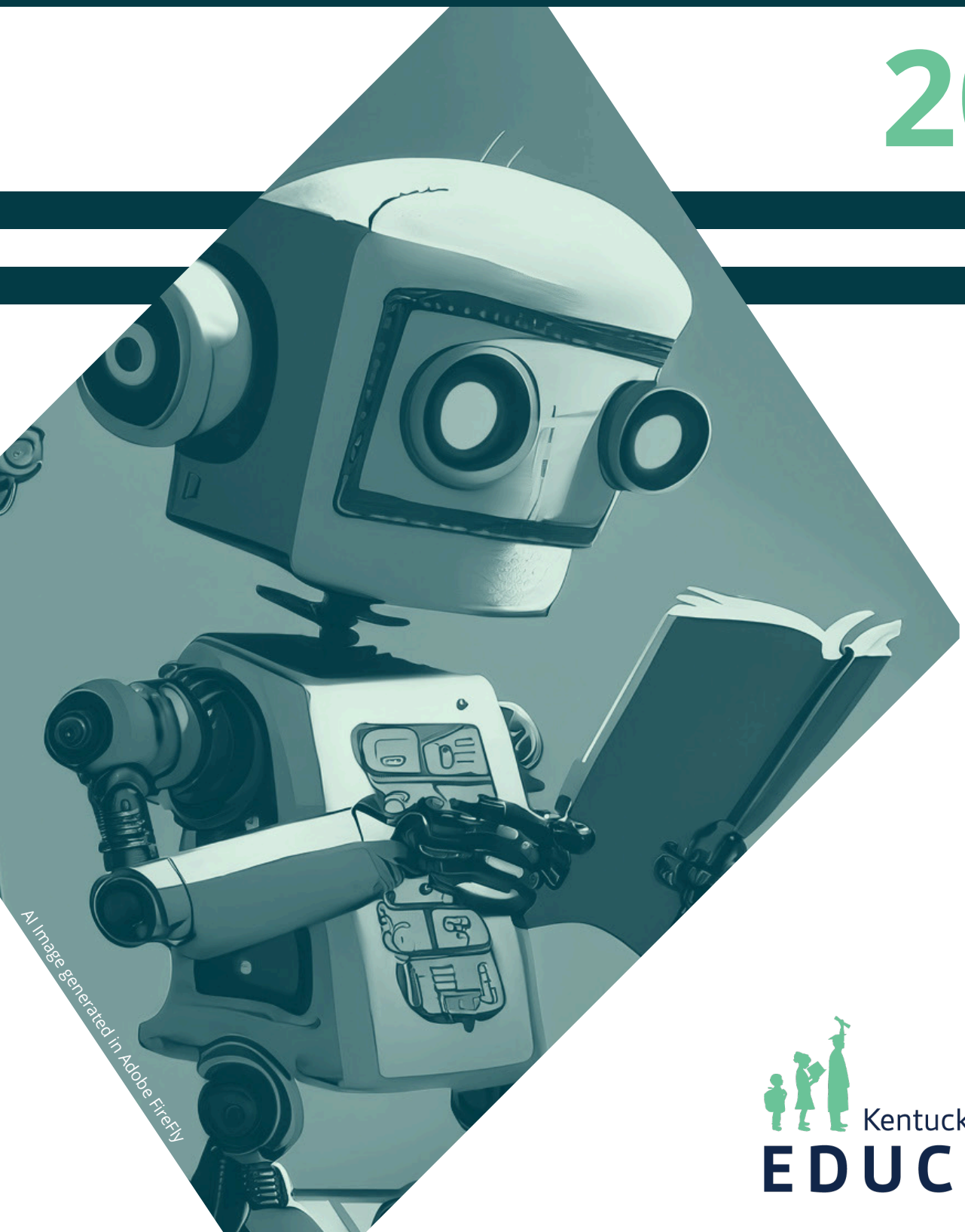
Artificial Intelligence
Guidance Brief

2024



AI Image generated in Adobe FireFly

Kentucky Department of
EDUCATION

Emerging Technology Considerations

Emerging technologies like AI are often met with a mix of excitement and apprehension, especially in education. While the potential of AI in this field is undeniable, treating it differently than other emerging technologies can hinder its effective integration and create unnecessary anxieties. Approaching AI through the same lens used for other innovations is crucial for the following reasons:

Consistency
Consistency fosters understanding. Educators can leverage their knowledge of technology integration by viewing AI alongside tools like online learning platforms or adaptive learning systems. This familiarity allows them to focus on AI's specific pedagogical affordances rather than getting bogged down by its novelty factor.

