School Report Card)*



Educate and support districts in the need and importance of positions/titles with duties related to student/staff data quality and privacy. *(The People Side of Ed Tech)*



Budget & Resources

Future Ready Gear

KETS GUIDING PRINCIPLE – The Master Plan, as well as district and school technology plans, are aligned to the vision of 21st century skills for students and staff. Revenue streams are aligned to account for the recurring and nonrecurring total cost of ownership to support the environment in a manner that reflects good stewardship of tax dollars; to include devices, infrastructure, support, data and human services.



Reduce local and state education technology expenditures through a system of shared/brokered/managed services



Continue use of long-term planning strategies that allow for continuity of initiatives and systems



Leverage all available state and federal funding opportunities in support of Education Technology programs and initiatives (*Unmet Need, E-Rate*)



Districts will report an increase in positions/roles requiring technology-related duties in support of technology and instruction.



Districts will show reduced expenditures on printing/print services (both in consolidated contract pricing as well as shifting from paper to digital experiences).



Community Partnerships

Future Ready Gear

KETS GUIDING PRINCIPLE – Connecting students 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 make those connections, help reduce risk, as well as increase communication and transparency with stakeholders including families, districts, vendors, collaboratives, postsecondary education and business/industry.



Build trusted relationships with stakeholders (families, districts, partners) that will reduce risk as well as increase transparency and communication. *(districts, vendors, higher-education, regional cooperatives, STLP regional events)*



Pursue avenues of communication to stakeholders allowing relevant and pertinent information and dialog to further student learning efforts. *(Webcasts, BrightBytes, TAR, KETS Service Desk, OEA studies, independent studies, EducationSuperHighway, etc.)*



Partner with post secondary pre-service teacher and principal programs to provide support in candidate preparation.

Draft



Digital 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. A robust digital experience provides students with the opportunity to assess their own learning/progress toward mastery of content/skills or utilizing 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 deep understanding of core competencies of every subject, utilizing digital collaboration tools that provide a realistic connection to college and career.



Increase access to instructional digital content which further aligns to the Kentucky Digital Learning Guidelines.



Create an opportunity for students to demonstrate learning connected to and through technology (empowering students through technology with STLP, Imagine Academy, etc.)



Develop Kentucky approved K12 Computer Science Standards and Technology/Digital Literacy Content Standards (based on ISTE standards) for ALL students.



Districts/classrooms will have access to digital instructional materials through an equitable and robust digital experience.



Develop a better understanding of digital content and tools (curriculum, instruction and assessment) designed to have the highest impact and value (e.g. Is the technology making an instructional and learning difference?), including frequency of use by teachers and students



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 building 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.



Provide districts with guidance and support that result in more flexible professional learning opportunities related to digital learning tools.



Use of Space & Time

Future Ready Gear

KETS GUIDING PRINCIPLE – The personalized learning environment for students requires a reimagination of the use of school space and time. Virtual instruction, cloud-based learning tools, digital instructional material, etc., assist in providing the vehicle for anywhere, anytime learning.



Provide guidance, support and resources for districts in the development and application of online/virtual coursework



Educate and support districts in the implementation and facilitation of digital learning tools that foster anywhere, anytime access for staff and students

In summary, the Master Plan acceleration and gap goals focus efforts in areas of strength as well as areas where strategic improvements can continue to move Kentucky public schools and districts forward. The linkage to the Future Ready Framework represents strong alignment to current research around digital learning, as well as national trends. The following section will further connect efforts to Kentucky K-12 and external studies that have provided guidance in cornerstones of digital learning.



Studies & Research

Studies and Research

Studies and initiatives at national and local levels have been conducted that are integral to education technology within the Commonwealth of Kentucky. Several studies yield recommendations that directly impact the strategic direction of KETS. 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 KY K-12 school districts.



[The People Side of K12 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 with it 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 continues to grow.



Across the nation, and including the Commonwealth of Kentucky, the demand for access to digital content and subsequent growth in technology investments continues 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 the hyperlinked study (above) to help highlight the current landscape and identify best practice guidance as opposed to a requirement. Two additional resources are a [slide deck](#) intended for school districts to edit and customize, as well as a in [interactive tool](#) for comparative analysis on the model used in the study.

