KETS Master Plan

for Education Technology
2018-2024

Kentucky Department of Education
Our Children, Our Commonwealth

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Approved by the Kentucky Board of Education
February 2018

Executive Summary

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

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

The 2018-2024 KETS Master Plan will identify: (a) things we already do well that we want to continue doing well over the next six years, (b) areas to improve upon, and (c) emerging items likely to occur that need to be accounted for by this Master Plan. The studies, research, standards, governance and technology needs for the state and districts that play a critical role in executing the Master Plan are also identified.

KETS celebrated its 25th year in 2017. It is very rare for a K-12 state-level education technology initiative to not only survive but also thrive for 25 years through changes of education commissioners and board members, governors' administrations, and state legislators. Fortunately, KETS maintained solid support throughout the entire time. In that sense, KETS is like a good band of musicians that, over the decades, stays relevant, continues putting out hits and grows in depth. Progress in earlier years (e.g., the initial six-year Kentucky K-12 Education Technology Master Plan, Internet connectivity and identification of a variety of sustaining funding sources) created a solid foundation for the unique accomplishments including, but not limited to, cloud-based major state level services, digital learning initiatives, Student Technology Leadership Program and the IT Academy (now Imagine Academy)**.** A more detailed look at the KETS history from 1992-2017 can be found in Appendix G.

The Kentucky Education Technology System's (KETS) major achievements since 1992 that we want to continue doing well include:

- National leader in state and district education technology planning and project management, including measures, metrics and feedback to frequently identify education technology that is and is not being used or adding value
- In 1995, first state to have all districts connected by high speed to the Internet, have all schools connected by fiber speeds, and, in August 2015, first state to reach the national goal of providing 100 kbps per student of fibered Internet access

- National leader of K-12 EdTech in product standardization - This allows Kentucky K-12 to:
    - significantly reduce costs
    - provide equitable price and service to all districts
    - make all the technology enabled components reliably work together in large scale with slim EdTech staffing
    - quickly integrate different, large EdTech systems
    - reduce obstacles to provide great cyber security
- National leader in K-12 EdTech cloud-based computing that is more reliable and secure, and saves money
- In 2014, recognized by the Data Quality Campaign (DQC) as a top three state for data quality
- National leader in education technology equity of access, opportunity and services
- National leader in K-12 cybersecurity
- Established the Kentucky K-12 Digital Learning Guidelines and a digital learning assistance team that significantly improved capacity building, relationships and connectedness with the folks in districts that focus on academic achievement in the classroom
- Created nation's first digital driver's license for students that now is adopted by the other 49 states
- Consistent stewardship and maximization of federal and state taxpayer funds (e.g., KETS, E-rate, bids)
- Nation's best Student Technology Leadership Program (STLP) - In May 2016, Kentucky Educational Television (KET) highlighted Kentucky's STLP for the one-hour "Education Matters" show.
- National leader in the implementation of Kentucky's first IT Academy (now called The Imagine Academy)
- Formative and interim online assessment providing immediate feedback to students and teachers
- First state to provide an online and smartphone app providing every K-12 student and their parent(s) real time status of students' grades, attendance, missing assignments, class schedule, and teachers' names/contact information
- First state to have telephones in every classroom
- First state to have an email account for every staff member, teacher, and student (helping parents stay connected with their child's teachers)
- Open House website, online School Report Card services and district websites help community members stay informed and connected with their district and school
- National leader in regards to the relationship, communications and trust between KDE's education technology office and customers (i.e., school districts, KDE program areas, vendor/government agency partners, and others)
- Received the 2016 Making IT Happen award from Kentucky K-12 school districts
- Received Government Technology Magazine's 2016 Doers, Dreamers, and Drivers award
- Received the Kentucky Association of School Administrators' 2017 State Education Leadership award and EdScoop's 2017 EdTech Hero award

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

- Recognize, educate, and continue to build upon previous accomplishments - Educate others about high quality continuing initiatives to prevent duplicative work for things that already exist and are very successful for schools.
- Address the importance of having adequate numbers of education technology roles/positions in all districts to ensure that existing and new education technology is (a) extremely reliable and available in the classroom, (b) maximized, (c) secure and safe, and (d) provides data of the highest quality
- Address funding required for basic cost of living increases, previous budget cuts to basic services and projected growth by districts (e.g., Internet consumption)
- Recognize the most crucial education technology professional development needs identified by teachers and identify who can best address the needs
- Focus efforts on shifting basic cyber security and safety to a prime position on the radar screen of teachers and district staff members
- A higher percentage of districts annually examining education technology investments to determine which technologies are and are not being used/maximized
- Data systems are first-class but we need to do much better with districts using the data available to them as well as providing visual data analytic tools allowing the data to be better understood and more interesting to the average person who does not have a technology and data background.
- Identify and communicate the EdTech product/design standards, EdTech safety and security, EdTech services, and reporting requirements of other schools that apply to charter schools
- While it's gotten significantly better due to advancements of hardware and software, there are still too many traditional labs filled with desktop computers in schools. Typically, labs do not provide ease of access for students throughout the school day and for all parts of the curriculum. Labs are also problematic for large-scale online assessment within a compressed window of time. Student and teacher mobile or portable devices help address the "ease of access" issue.
- Create a deeper partnership with higher education (postsecondary institutions). Focus on giving future teachers currently in a Kentucky postsecondary college of education experience with the K-12 education technology tools and environment. Have STLP events better maximized by the institution while we are on their campus. Kentucky is the most advanced state in regards to having electronic transcripts being sent from a K-12 school and electronically accepted by a KY higher education institution; transition cost for the service from the Council on Postsecondary Education (CPE) to the institutions.
- There can be a significant cost savings and increased reliability and security by continuing to move more types of services to managed (e.g., printing) and cloud-based services (e.g., phone systems).
- Continue to create a closer connection with Career and Technical Education (CTE) expanding opportunities for students to code, expand the technology and computer science courses/exams available through our IT Academy (now Imagine Academy), implement computer science standards, and digital literacy standards
- Be a vital part of helping implement the new assessment and accountability system - This includes the implementation of the new school report card/dashboard and summative online assessment. The success in formative and interim online assessment has not yet been duplicated in online summative assessment.

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

- Six-year KETS Master Plan for all of Kentucky K-12
- Monthly Kentucky K-12 Education Technology Leaders' webcast/written summary for all 173 districts
- 2018 Kentucky K-12 Education Technology Infographic
- KDE Open House
- District Digital Readiness Report
- Student Technology Leadership Program

The 2018-2024 KETS Master Plan includes the following sections: Introduction, Vision, Technology Planning, Areas of Emphasis, Technology Need Budget Projections, Studies and Research, Surveys and Results, Supporting Resources, Governance Structures, Standards, and Projected Costs of KY K-12 Technology Needs.

Introduction

Introduction

As mandated by KRS 156.670, [Appendix D] a plan related to purchasing, developing and using technology to accomplish specific purposes in Kentucky's public school systems must be developed and must cover at least a five-year period. The previous four versions of the Kentucky Education Technology System (KETS) Master Plan for Education Technology served the state very well and are the foundation for the current (fifth) 2018-2024 KETS Master Plan. The fundamental concepts and visionary principles used in the development of the first and subsequent plans remain relevant today. They are as important today as they were 25 years ago, have withstood the test of time, and will remain as guiding principles and benchmarks for future decision making.

To develop this plan, Kentucky Department of Education (KDE) staff gathered feedback and closely examined input from the state's 173 public school districts, the Kentucky School for the Deaf and the Kentucky School for the Blind, consulted with KDE program areas, and studied other plans such as the state plans of North Carolina and Wisconsin as well as the National Education Technology Plan and the Future Ready Framework. The KETS Master Plan is designed to build upon the state's past successes and progress, while progressing towards the future. This plan illustrates the path that will enable all students, teachers and administrators to understand and leverage technology. Education technology can provide students and teachers the opportunity to realize their full potential. It extends instructional content beyond traditional school walls and leads students to where every opportunity is open to them.