Balance
A balanced approach mitigates unfounded fears. Exaggerating AI's transformative power can breed anxieties about job displacement, human knowledge inadequacies, or a loss of creativity. By treating it as one tool among many in the educator's toolkit, alongside traditional methods, we can emphasize its potential to augment, not replace, the human touch in education.

Normalization
Normalization encourages responsible use. Integrating AI similarly to other technologies allows for open discussions about its limitations and potential biases. Just as we teach students to critically evaluate online information, we can equip them to understand the algorithms behind AI-powered tools and use them responsibly.

Finding Balance on the Spectrum of Thoughtful and Intentional AI Use

By normalizing the use of intelligent systems in the classroom, educators can harness their potential to personalize learning, empower students, and prepare them for a future increasingly shaped by such technologies.

As you read through this document and think about your district's own approach to emerging technologies, some guiding questions can assist in developing your approach to integrating AI tools:

Guiding Questions for AI Integration

1. *Am I feeding any sensitive or personal information/ data to an AI that it can use or share with unauthorized people in the future?*
2. *Is this AI part of our enterprise, KETS, or KDE ecosystem, or is it a third-party tool offered by someone we may not be familiar with (or have a relationship with)?*
3. *Does this AI bot want me to give it permissions to access all of my account information or act like it is me?*
4. *If the tool is "free" to use, then am I the payment? (my data, district data, or other datasets of which I have access - beware of freemium models)*
5. *Is the product generated from AI ethical to use or share?*
6. *Can the AI's response be shared as is, or does it need to be reviewed first (e.g., no hallucinations, unintended bias)*
7. *Have I asked my (manager/supervisor/knowledgeable person) whether my use of an AI tool for a particular task presents any risks that I might not see?*

Introduction

The Kentucky Department of Education (KDE) recognizes the importance of Artificial Intelligence (AI) in transforming the education and workforce landscape. The KDE's Office of Education Technology (OET), through the Kentucky Educational Technology Systems (KETS) Master Plan, identifies AI use as a growth opportunity area and seeks to,

> *Encourage, engage, and empower the safe, secure, and responsible uses of Artificial Intelligence (AI) into school efficiency and the learning space by teachers and students (ensuring humans remain in the loop with strong AI implementations)* [1]

This AI guidance brief outlines the principles guiding the department when developing responsible and ethical governance models of AI technologies within the education sector, following state and federal laws and international best practices.

Additionally, this document can serve as an example to districts creating their own AI usage/integration policies and be further refined using partner organizations' resources.

As a participant in the international Teach AI collaborative, the KDE values and lends its voice to the call for robust guidance and research-based best practices in incorporating AI into education systems. TeachAI's three-stage framework for incorporating AI into education is:

1. Developing and implementing policies that support the use of AI in education.
2. Helping educators learn about AI and how to use it effectively.
3. Using AI to improve educational outcomes and transform the educational system.

These three stages are interconnected and should be pursued simultaneously. For example, as educators learn more about AI, they can help to inform policy development. As policies are developed and implemented, they can help to guide organizational learning and improvement efforts.