[Data 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 that does not have the proper access rights, authority or the "need to know" as well as provide considerations and protocols for notifying any affected individual.



Digital Learning 2020 - In December 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, 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, and 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 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.

The report also outlined several strengths and weaknesses in Kentucky, and those can be seen in their entirety by clicking on the report link above

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 effectiveness of IT services and investments. Recommendations from this study are evident in the foundations of many current OET processes and initiatives.



Kentucky TELL Survey - Kentucky teachers participate in the Teacher Empowering Leading and Learning (TELL) working conditions survey every other school year. The most recent (2017) TELL Kentucky Survey helps ensure we are supporting our teachers and providing them opportunities to thrive digitally. Teaching conditions directly 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 TELL survey are ten intentional and connected questions that inform the KETS Master Plan. The follow visual identifies the ten questions and corresponding percentage of teacher agreement.



2017 EdTech TELL Survey Questions		
Internet Related Question	2017	2015
1. The reliability and speed of Internet connections in this school are sufficient to support instructional practices.	85.1%	80.2%
General EdTech Related Questions		
2. Teachers have sufficient access to instructional technology, including computers, printers, software and internet access.	84.3%	82.1%
3. Teachers have access to reliable communication technology, including phones, faxes and email.	96.9%	96.0%
Professional Learning & Training Related Questions		
4. Teachers have sufficient training to fully utilize instructional technology.	81.8%	76.9%
5. Teachers have sufficient support to use effectively the state-approved electronic platform (i.e., CIITS, EDS).	89.6%	84.6%
Data Related Questions		
6. The school leadership facilitates using data to improve student learning.	95.8%	95.8%
7. Professional learning offerings are data driven.	90.2%	86.9%
8. State assessment data are available in time to impact instructional practices.	73.5%	70.9%
9. Local assessment data are available in time to impact instructional practices.	92.7%	91.0%
10. Teachers use assessment data to inform their instruction.	96.5%	95.5%



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 Educational Accountability Study of Educational Technology Initiatives - This 2009 publication is the result of the Office of Education Accountability's (OEA's) 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 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 -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 enactment of Senate Bill 95. The task force was charged with considering strategies for providing 5th- and 6th-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.



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 the nine key implementation factors (KIFs) 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.



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 data utilizes data points to examine the readiness of teachers to use digital tools to transform the learning process.



Building Technology Infrastructure for Learning - The U.S. Department of Educational

Technology released in June 2017 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, rollout 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 more reliable access to MUNIS services, significant cost savings, and disaster recovery capability that could not be achieved with a traditional on-premise solution.



Kentucky has been proactive in utilizing research, both self-initiated and from trusted partners, to take an objective look at policies, processes, business functions and digital learning. This has allowed KETS to remain focused on what is most important but also forwarding thinking. The following section showcases how Kentucky is using internal data and research as an extension of this mindset.

Draft





Surveys & Results

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 the Commonwealth on an annual basis. Additional sources of information used to triangulate the infographic story below are adoption metrics, BrightBytes Clarity, TELL survey, and Speak Up.

Draft





Kentucky Department of Education

Office of Education Technology - June 2017

Kentucky's digital-and future-ready students and teachers

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 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.

Access

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.



78% - 89% of students have Internet access at home; **93%** of whom have wireless Internet access.

82	Districts with BYOD only - 47% (76% total)
15	Districts with 1:1 only - 9% (38% total)
51	Districts with both BYOD and 1:1 - 29%
27	Districts without BYOD or 1:1 - 15%