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

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

- a more informative and engaging experience for students
- addressing the different learning and teaching styles of all students and teachers
- deepen 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 need for schools, districts and the state. This portion of the plan recognizes both the ongoing operational, maintenance and replacement needs as well as the technology-enabled aspects of new strategic educational priorities, plans and projects. A blend of federal, state, local and creative funding sources are used to address the technology needs 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.
- Targeted areas of emphasis are aligned with the KDE strategic goals and the Future Ready Framework [Appendix C] to help position the state and P-12 students to be future-ready.
- The plan more closely aligns 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 sections in those plans.
- The plan continues to be informed by relevant studies, research, audit and survey results, and customer feedback, as well as national and other state and district plans to help guide and influence the direction of the work going forward. The following new studies and research results along with many others that are included further validate initiatives and work of the Master Plan. A link to a comprehensive list can be found in both Appendix A and C.
    - 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
- KETS standards are streamlined for display in table format to provide a summary of technology need, architectural and design, and product standards. [Appendix E]
- The technology need budget projection 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 Kentucky Education Technology System 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 shared in this Master Plan for Education Technology are Equity, Achievement, and Integrity (Figure 1). Equally, KDE and KETS value equity so that each student has the opportunity to graduate from high school with the education and skills needed to be successful. KDE and KETS value 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.

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

Quality, opportunity and access permeate the Master Plan as well as parallel the KDE Strategic Plan in many areas. Together the two plans set the stage for student success and provide guide points or map markers to keep KETS on course. Knowing where we've been and where we are heading allows KETS to remain true to its core values and serve Kentucky's students alongside the KDE Strategic Plan.

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 establishes conditions that allow KDE and OET to provide guidance to shareholders aimed at schools and districts making progress toward providing high quality opportunity and access to all students.

Additional connections exist in the objectives and identified strategies of both the Strategic Plan and the Master Plan. Both plans seek to leverage partnerships with a variety of shareholders and support district improvement efforts by building the collective expertise of educators through positioning resources to ensure opportunity and access for all students.

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

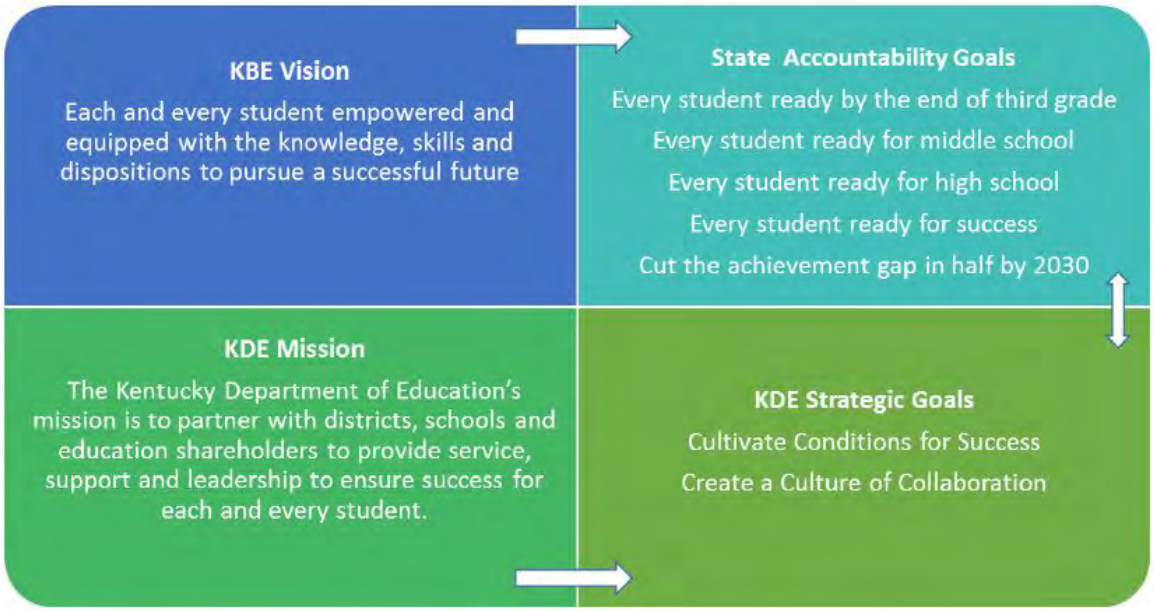


Figure 2: Connecting the Kentucky Department of Education vision, mission, and goals.

Ensuring a high quality education that leads to a successful future for each Kentucky student is not possible without addressing key elements of quality, opportunity and access [Figure 3]. These elements combined with rigorous instruction and quality resources provide a foundation that will propel students and the state forward for years to come.

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

Technology Planning

Technology Planning

District Comprehensive Planning

Kentucky's school districts perform comprehensive planning activities to determine long-range measurable areas of emphasis for each school with identified indicators. The process encompasses identification of strengths and weaknesses with each school and development of 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.

District Technology Planning Requirements

Through the legislation associated [Appendix D] with the development and maintenance of a master plan, districts are required to develop strategic technology plans that span at least one but no more than three years. Components of a district strategic technology plan include establishing specific areas of emphasis related to the following categories.

- Curriculum and 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 – The plan must have clear goals and a specific implementation plan detailing how students will acquire technology and information literacy skills as adopted by the Kentucky Board of Education in the Kentucky Core Academic Standards (including clear areas of emphasis and specific implementation plans detailing how student technology skills will be applied and integrated into demonstrated technology proficiency).
- 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 areas of emphasis of the district through the identification of technology solutions designed to provide ongoing support to the educational environment, both academically and administratively [Figure F-1, F-2]
- Evaluation Process - This is required to be incorporated into the plan to enable the district to monitor progress toward the specified areas of emphasis and perform mid-course corrections in response to new developments or opportunities
- Budget Summary – Planned professional development purchases along with funding sources 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. The Kentucky Education

Technology System offer of assistance is a state level funding mechanism intended for implementation of district technology plans.

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

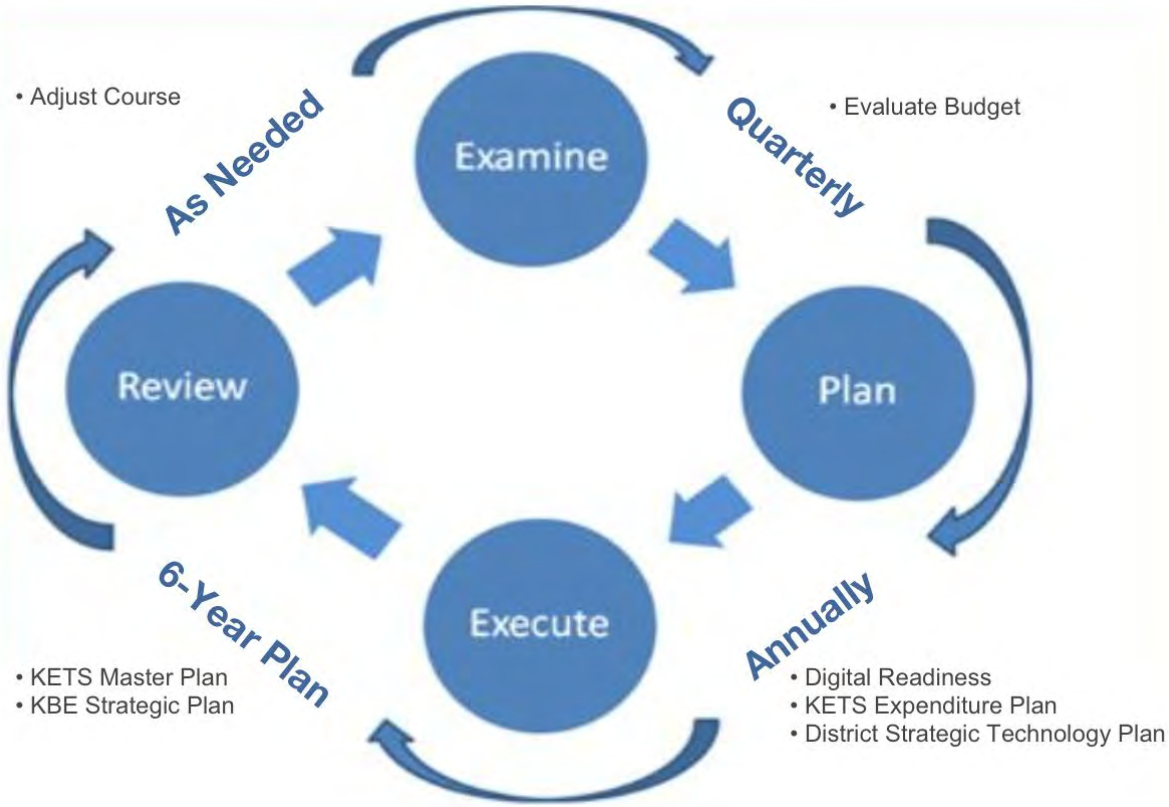


Figure 4: Technology planning cycle

An important focus for the Master Plan is to identify leadership and support opportunities directly tied to goals and deliverables for KDE and school districts. When doing so, targeting measurable indicators presents an opportunity to gauge the overall efficiencies and effectiveness of the KETS program. Like the Master Plan, the district technology strategic planning process is intended to provide the local level with control over the decisions related to integrating technology into instruction and administrative functions, and efficiency based on the situation and capabilities such as culture, policy and available funding sources. Just as the National Education Technology Plan cannot dictate standards and specific requirements for all 50 states, the Master Plan cannot define a step-by-step process to follow, nor can it advocate one solution over another for 173 districts.