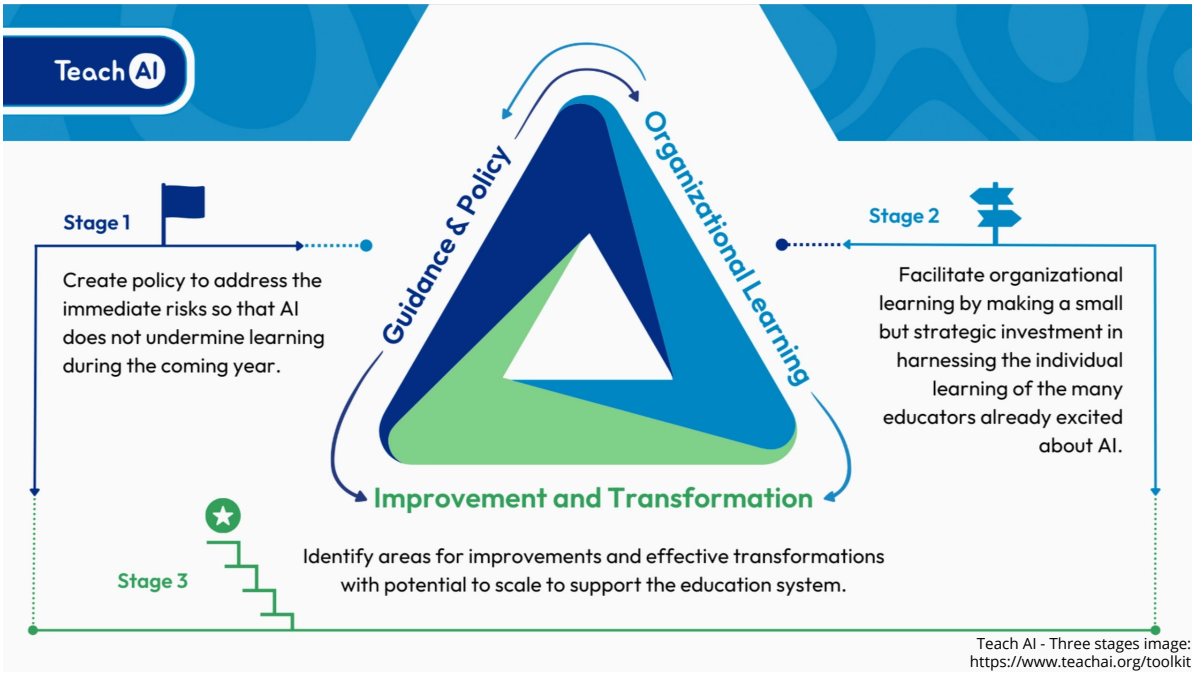
Chief Information Officers (CIOs)

Policy-in-Action Spotlight

While specifics may differ, education CIOs in the AI space share a unifying mission: harnessing AI's potential to enrich student learning and organizational effectiveness, while skillfully navigating ethical and technical complexities. In this endeavor, they assume the vital roles of strategic leader, change agent, and lifelong learner.

[1] KETS Master Plan 2024-2030

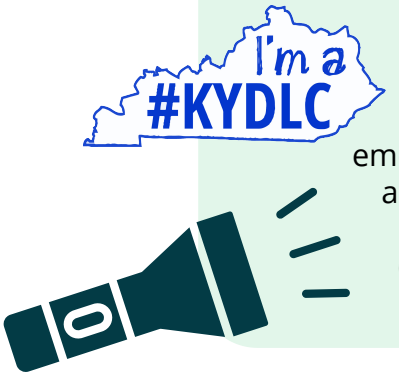
At the same time, these policies should support the ongoing pursuit to equip and train our students to create and work within AI systems of the future through continued growth of K-12 computer science programs, data science, and cyber systems engineering education.



Teach AI - Three stages image: https://www.teachai.org/toolkit

Kentucky is uniquely positioned to have success in this field. While the KDE has led the way in digital equity and infrastructure, we have also provided national leadership on embedding technology tools into classroom practice. If AI is treated just as these other tools have been, Kentucky will provide a leadership process for incorporating AI into education thoughtfully and strategically. To that end, AI is not a means to replace educators but could complement their strengths, automate routine tasks, and enhance their ability to differentiate (or further empower them to differentiate) their instructional approach to meet the needs of diverse learners. It is important to note that this is not a one-size-fits-all approach. The specific steps schools and districts take will vary depending on their unique needs and circumstances, and exemplary guidance could vary depending on course structure or content.

Digital Learning Coaches



Policy-in-Action Spotlight

Leaning on the strength of their statewide network, DLCs are exploring the ethical standards for AI, the emerging best practices, the variety of AI tools they can assist with during their coaching cycles, how they can be used to meet the Kentucky Academic Standards (KAS) for Technology, as well as how they are woven into the Digital Citizenship framework.

[2] Code.org, CoSN, Digital Promise, European EdTech Alliance, Larimore, J., and PACE (2023). AI Guidance for Schools Toolkit. Retrieved October 17, 2023 from teachai.org/toolkit.