Kentucky's Educational Network (KEN) usage increased

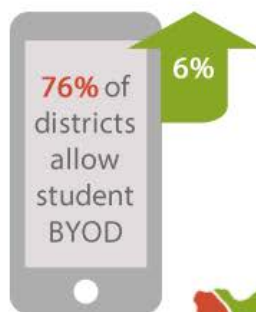
+70%

While maintaining uptime of

99.9688%



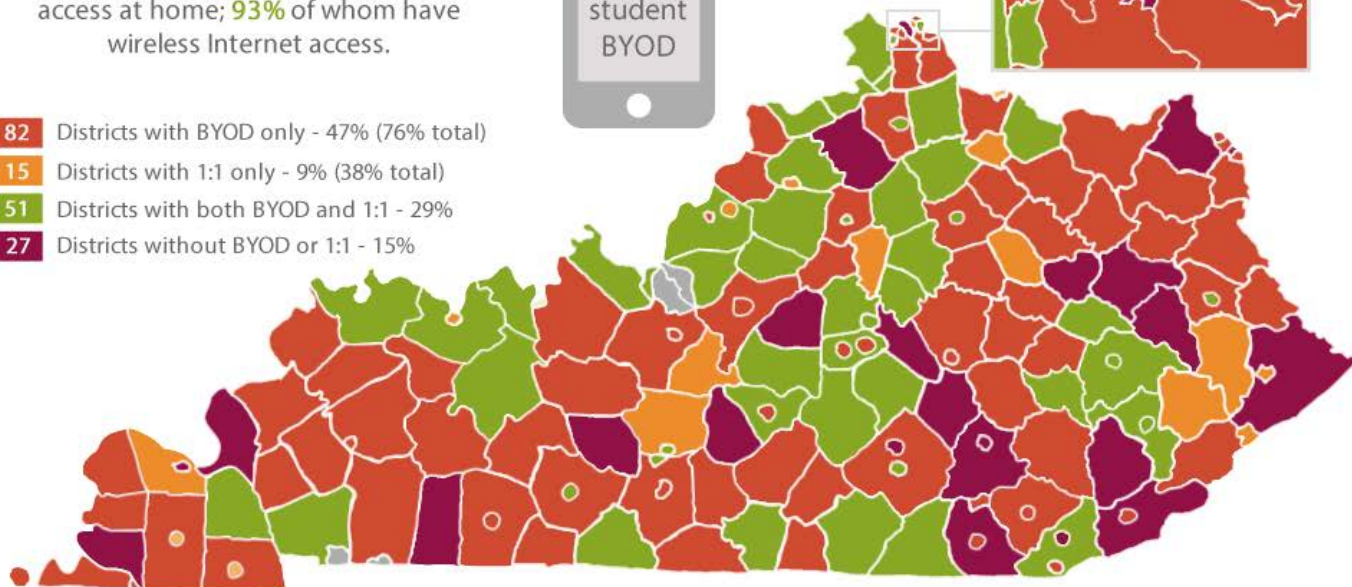
70% ↑ **12%**
of students have a smartphone. **12%** of which are shared.



Of these, **82%** (+20%) schools have implemented dense Wi-Fi networks capable of supporting BYOD or 1:1 initiatives

100-150kbps

Bandwidth per student available through statewide fiber network service



Anytime, Anywhere, Always On, Differentiated Teaching and Learning

Future-Ready Student

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.



These skills are a precursor to the use of digital creativity, digital collaboration, digital communication and critical thinking in the classroom and while learning.

Students can also personalize the use of their technology and leverage greater access to engage in anytime, anywhere learning on topics of their choice.

MULTIMEDIA SKILLS

Student reported ease of editing a photo



Only 13% reported never doing so

Student-reported ease of recording and editing video



Only 11% said the task was impossible

Student-reported frequency of playing a game on a computer or phone



Only 4% reported never doing so

FOUNDATIONAL SKILLS

Student-reported ease of sending an email



Only 5% said the task was impossible (+1%)