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

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

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

Contributing State Plans

State level digital learning plans provide insights, recommendations and research to advise Kentucky's digital learning work. The following section provides brief summaries with links to the publication.

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.

Kentucky District Plans

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

Master Plan Areas of Emphasis

Master Plan Areas of Emphasis

Connected to the Future Ready Framework

The following section links current successes (see executive summary) and identified areas of emphasis to the Future Ready Framework (see page 16). The identified areas of emphasis are categorized as either 1) Areas of Acceleration or 2) Areas of Improvement. Each Future Ready connected gear will include both categories of emphasis. The “acceleration” areas of emphasis, which are considered big wins, successes, and major milestones of the Kentucky Education Technology System are identified for continuation work. The areas of improvement identified below address emerging areas based upon growth or decline metrics, research, needs assessments, and reporting by Kentucky school districts. The areas of emphasis established through a strategic planning process are intended to highlight the groundbreaking progress made over KETS program history and continue placing major emphasis on this work as a primary goal. Additionally, this will help prevent duplicate initiatives, which create confusion and lost time, while simultaneously focusing energy on areas of improvement in order to get better. These areas will focus efforts during the life of this Master Plan to continue the delivery of quality, opportunity and access to students and staff. Identification of area types are represented by the following symbols:

Areas of Acceleration
(Big Wins, Successes & Continuation)

Areas of Improvement
(for this Master Plan)

Robust Infrastructure & Ecosystem

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.

AA

Continue to provide nation's first, fastest, highest quality, and most reliable Internet access to 100% of Kentucky's public schools

AA

Continue to ensure equity and standardization for delivery of device, network, data, and support creating best in class staff and student digital experiences AND provide a system of shared/brokered/managed services maintaining low infrastructure costs and providing support structures promoting the use of personalized learning environments

AA

Continue to create a culture of digital connectedness through all - the - time, everywhere, always on digital opportunity and access with emphasis on dense Wi-Fi throughout schools *(also including home access, Wi-Fi buses, school and classroom Wi-Fi, etc.)*

AA

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

AI

Improve ease of access for students and staff through continued progress toward a 1:1 student to computer ratio utilizing increased amounts of mobile devices *(fewer traditional computer labs)*

Data Security, Safety & Privacy

Future Ready Gear

KETS GUIDING PRINCIPLE – Security, safety and privacy of student data is a cornerstone of digital learning. Policies and procedures are enacted at the state, district and school levels that work in conjunction for this purpose. Student data are then utilized by data fluent educators for improved decision-making leading to increased learning for students.

AA

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

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

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

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

Continue supporting teacher efforts in taking ownership of digital citizenship skills and educating their students in the same skills to foster a secure digital learning environment

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

Kentucky K-12 Data systems are first-class but we need to do much better with districts using the data available to them as well as providing visual data analytic tools allowing the data to be better understood and more interesting to the average person who does not have a technology and data background.

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 21st century learning environment in a manner that reflects good stewardship of tax dollars to include devices, infrastructure, support, data and human services.

Continue to maximize 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 *(ex: accounting for cost of ownership over the lifespan equipment so monies are allocated for repairs/upgrades)*

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

Make districts aware of positions/roles requiring technology-related duties in support of technology and instruction *(The People Side of K-12 EdTech)*

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

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

See an increased percentage of districts examining which education technology investments are or are not being maximized

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 build those connections as well as increase communication and transparency with shareholders, including families, districts, vendors, regional education collaboratives, postsecondary institutions and business/industry, in support of student learning and preparation beyond K-12.

Continue to build trusted relationships with shareholders (families, districts, partners) that will reduce risk as well as increase transparency and communication.*(districts, vendors, higher-education, regional cooperatives)*

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

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

Partner with postsecondary pre-service teacher and principal programs to provide support in candidate preparation

Encourage postsecondary institutions to host STLP events and/or more fully maximize the opportunity to showcase the university and its programs while students are on campus

Build relationships with charter schools to determine policies and procedures related to architecture/design, systems security and privacy, services and reporting requirements

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 environment 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.

Continue to provide access to instructional digital content which further aligns to the Kentucky Digital Learning Guidelines

Continue providing opportunities for students to demonstrate learning connected to and through technology *(empowering students through technology with STLP, Imagine Academy, etc.)*

Continue to finalize and partner with Career and Technical Education (CTE) to promote Kentucky approved K-12 Computer Science Standards and Technology/Digital Literacy Content Standards *(based on International Society for Technology in Education standards)* for ALL students

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

Continue to provide districts/classrooms access to digital instructional materials through an equitable and robust digital experience

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

Create a closer connection with Career and Technical Education to expand information technology and computer science career pathway offerings specifically related to computer programming/coding and increase exams available through IT Academy

Play a vital role in implementation of summative online assessment and school report card and dashboard tool of the new assessment and accountability system

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 to determine crucial learning needs of teachers resulting in more 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 reimagining the use of school space and time. Virtual instruction, cloud-based learning tools, digital instructional material, digital collaboration, digital workflows and digital relationships, etc., assist in providing the vehicle for anywhere, anytime learning.

AA

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

AI

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

Projected Costs for KY K-12 Technology Needs

Projected Costs for KY K-12 Technology Needs

The 2018-2024 Master Plan Budget for Education Technology represents a statewide budgetary projection outlining the total cost of ownership for the primary technology components, services, and people needed to ensure ease of access to an equitable 21st century learning environment. In accordance with KRS 156.670, this budgetary projection establishes the baseline technology **need** for all Kentucky public schools and districts, and includes the annual costs to sustain the education technology shared services provided by KDE to all schools and districts statewide. Each Master Plan Budget item represents an industry standard "best practice" approach as opposed to a requirement, and carries the expectation that a wide variety of local, state and federal funding sources should be leveraged to address the ongoing need to implement and incrementally replace all technology components and services (701 KAR 5:110). The fiscal year 2013-2018 Master Plan budget reflected an annual overall need of $322,126,501 compared to the newly projected annual need of $356,157,170.

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

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

1. District Technology Plan
2. Digital Readiness Survey
3. Technology Activity Report

The delta between that which is outlined in the Master Plan Budget as targeted projections, when compared to actual implementation progress as identified in statewide reporting determines the remaining **Unmet Need.** The state funding program and subsequent annual offers of assistance are specifically targeted at reducing the remaining district unmet need.

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

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

1. **Q: What is considered "technology"?**

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

2. **Q: What is considered a KY K-12 Enterprise System?**

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

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

A: Ninety-five percent of the nation's CEOs (including superintendents) blame the KDE CIO and/or the district CIO for any failure or any major issues/controversy of any KY K-12 EdTech enterprise system. In addition, OET and district EdTech staffs have up to 25 years of experience/wisdom of successfully implementing hundreds of large scale, high visibility, EdTech systems. This experience proves to be very helpful during the implementation of successful budget planning, deploying, integrating, maintaining and providing cyber security for all enterprise level EdTech product/service in KDE and/or school districts.

4. **Q: What is total financial cost of ownership (TCO)?**

A: Typically, the initial purchase price to build or buy a technology-enabled product/service only represents 20% of its true cost over its life. The other 80% is the people, software and hardware costs of initial/ongoing training, conversion, integration, telephonic/onsite repair/break fix, ongoing maintenance and incremental upgrades, and its relationship to and impact on other KY K-12 data systems (aka change management).