Purpose

This document intends to provide an example of foundational guiding principles by which Kentucky's students, staff, and school communities can model appropriate and responsible use of artificial intelligence (AI), including but not limited to generative AI (GenAI) tools. Generative AI is a type of AI used to create new content, whereas AI is broader in the kinds of applications developed depending upon the algorithmic process's intent. We use Generative AI as an example in this guidance brief because that is the field's new 'consumer-facing' development, allowing users to access the accompanying algorithms for their own implementations to create new products in everyday use. Spell Check is an AI/Machine learning development familiar to most people, but its development and release did not necessitate new governance and policies. Explicitly calling out Gen AI is intentional but not intended to be limiting. The KDE will develop the first structures and positions on using and integrating these tools in classroom instruction, school management, and district operations. Generative AI has potential benefits and risks for education in our state and must be thoughtfully managed by all stakeholders and policymakers.

Definition

Policy-in-Action Spotlight

To enhance the AI proficiency of STLP participants while upholding Digital Citizenship and Computer Science principles, AI-based challenges have been introduced that encourage students to demonstrate their AI skills in a responsible manner. Challenges that require student original work still encourage AI use for inspiration.

Artificial intelligence (AI) is a vast field encompassing various technologies that allow computers to mimic human intelligence. GenAI is only one type of AI that can create new content, such as text, images, or music, based on patterns it has learned from its training data and/or language models (e.g., large language models (LLM) are huge deep learning models that are pre-trained on vast amounts of data). This is made possible through machine learning, an AI subset that allows computers to learn from data without being explicitly programmed. Machine learning, deep learning, Natural Language Processing (NLP), Robotics, and Expert Systems are more examples of types of AI categorized by the technologies used.

Another way to think about GenAI is as a way to teach a computer to be creative. By providing a generative AI model with a large dataset of examples, it can learn to generate new content similar to the criteria it has seen.

Generative AI tools have the potential to be potent tools for education, but it is essential to be aware of their limitations. Generative AI tools are designed to predict what is right but are not always accurate. As a result, their output can be misleading, biased, incomplete, or even untrue. By way of example, GenAI-directed instruction could turn out to be “just plain bad instruction,” or instruction centered around information hallucinations if left on its own and not guided by expert teachers.

Unpacking the Master Plan Statement

The 2024-2030 KETS Master Plan explicitly highlights the integration of artificial intelligence and generative AI systems as a growth opportunity by stating the OET will,

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

While this document serves as one avenue to begin laying the foundation to meet this target, we believe that many of the mechanisms needed to foster that growth are already systemically present within the KETS environment and mission of KDE.

Unpacking what is specifically meant by the Master Plan's statement is crucial in identifying those existing frameworks, necessary guiding principles, and possible gaps in the successful implementation of any current or future policy directives.

Master Plan Terminology	Contextual Definition
Encourage	The KDE can continue to provide guidance and support to districts and schools choosing AI in their classrooms or district systems. Additionally, identifying and reducing barriers to integrating these tools into the school programs should be done by leveraging best practices already in place when using other instructional and non-instructional technology tools while providing specific support to programs. This support can include providing training for teachers, helping to develop AI-powered lesson plans, and evaluating the effectiveness of AI-enabled methodologies.
Engage	As with any change to the educational environment, the AI conversation necessitates the KDE to foster collaboration and knowledge sharing among stakeholders. This partnership of the agency and school districts with universities, research institutions, and AI vendors allows us to collaborate on AI-related professional learning initiatives and articulate best-practices. Further, establishing communities of practice[3] where educators can share their experiences, ask questions, and learn from each other and outside entities about how AI implementation can facilitate governance development and ongoing policy adaptations.

[3] Wenger-Trayner, E., Wenger-Trayner, B., Reid, P., & Bruderlein, C. (2022). Communities of practice within and across organizations: a guidebook. Social Learning Lab.