COLLABORATION & ONLINE SKILLS

Student-reported ease of collaborating using online documents



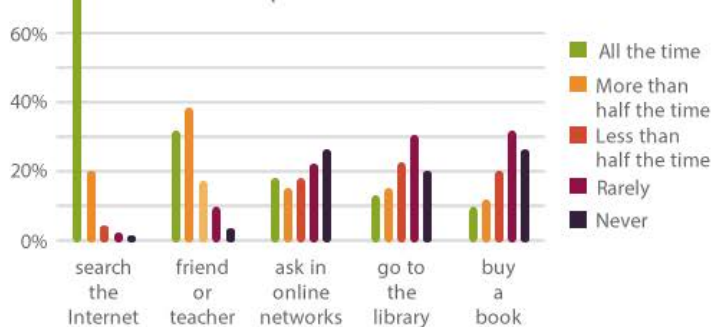
9% said the task was impossible

Student-reported frequency of reading online content



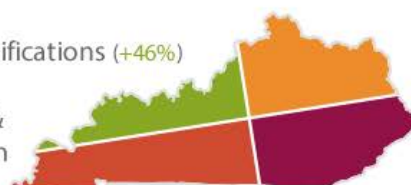
15% said never

Student reported research methods



12,173 Certifications (+46%)

91% High School & ATC Participation



45,582 Courses Downloaded (+2%)

25,493 Courses Completed (-12%)

< KY IMAGINE ACADEMY />

21st-Century Teacher

MULTIMEDIA SKILLS

Ability to manipulate photos and record and edit audio or video



41% expressed interest in Professional Development (PD) in this area (-8%)

ONLINE SKILLS

Essential skills for contributing to and collaborating on the Internet



45% expressed interest in PD in this area (+30%)

FOUNDATIONAL SKILLS

Basic computing skills - sending email and creating spreadsheets



16% expressed interest in PD in this area (-1%)

4 of 5 teachers report having sufficient access to instructional technology...



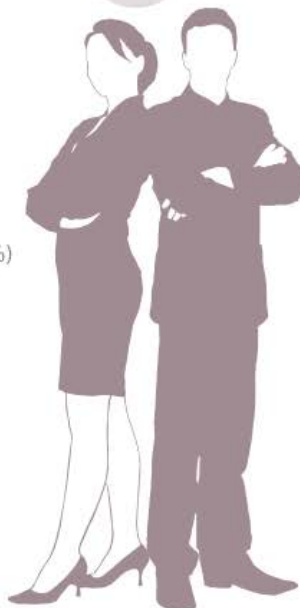
yet less than 2 in 5 have access to an integration specialist or learning coach.

88% of these are encouraged to use technology and learning by school leaders

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



of KY teachers believe technology enhances learning and their daily lives

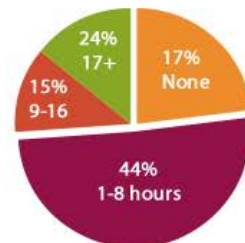


Teachers with strong foundational skills are able to handle administrative classroom tasks easily, including attendance and grading. Further, teachers who are confident in their ability to use foundational skills are often able to use these skills when learning new online and multimedia skills.

CONFIDENCE WITH TECHNOLOGY

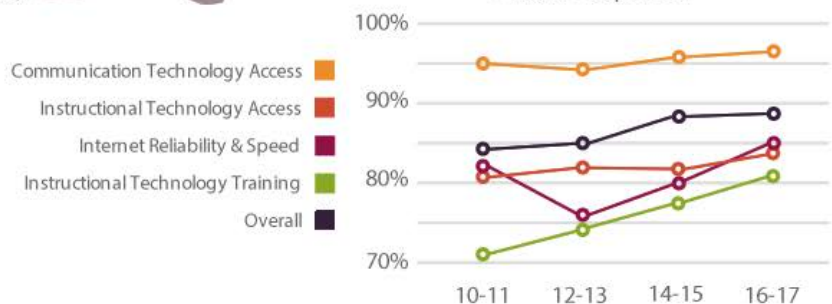


Teacher-reported hours spent per year participating in school-sponsored technology related PD



76% of these teachers say the quality is average or above average

Kentucky Teaching, Empowering, Leading and Learning (TELL) Survey Results
Positive Responses



Most requested education technology PD topics



Tech Trends

ONLINE & VIRTUAL LEARNING



Students grade 6-12 taking at least one online course are up **29%**. Of these, **45%** are girls, **55%** boys.

LEARNING MANAGEMENT SYSTEM



The majority of adoption is with free cloud services. However, there is an upward trend toward paying for a solution.