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

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

Summary

Summary

We recognize and celebrate that today's learners must be prepared to flourish in a continually changing digitally rich landscape. It is estimated that 65% of children entering elementary school will ultimately work in jobs that don't exist today (reference: 2016 World Economic Forum report New Vision for Education). To prepare our students to redefine what is possible and for future success (college and career), both students and teachers will need access to infrastructure, devices, digital tools and resources, digital curriculum and assessment, personalized learning applications, and digital experiences that reshape the use of space and time that can be embedded seamlessly into powerful learning experiences**.** This KETS Master Plan represents statewide guidance for the next six years. The Master Plan standards, budget projections and areas of emphasis are intended to be carried out over time with progress reported annually to the Kentucky Board of Education (specifically focused on budgeting unmet need and offers of assistance). Ultimately, the goal of this plan is to provide each Kentucky student with the skills, understandings and confidence she or he needs to be successful and lead in the digital age. It is intentionally designed to meet the requirement for providing equitable access to educational opportunities. A collaborative effort from all partners is essential to continue to accelerate and improve upon the emphasis set forth in this plan — from Pre-K–12 to postsecondary, classroom teachers to local and state policy-makers, libraries to businesses, and students to parents — it will take everyone partnering and working side-by-side.

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

FURTHER INFORMATION: KETS Master Plan Website

To prepare this fifth edition of the KETS Master Plan, the Kentucky Department of Education team, along with many partners, analyzed relevant research and data, reviewed many national and state reports, and prepared summaries of relevant findings. Also published were studies, models, and other resources that provide more background and details for a number of the recommendations in this plan. This KETS Master Plan and accompanying materials are available on the Kentucky Department of Education website. This plan is a living document and will be updated as needed.

Appendix A - Studies & Research

Studies and Research

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

Kentucky Studies

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

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

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

Digital Learning 2020 - 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 and weaknesses:

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

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

IT Assessment and Optimization Gartner Study - Performed in 2004, this study detailed key findings as well as provided implementation recommendations to KDE to increase cost efficiency and enhance 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 Teaching 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 teacher agreement percentages.

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) review of Kentucky's education technology, inclusive of funding, governance and status of related initiatives and projects. The study names several accomplishments as well as some areas in need of improvement.

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

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

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

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

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

External Studies

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

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

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

Building Teacher Capacity and Competency to Create Learning Experiences for Students
A report released by Project Tomorrow and Blackboard using the Speak Up initiative fall 2016 survey utilizes data points to examine the readiness of teachers to use digital tools to transform the learning process.

Building Technology Infrastructure for Learning - In June 2017, the U.S. Department of Educational Technology released a comprehensive look at delivering broadband connectivity to schools for the purpose of student learning. The guide provides examples of how to connect a school district to broadband, connect students and staff inside the school building, 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.

Appendix B - 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 Kentucky 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.

Kentucky Department of Education

Office of Education Technology - January 2018

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.

1.1 to 1
↓.3

525,687
Student Instructional Devices

100% of schools provide Wi-Fi access to students

Of these, 95% (+13%) 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

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.

Kentucky's Educational Network (KEN) - school fiber Internet total usage increased

+140%

in the past 24 months. While maintaining uptime of

99.9688%

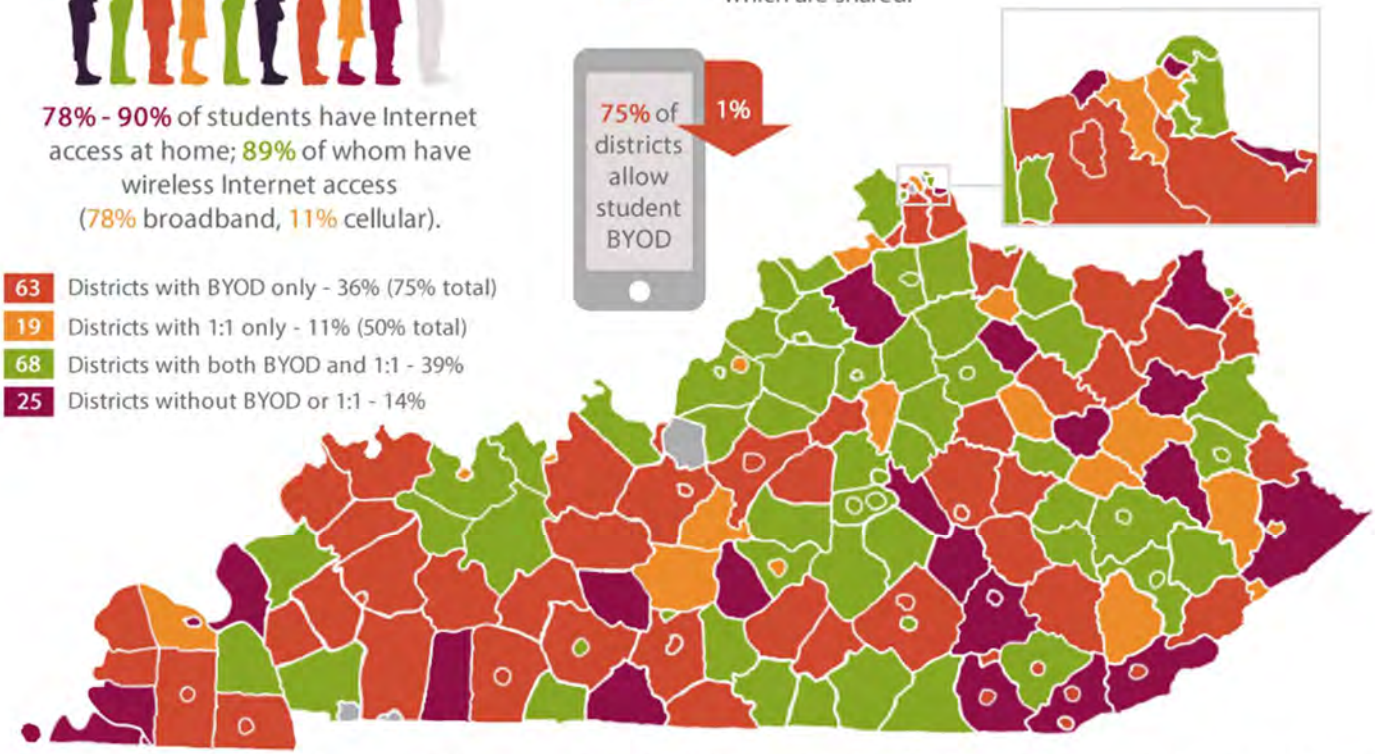
74% ↑4%
of students have a smartphone. 11% of which are shared.

78% - 90% of students have Internet access at home; 89% of whom have wireless Internet access (78% broadband, 11% cellular).

75% of districts allow student BYOD

1%

63 Districts with BYOD only - 36% (75% total)
19 Districts with 1:1 only - 11% (50% total)
68 Districts with both BYOD and 1:1 - 39%
25 Districts without BYOD or 1:1 - 14%



Anytime, Anywhere, Always On, Differentiated Teaching and Learning

Future-Ready Student

82% of KY parents believe their child's school encourages technology use for teaching and learning

87% of KY parents believe technology use in class can enhance student learning

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

67% find these tasks easy to perform

Only **9%** reported never doing so

Student-reported ease of recording and editing video

84% ↑14% find these tasks easy to perform

Only **10%** said the task was impossible

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

92% at least once monthly

Only **4%** reported never doing so

FOUNDATIONAL SKILLS

Student-reported ease of sending an email

80% find these tasks easy to perform

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

45% ↓2% of students are allowed to use personal mobile devices in class for academic reasons

COLLABORATION & ONLINE SKILLS

Student-reported ease of collaborating using online documents

73% find these tasks easy to perform

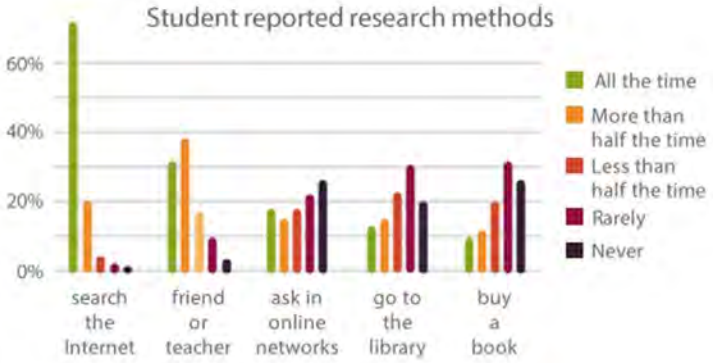
7% said the task was impossible

Student-reported frequency of reading online content

68% at least once a week

15% said never

Student reported research methods



15,615 Certifications (+35%)

91% High School & ATC Participation

59% Certification Pass Rate

29% Greater than National Average

< KY IMAGINE ACADEMY />

student responses: > 60,000 | teacher responses: > 7,000

21st-Century Teacher

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

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.