INSTRUCTIONAL MANAGEMENT SYSTEM (IMS) & EDUCATOR DEVELOPMENT SUITE (EDS)



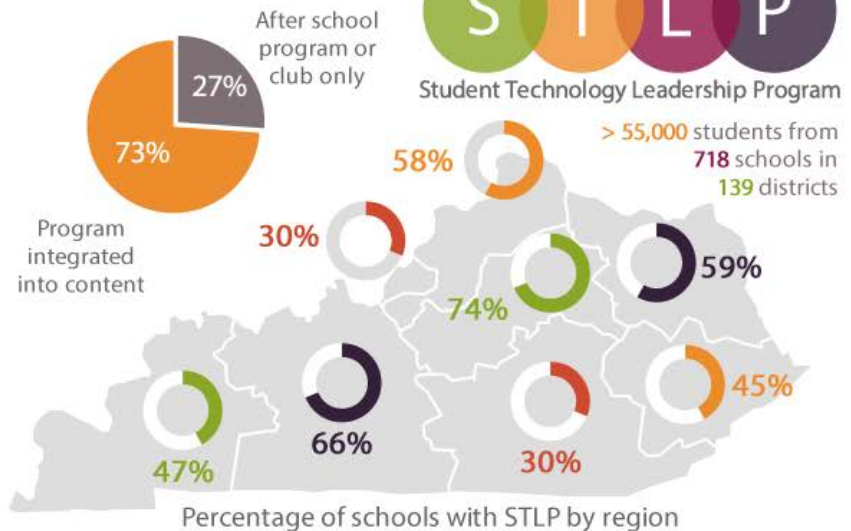
>**317,500** formative assessments and **693,500** lesson plans have been created.

100% of all districts recorded summative evaluations. **98,329** observations recorded for **65%** of all teachers.

*For our 2017 infographic, we've presented subscript indicators for year-over-year changes to data where applicable. **GREEN** indicates favorable changes, **RED** unfavorable, and **GRAY** neutral.

STLP

Student Technology Leadership Program

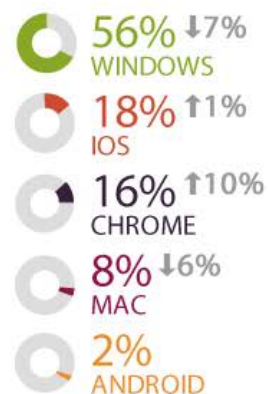
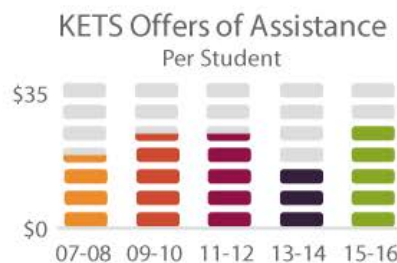


> **55,000** students from **718** schools in **139** districts



More than **2 Billion** unauthorized connection attempts against school networks were blocked by statewide security services since the start of the school year.

20 large-scale organized network attacks aimed at denying Internet access to all Kentucky schools and districts were successfully mitigated.



2017
June



Sources

Kentucky Digital Readiness Report: http://applications.education.ky.gov/trs_reports/
 TELL Kentucky: <http://www.tellkentucky.org/results/25>
 BrightBytes: <http://brightbytes.net>
 Digital Driver's License (DDL): <http://iDriveDigital.com>
 Google Analytics
 Open House: <http://openhouse.education.ky.gov>





Supporting Resources & Guidance

Supporting Resources & Guidance

Several state and national initiatives provide guidance and recommendations that directly influence the KDE's strategic direction and this KETS 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](#) - OET implements policies and guidance on issues relating to statutory and regulatory compliance as well as best practices for protecting student privacy. These efforts align with the U.S. Department of Education (USDE) Privacy Technical Assistance Center's (PTAC) recommendations. PTAC 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.

[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 continued development, refinement and implementation of systems and processes that advance 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.



[KSLDS Recommendations & Transition Report](#) – The Kentucky Statewide Longitudinal Data System (KSLDS) project was originally envisioned and tasked with the primary goal of providing the means for educators to use longitudinal information to improve instruction, as well as increase accountability and reduce the burden of data reporting. KSLDS succumbed to budget cuts in the unusually dire economic situation in 2010. A more economical data portal, Open House, was begun soon after, and continues to build on the successes of the KSLDS implementation.

[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 a 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 as well as recommend goals and how to measure progress toward program goals.

[3 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 the studies that are scientifically rigorous.

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

[Personal Data Security Study \(HB 341\)](#) – 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 the Studies and Research Section above.



[**Gartner: 7 Cloud-Computing Security Risks**](#) – A study by Gartner published in 2008 reports the three risks to cloud-computing as being security, privacy and access. The study provides recommendations to where the risks lie and how to prepare for them ahead of time.

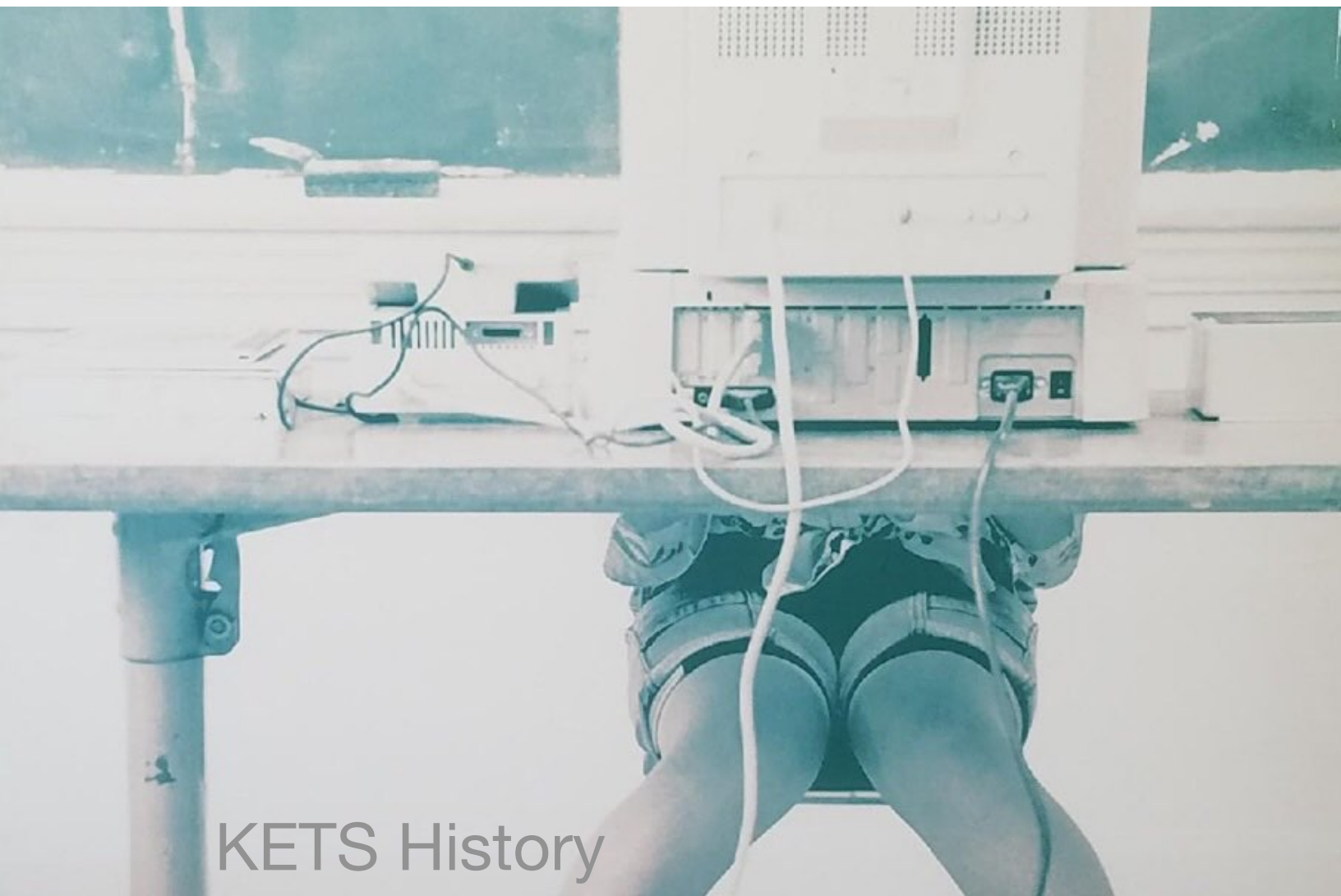
[**CoSN's Annual Infrastructure Survey**](#) – The 2016 version of the CoSN E-Rate Infrastructure survey addresses five key components of affordability, network speed and capacity, reliability, digital equity and security and cloud-based services. Trend data from the survey results is presented to assist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