MULTIMEDIA SKILLS

Ability to manipulate photos and record and edit audio or video

44% ↑1%
find these tasks easy to perform

40% expressed interest in Professional Development (PD) in this area (-8%)

ONLINE SKILLS

Essential skills for contributing to and collaborating on the Internet

67% ↑1%
can use these skills

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

FOUNDATIONAL SKILLS

Basic computing skills - sending email and creating spreadsheets

69% ↑2%
find these tasks easy to perform

15% expressed interest in PD in this area (-1%)

90% ↑1%
of KY teachers believe technology enhances learning and their daily lives

CONFIDENCE WITH TECHNOLOGY

74%
can solve their own tech problems

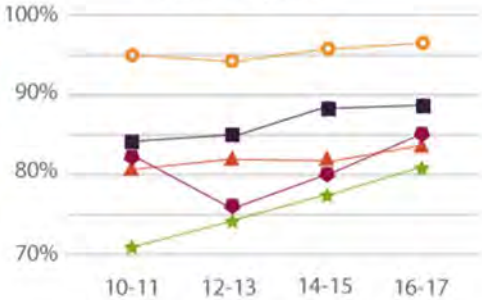
75%
easily learn new technologies

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

78% of these teachers say the quality is average or above average

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

Positive Responses



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.

90% of these are encouraged to use technology and learning by school leaders

Most requested education technology PD topics

40% ↓1%
Multimedia Skills

54% ↑9%
Online/Digital Collaboration

38%
Online Tools for Critical Thinking

Tech Trends

ONLINE & VIRTUAL LEARNING

90% of districts report students taking online or virtual courses

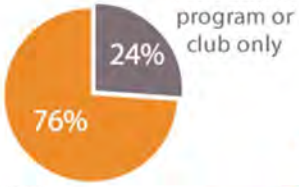
Students grade 6-12 taking at least one online course are up **29%**. Of these, **45%** are girls, **55%** boys.

LEARNING MANAGEMENT SYSTEM

79% ↑8% of districts sponsor a learning management system (LMS)

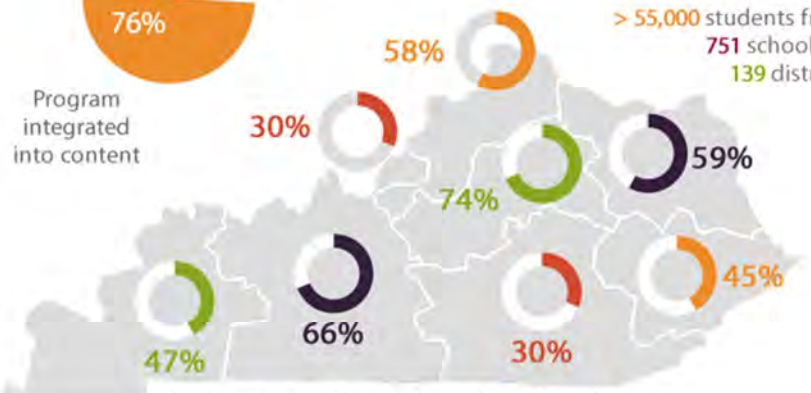
The majority of adoption is with free cloud services. However, there is a upward trend toward paying for a solution.

- **48%** ↓8% WINDOWS
- **29%** ↑13% CHROME
- **15%** ↓3% IOS
- **6%** ↓2% MAC
- **2%** ANDROID



STLP
Student Technology Leadership Program

> 55,000 students from **751** schools in **139** districts



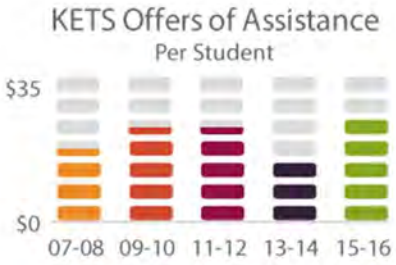
Percentage of schools with STLP by region

94% of districts are using Google Apps for Education. Of these, **79%** have integrated with Office 365 & Active Directory

SECURITY

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.



90% of districts report having a strategic plan for teaching Digital Citizenship Skills

*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.

2018
January

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

Kentucky UNBRIDLED SPIRIT

Appendix C - Supporting Resources & Guidance

Supporting Resources and Guidance

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

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

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

Data Quality Campaign – OET has made great progress to collect useful data and make it available to educators at all levels. The Data Quality Campaign (DQC) is the nation's foremost organization advocating for effective data policy and use. OET participates in DQC initiatives and uses DQC resources to identify best practices to advance 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 and 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. Soon after, a more economical

data portal, Open House, was launched that 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. The review also recommends goals and provides guidance on how to measure progress toward implementation..

Three Lessons from Rigorous Research on Information Technology – The Massachusetts Institute of Technology conducted a study to determine relevant studies on the use of educational technology and its effects on student learning. The study identifies three key findings through 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) – House Bill 341, passed by Kentucky Legislature in 2006, directed KDE to perform a study of the requirements for data security and the notification process if a breach were to occur. This study provided the basis for the Data Privacy Best Practice Guidelines highlighted in Appendix A.

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

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

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.

Appendix D - 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).

KDE's responsibility was further codified with KRS 42.746, a 2015 renumbering of KRS 11.507, clarified that technology services to local school districts falls completely under the Kentucky Department of Education. The services include but are not limited to developing, implementing, and maintaining the direction, standards, and architecture of the K-12 focused technology infrastructure.

Approval and Update of the Master Plan

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

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

Standards

KRS 156.160(1) stipulates that the Kentucky Board of Education has a statutory mandate to prescribe standards, 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 a technology need described in the district plan and approved by the Kentucky Board of Education (KRS 157.655(3)).

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

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

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

Calculation of Technology Need

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

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

Staff certify that districts recommended by the Commissioner of Education have met all the statutory requirements of KRS 157.655 and KRS 157.660 required to adequately describe their technology need and current KETS inventory before Offers of Assistance are distributed.

The following must occur before a district receives its funding:

1. Kentucky Board of Education approves technology need for districts.
2. School Facilities Construction Commission (SFCC) approves technology 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 technology need:

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

Expenditures in operations and maintenance are necessary to sustain current levels of service. If technology need within the operations and maintenance categories 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 file server repair, school management software improvements, initial/ongoing technology integration, professional development, student technology leadership services, Internet services, telephone communications to parents, distance learning service, help desk services, email services, enterprise data system access and school financial management services.

The technology need for incremental replacement constitutes a framework for 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 technology 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 technology 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 technology 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 technology 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 remains an effective cornerstone of guidance for data security, new bills (KRS 61.931, et seq. or "House Bill 5" and KRS 365.734 or "House Bill 232") went into effect in 2015 and added clarity, definition, and direction.

KRS 61.932 protects personal information in three 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 state laws, the Kentucky Board of Education (KBE) promulgated 702 KAR 1:170. This KAR requires the Kentucky Department of Education (KDE) and school districts to annually acknowledge to their respective boards, by August 31 of each year, that they have reviewed guidance from the Data Security and Breach Notification Best Practice Guide, [Appendix A] and implemented appropriate security for each data system for which they are responsible or provide reasons why safeguards have not been put in place, such as lack of resources.

Appendix E - KETS Standards & Establishing Technology Need

KETS Standards and Establishing Technology 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 Core 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 K-12 Computer Science Standards. These standards are based on 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

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

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

Since 1992, enterprise standards have anchored all instructional, administrative, and technical aspects of Education Technology. These standards have afforded the state a) significant savings in the initial procurement of technology equipment, b) equitable supportability regardless of geographic location, c) a foundational infrastructure to provide for secure, global ease of access, d) statewide collaboration via various forms of electronic mediums (email, telephonic, video-conferencing), e) statewide adoption of the Internet as an instructional resource, and f) uniform education technology applications to address both student management and financial management. All Commonwealth of Kentucky public school districts

share in the benefit of each of these efficiencies due to a common set of standards. Standards minimize the retraining required when staff 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.