[**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 school, but out 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.

Internal and external guidance has allowed KETS to remain accountable to its core values and remain lock-step with KDE's vision for students. The following section will highlight some of the ground-breaking work of KETS since its inception that in many ways has roots in the research and guidance above.





KETS History

KETS History

KETS history is full of milestones furthering the vision of the Master Plan as well as goals and objectives of the Kentucky Board of Education and Kentucky Department of Education. The following timeline highlights milestones that are considered a national “first” or “first and only,” and key to implementation of KETS. A more complete reference can be found in the [KETS from the Beginning document](#).

Draft





The History of Education Technology in Kentucky Schools

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 Commonwealth, 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 \$545m 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 erate reimbursements funnel to districts as KETS offers of assistance (where they are matched 1:1) to support district eligible erate 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

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.

KATC Becomes KySTE

Kentucky Association of Technology Coordinators becomes KySTE (Kentucky Society for Technology in Education) and hires first Executive Director.

2007-2012 KETS Master Plan for Education Technology

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

Started in 1993 and completed by 1995, Kentucky was the first state 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).

1997

MUNIS a Common Financial System for Every District

Included those applications deemed most critical: Accounts Payable, Personnel, Payroll, Budget, General Ledger, and Purchasing.

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.

2000

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.

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.

2004

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.

Statewide AntiVirus System

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

2006

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 host KETS leadership for the first ever district edtech leaders webcast. This is a monthly event that has continued for the past 11 years.

2007

Cloud Email

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

KySTE Conference

KySTE moves its summer conference to the spring in the old Kentucky Teaching and Learning Conference (KTLC) timeslot (previously Kentucky Education Technology Conference/KETC).

First Online Statewide School Report Card

Kentucky first introduced an online school report card in 2012 that was recognized nationally by the Education Commission of the States as one of eight states with report cards that were accessible, informative and easily understood.

First All State Superintendent Webcast

Kentucky Board of Education (KBE) began to webcast meetings with the first webcast conducted from the State Board Room at the Capital Plaza Tower in Frankfort.

Paperless State Board Meetings

The Kentucky Board of Education (KBE) became totally digital for state board meetings.

KDE Notify App

KDE and Northern Kentucky University launched KDE's first mobile application for iPhone, Android and Windows devices focused on the status of education technology services.

Kentucky Virtual High School Grows

KDE shifts virtual high school experience from a state-ran model to a distributed partnership model (naming JCPS eSchool, BAVEL, and KET the original partners).

2013-2018 KETS Master Plan for Education Technology

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.

BrightBytes Partnership

BrightBytes helped KDE and school districts better understand, through EdTech data, more about the usage and impact of digital tools and resources for students, teachers, and parents.

KDE News Mobile App

KDE and Northern Kentucky University launched the KDE News mobile application for iPhone, Android and Windows devices.

KETS Infographic

An accumulation of education technology data that visually presents important data trends.

Internet Safety and Content Management

Established statewide product standard for internet content management service.

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

Now called Microsoft Imagine Academy, KETS established a new strategy for championing industry recognized IT student certifications.

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.