Technology need standards represent the equitable baseline of all technology components required to adequately address both the education technology instructional and administrative needs of K-12 and involve the following 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 Technology 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 Technology 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 architectural design and configuration standards to ensure enhancement, maximization and security of the education technology environment in Kentucky. The following are some of the core standards included:

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.

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.
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).

Kentucky K-12's education technology product and design standards are "the" big edge that KY K-12 has on the other 49 states and a big reason KETS is viewed as a national leader in education technology. KY K-12 is the national leader in having education technology product and design standards/policies for all our schools, districts and for the Kentucky Department of Education (KDE) program areas. This allows KY K-12 to (1) significantly reduce costs, (2) provide equity of price and service to all districts, (3) make all the technology-enabled components work reliably together in large scale with smaller EdTech staffs, (4) quickly integrate different large EdTech systems together and (5) provide great cyber security. Therefore, KDE's Office of Education Technology is able to effectively provide a variety of effective operational services and a protective cyber security bubble around all schools, district offices and KDE program areas that follow those KETS product and design standards/policies.

Product standards provide the purest alignment and maximizing of efficiencies within KETS when KETS product components are utilized. These technology components embody

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

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

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

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

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

KETS Standards			
Category	**Technology Need**	**Architectural Design & Configuration**	**Product**
Student Workstations	✔	✔	✔
Faculty/Staff Workstations	✔	✔	✔
Assistive and Adaptive Technology	✔		
School and District Printing Services	✔	✔	✔
File Servers and Storage	✔	✔	✔
School and District Network Wiring	✔	✔	
School and District Network Components	✔	✔	✔
School and District Phone Systems	✔	✔	✔
Software, Apps and Digital Content	✔		
Student Information System	✔	✔	✔
Financial Accounting System	✔	✔	✔
People Side of Education Technology	✔		
STLP Leadership & Services	✔		
The Internet	✔	✔	
- KY K-12 District Internet Hub Fiber Connection to the Internet (KDE provided).	✔	✔	✔
- School to KY K-12 District Internet Hub Fiber Connection	✔	✔	
School & District Phone Lines	✔		
Professional Development *Teachers, School & District Staff*	✔		

Category	Technology Need	Architectural Design & Configuration	Product
Classroom Instructional Technology *(projectors, interactive displays, etc.)*	✔		
Directory Services *(defines who you are, what you have access to, and under what conditions)*	✔	✔	✔
Electronic Mail	✔	✔	✔
Cybersecurity (protecting people, data, and systems)	✔	✔	
- Virus Protection	✔	✔	✔
- Software Update Services	✔	✔	
- Firewall	✔	✔	✔
- Internet Safety/Security Management Solutions (web filter)	✔	✔	✔
- Virtual Private Network (VPN)	✔	✔	✔
- Distributed Denial Of Service Protection (dDoS)	✔	✔	✔
- Private Internet Protocol (IP) Services	✔	✔	✔
- Managed Uninterrupted Power Supply Services	✔	✔	✔
- Domain Name Services (DNS)	✔	✔	✔
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), Council of Chief State School Officers (CCSSO), International Association for K-12 Online Learning (iNacol), and Consortium for School Networking (CoSN).
- 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.

Click for more information on KETS Enterprise Architecture and Standards.