2008

First Stilwell Award

KDE instituted the Stilwell Award for those outstanding partners who have helped KDE fulfill their mission to the students and citizens of the commonwealth. William E. Stilwell, namesake of the KDE Technology Award, is named first recipient.

KDE Open House

KDE Open House launched as a "one-stop shop" for education data allowing schools, districts, parents, researchers and others access to key data on schools and districts.

Kentucky Student Information Mobile App

In partnership with Infinite Campus, launched the first student information system mobile app, providing parents and students real time access to assignments, grades, attendance and more - The iOS app was introduced in 2011 and an Android version was available by 2012.

Digital Driver's License for Digital Citizenship Launched

KETS created a partnership with the University of Kentucky's Digital Learning Design Lab to launch an app focused on helping students and teachers learn the 9 elements of digital citizenship.

First State Board Meeting

Kentucky Board of Education (KBE) began to webcast meetings with the first webcast conducted from the State Board Room at the Capital Plaza Tower in Frankfort.

2011

Data Quality Study

Partnered with Gartner to define best practices for collection and stewardship of education data.

Non-Traditional Instructional Time Legislation

All 173 public school districts became eligible to apply to conduct "non-traditional" student attendance days due to weather or other emergencies formerly known as the "Snow Bound Pilot". 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

Schools implemented wireless Internet access on school buses to give students access to education technology tools while commuting to and from school.

eTranscripts

First state to use a common transcript and electronic process for college admissions statewide; all public high schools, and both public and private post-secondary schools participate.

Recognized as a Top 3 State in Data Quality

KDE recognized nationally, by the Data Quality Campaign, for best practices in data collection and use of educational data to improve student achievement.

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.

2014

Make 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. - (2011, 2012, 2013, 2014, and 2016)

Government Technology Magazine's "Doers, Dreamers and Drivers" Award

KDE named one of Government Technology's Top 25 Doers, Dreamers and Drivers for 2016, for finding innovative ways to cut through public sector barriers to improve and maximize services to the Commonwealth.

STLP on KET's "Education Matters"

Filmed live at STLP State championship at Rupp Arena, the video highlighted the impact of KETS and instructional technology across Kentucky.

2016

2012

2013

2015

2017



Master Plan Governance

Master Plan Governance

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 has been transitioned to the Office of Education Technology within the Kentucky Department of Education (KDE).

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, which 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)(b)).

[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 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).

Districts are required by [701 KAR 5:110](#) 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 an unmet 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 districts are to be used only for the projects included in the district's plan ([KRS 157.660](#)(2)).

Trust funds are transferred to local districts after the district's need for assistance has been certified by the School Facilities Construction Commission. All other expenditures from the fund require the approval of the Kentucky Board of Education ([KRS 157.655](#) (3)).

Calculation of Unmet Need

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



Approval of the unmet 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 unmet need and current KETS inventory before Offers of Assistance are distributed.

The following must occur before a district receives its funding:

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

The districts must follow 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.

There are four categories of unmet need:

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

Expenditures in operations and maintenance are absolutely necessary to sustain current levels of service. If unmet need within the operations and maintenance categories is 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 student workstation repair, teacher workstation repair, instructional software improvements, classroom printer repair, instructional fileserver 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 unmet need for incremental replacement constitutes a framework for 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 student instructional devices, teacher 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 unmet need for new technologies includes products and services that are more discretionary in nature--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 unmet need for each district. In the KETS Expenditure Plan, the board will also be considering approval of the amount of funds available to go toward that unmet need. Districts must continue to secure alternative funding sources beyond the KETS funds, using federal funds, local grants or other source, to fully fund the unmet need. Budgeting skills will be required to sustain and implement KETS.

Additional KETS Regulatory Information

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 has remained 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 have added clarity, definition, and direction.

[KRS 61.932](#) protects personal information in three very 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 security of student data.

In conjunction with these two laws, the Kentucky Board of Education (KBE) promulgated [702 KAR 1:170](#), which requires the Kentucky Department of Education (KDE) and school districts to annually acknowledge to their respective boards, by August 31 of each year, that the department or school district has reviewed best practices that meet the needs of personal information reasonable security.