Appendix F - Evaluating and Measuring EdTech Investments

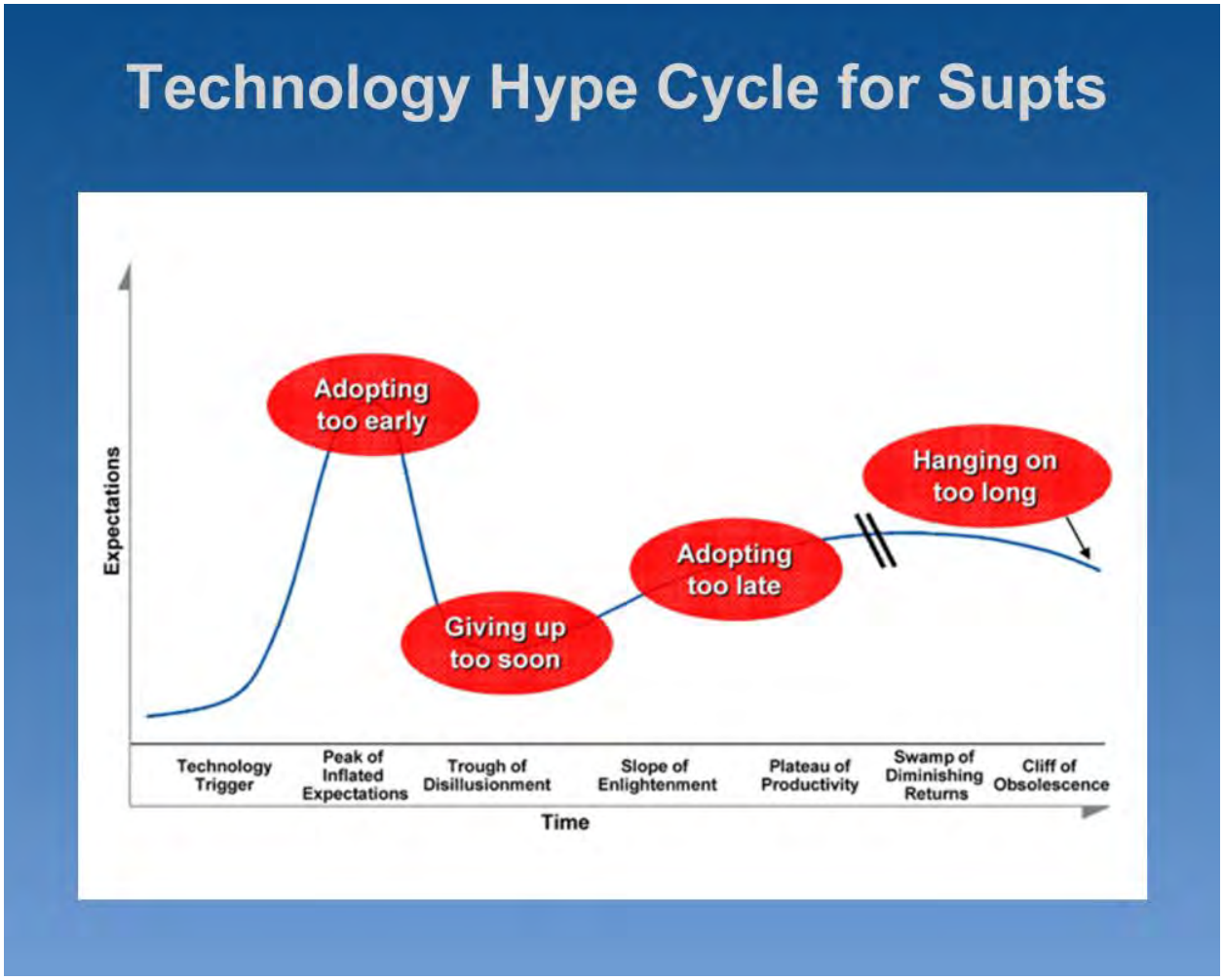


Figure F-1. Correlation of time and expectations related to technology adoption

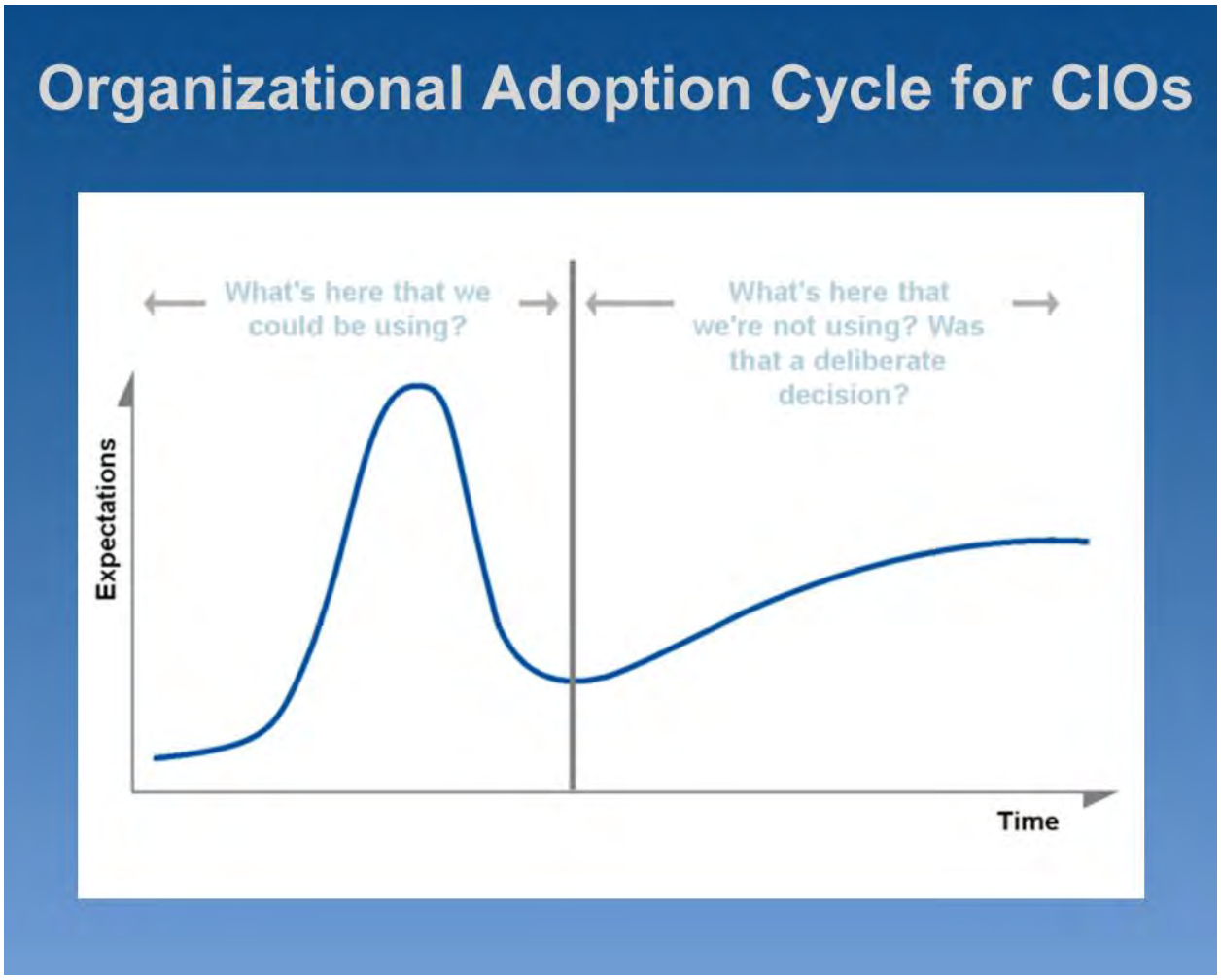


Figure F-2. Technology adoption cycle considerations for chief information officers

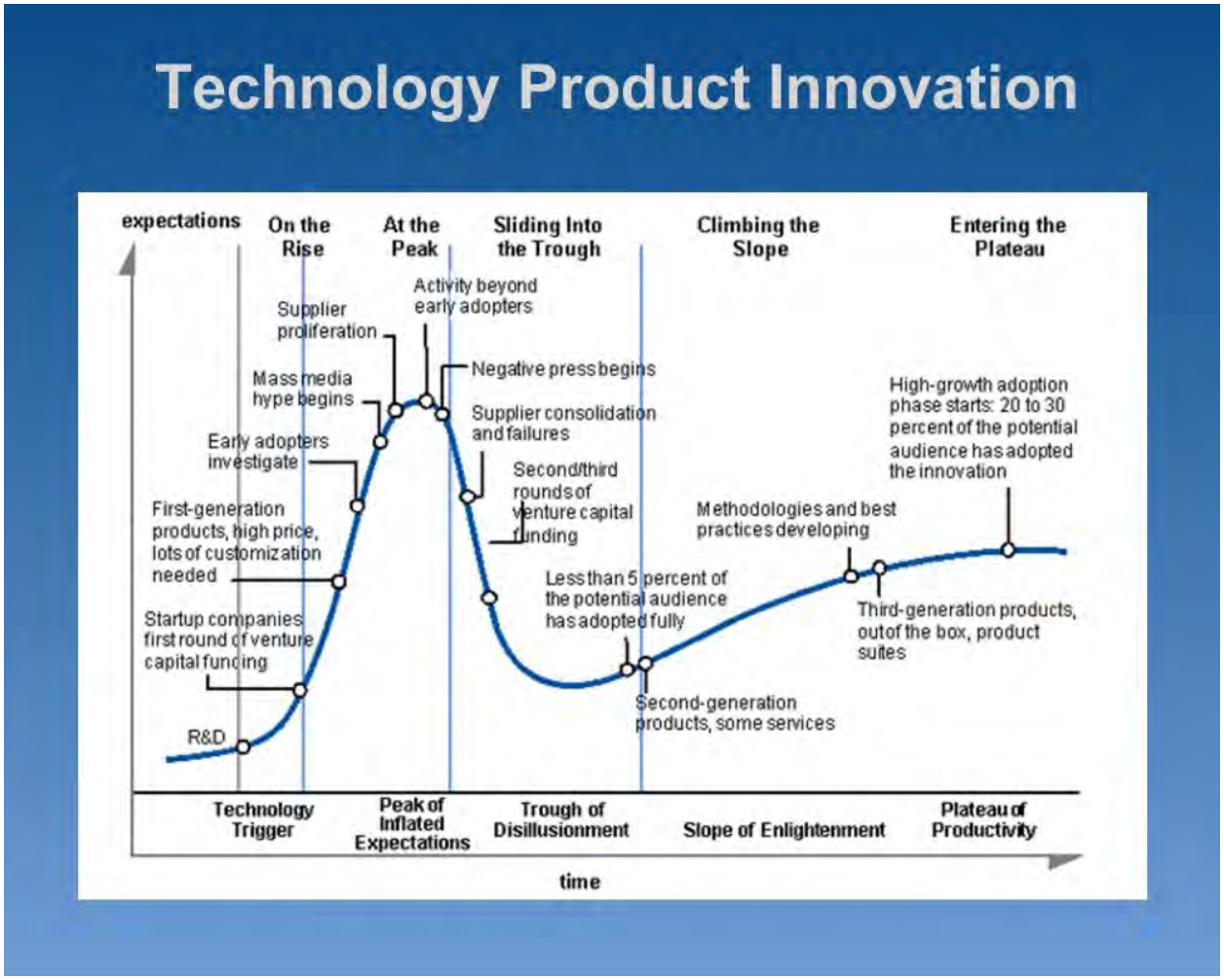
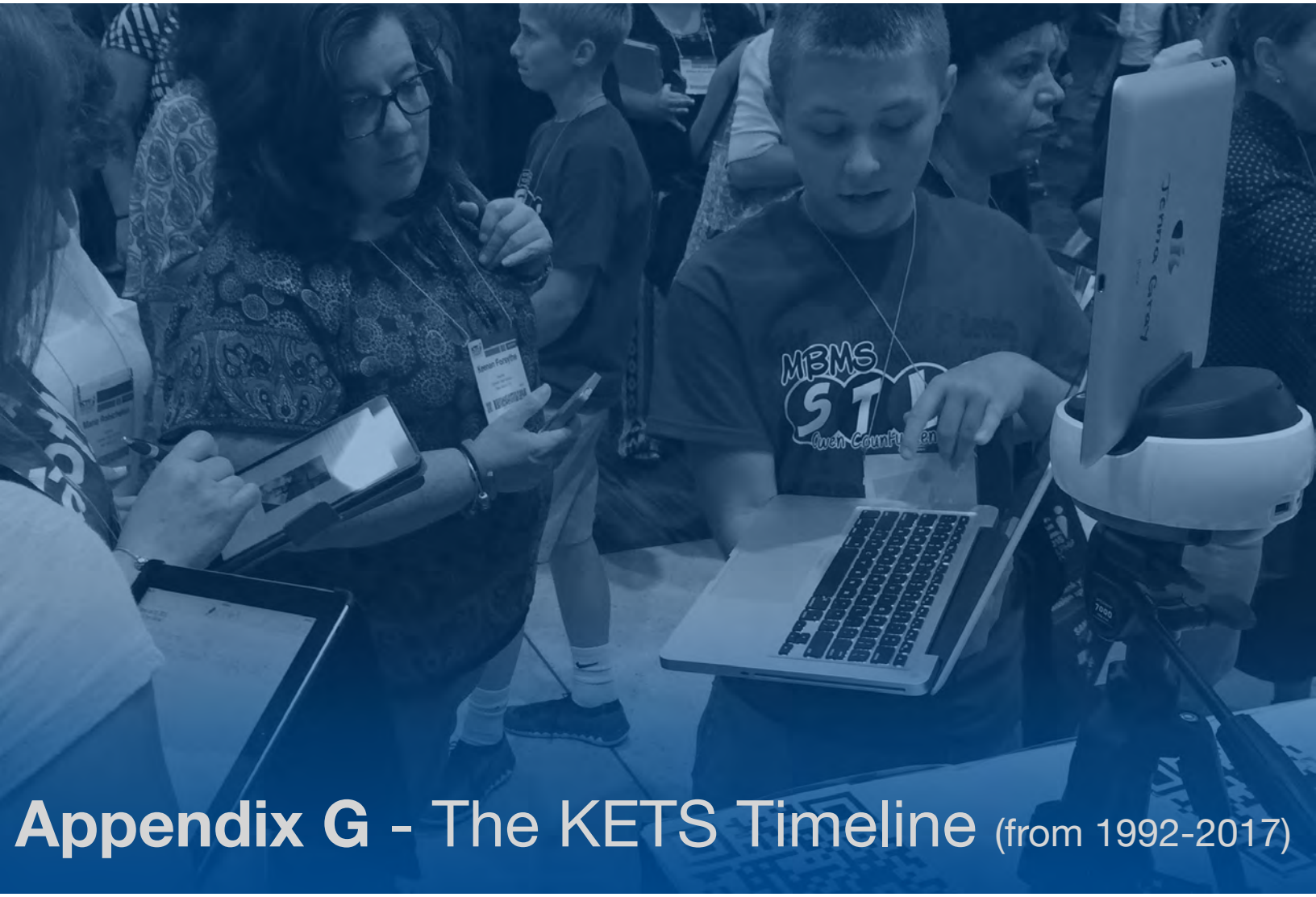


Figure F-3. Private sector technology product innovation



Appendix G - The KETS Timeline (from 1992-2017)

The History of Education Technology in Kentucky Schools

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.

1993

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.

1994

Student Technology Leadership Program (STLP)

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

Model Districts Selected

Eight model sites, strategically located across the state, selected to demonstrate how KETS would bring life to the vision of the Kentucky Education Reform Act (KERA)1

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

1995

First Microsoft Mail Implementation

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

Rollout of District Administrative System

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

Every School District Connected to the Internet

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

1997

MUNIS a Common Financial System for Every District

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

1998

Federal E-rate Program

Kentucky was the best-positioned state in the nation to take advantage of this new federal funding opportunity because of the state and district education technology plans and existing statewide education technology contracts for eligible components. Kentucky schools have received over $545 million for telecommunication lines, Internet access and networking components since 1998 and remains among the top states in the nation in E-rate funds received. State level 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

2000

Statewide Student Information System

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

Statewide KETS Service Desk

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

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

2001

KETS Phase 1 Completion

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

2001-2006 KETS Master Plan for Education Technology

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

2004

Statewide Identity Management Service

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

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

2005

First Statewide STLP Championship at Rupp Arena

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

2006

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 district EdTech leaders webcast. This is a monthly event that has continued for the past 11 years.

2007

KATC Becomes KySTE

Kentucky Association of Technology Coordinators became KySTE (Kentucky Society for Technology in Education) and hire first executive director

2007-2012 KETS Master Plan for Education Technology

The 2007 Master Plan described how technology would be used to improve teaching and learning for all of Kentucky's children, building upon past successes and defining a path which enable all students to understand and leverage technology opportunities to realize their full potential while extending instruction beyond traditional school walls.

2008

First Stilwell Award

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

2010

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

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

2011

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
Commissioner held first All State Superintendent webcast 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.

2012

KDE Notify App
KDE and Northern Kentucky University launched KDE's first mobile app 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

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.

2014

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 postsecondary schools participate.

2015

Recognized as a Top 3 State in Data Quality
KDE was 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.

2016

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 state.

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.

2017

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 nine elements of digital citizenship.

First State Board Meeting 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.

2013-2018 KETS Master Plan for Education Technology
The 2013 Master Plan closely aligned with the P-12 education strategic plan of the state and districts, and was further informed by relative studies, research, audit and survey results, and customer feedback. For the first time, the Master Plan was delivered in an online digital format.

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 app 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.

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

Appendix H

Projected Costs for KY K-12 Technology Needs (Line Item Worksheet)

2018-2024 Projected Costs for KY K-12 Technology Needs (Line Item Worksheet)

	Average Cost per Unit	Unit Variable	Units of Sustained Need	Annual Unit Cost	Annual Replacement Cost	Refresh Rate (Years)	Master Plan 6 Year Replacement Cost
School/District Expenditures							
Student Access							
Student Workstations	$300	per student (ADM)	656,588	$75	$49,244,100	4	$295,464,600
Assistive and Adaptive Technology	$200,000	per year	1	$200,000	$200,000	1	$1,200,000
Student Access Subtotal					**$49,444,100**		**$296,664,600**
Classrooms Digital Learning and Environment							
Software, Apps, and Digital Content	$41	per student (ADM)	656,588	$41	$26,920,108	1	$161,520,648
STLP Leadership & Services	$10	per student (ADM)	656,588	$10	$6,565,880	1	$39,395,280
Classroom Instructional Technology	$2,000	per classroom	43,778	$250	$10,944,500	8	$65,667,000
Classrooms Digital Learning and Environment Subtotal					**$44,430,488**		**$266,582,928**
Faculty/Staff Access							
Faculty/Staff Workstations	$1,000	per teachers/staff	97,418	$250	$24,354,500	4	$146,127,000
Faculty/Staff Access Subtotal					**$24,354,500**		**$146,127,000**
School/District Administrative Technology							
* School and District Printing Services	$35	per student (ADM)	656,588	$35	$22,980,580	1	$137,883,480
File Servers and Storage	$3	per student/adult	754,006	$3	$2,262,018	1	$13,572,108
School and District Phone System	$14	per teachers/staff	97,418	$14	$1,363,852	1	$8,183,112
School and District Telco Voice Lines	$90	per teachers/staff	97,418	$90	$8,767,620	1	$52,605,720
Financial Accounting System (Munis)	$4	per student (ADM)	656,588	$4	$2,626,352	1	$15,758,112
Student Information System (Infinite Campus)	$6	per student (ADM)	656,588	$6	$3,939,528	1	$23,637,168
School/District Administrative Technology Subtotal					**$41,939,950**		**$251,639,700**
School/District Internet Access							
School and District Network Wiring	$3,600	per classroom	43,778	$300	$13,133,400	12	$78,800,400
School and District Network Components (LAN, WAN, Wired, Wireless)	$120	per student/adult	754,006	$24	$18,096,144	5	$108,576,864
School to Kentucky K12 District Internet Hub Fiber Connection	$22	per student (ADM)	656,588	$22	$14,444,936	1	$86,669,616
School/District Internet Access Subtotal					**$45,674,480**		**$274,046,880**
Technology Leadership and Personnel							
People Side of Education Technology	$142	per student (ADM)	656,588	$142	$93,235,496	1	$559,412,976
Professional Development - Teacher, School and District	$146	per teachers/staff	97,418	$146	$14,223,028	1	$85,338,168
Technology Leadership and Personnel Subtotal					**$107,458,524**		**$644,751,144**
School/District Expenditures Total					**$313,302,042**		**$1,879,812,252**
State Shared Services for Schools and District Offices							
KETS State Shared Discounted Services	$16,000,000	per year	1	$16,000,000	$16,000,000	1	$96,000,000
* Internet Access for all Kentucky K12 Districts	$18,429,400	per year	1	$18,429,400	$18,429,400	1	$110,576,400
Other KDE and State Sponsored Programs	$18,600,000	per year	1	$18,600,000	$18,600,000	1	$111,600,000
State Shared Services for Schools and District Offices Total					**$53,029,400**		**$318,176,400**
GRAND TOTAL					**$366,331,442**		**$2,197,988,652**