Master Plan Terminology	Contextual Definition
Empower	Empowering students and schools is not about using digital tools to support outdated education strategies and models; it is about tapping into technology's potential to amplify human capacity for collaboration, creativity, and communication.[4] The KDE values creating a culture of innovation and recognizes that the availability of AI-enabled systems can provide new opportunities to innovate in the learning space. Through collaboration, schools should create a culture of innovation that encourages teachers to experiment with new technologies, including AI. This can be done by providing teachers with the time and resources they need to experiment and by rewarding them for their successes.
Safe and Responsible	As the development and application of artificial intelligence (AI) continues to expand rapidly, so does the need to ensure its safe and responsible use. Ensuring the safe and responsible use of such tools means embedding transparency, data protection measures, fairness, non-discrimination, ethical practices, and continuous monitoring into the day-to-day operations of these AI-enabled systems. There are currently lawsuits pending against large AI companies that claim copyrighted text and image materials used to train their systems were not used legally (or with potential fair use guideline implications). These developments will need to be watched closely and policies revised if certain AI providers are not providing services ethically.
School Efficiency	The instructional impact of AI is not the only aspect of education that has the potential for a drastic change with these tools. Schools may already be investigating or incorporating AI tools to improve district operations, automate routine tasks, or even provide assistance on large-scale project completion.
Humans in the Loop	Human-in-the-loop (HITL) is a tenet recognizing that AI systems should not operate autonomously without human oversight and control, especially in applications where AI decisions could have significant consequences for individuals or society, particularly during high-quality assurances, instruction, and learning. Additionally, keeping human oversight at the center of practice, AI can be implemented in a way that prioritizes human values, well-being, and dignity. This means considering the ethical implications of AI applications and ensuring that they align with human rights, intellectual property, social justice, and environmental sustainability principles.

[4] Kentucky Academic Standards (KAS) For Technology

Guiding Principles for Incorporating AI Use

AI holds the potential to enhance the learning experience and transform the way educators teach. However, with this new and innovative technology comes a set of responsibilities and principles to ensure its proper implementation. In this section, we will outline the essential principles for incorporating AI use in education. By following these principles, we can maximize the benefits of AI and make a significant impact on the education sector. Our guiding principles provide the foundation for our continued commitment to educational excellence by focusing on curriculum enhancement, administrative efficiency, and universal accessibility.

Education-first Approach

Promoting the use of AI to help students achieve their educational goals is of paramount importance. AI should be leveraged to enhance curriculum development, adaptive learning, and personalized education, catering to individual student needs. Addtionally, school operations and teacher workloads can benefit from AI-delivered partnerships and assistance. Professional learning experiences targeting the effective integration of AI tools into regular practice will help ensure these current and future tools are used with fidelity.

Equity and Reduction of Bias

The integration of AI in education should promote equity of voice and reduce bias. AI systems should not perpetuate or exacerbate disparities among students, educators, or schools. As governance structures at the state and national levels develop, early AI adopters should continue to work toward this goal, and evaluate tools based upon their adherence to these ideals.

Transparency and Accountability

Transparency is key when using AI. Everyone involved should work together to make sure that AI systems are open and accountable. This means that people should be able to understand how AI systems make decisions and that there should be ways to hold them accountable if they make mistakes. When AI tools are used, students, teachers, and parents should be informed how the vendor-provided application works and what data they collect and/or store. This is especially important when the data is sensitive.

Digital Citizenship and Computer Science

Education leaders continue to promote Digital Citizenship among students and staff members, which includes the responsible use of AI. We believe that promoting AI literacy activities among students and staff is essential to addressing the risks of AI use and teaching critical skills for students' futures. One strategy the KDE is developing is utilizing the statewide Student Technology Leadership Program (STLP) as a platform to engage K-12 students in AI concepts and applications. Continuing to invest in digital learning and computer science education, and by striving to provide access to computer science coursework in all KY schools, we will support students and staff in developing AI literacy, which includes understanding how to use AI, when to use it, and how it works. We will also support teachers in adapting instruction in a context where some or all students have access to generative AI tools.

Privacy and Data Protection

All AI application usage should adhere to state and federal privacy laws, such as the Family Educational Rights and Privacy Act (FERPA)[5], the Children's Online Privacy Protection Act (COPPA)[6], and Kentucky House Bill (HB) 5 (2015)[7]. Student and educator data should always be treated with utmost confidentiality and security.

Ethical AI Use

As with the use of any technological tool, we should expect students and teachers to be honest, trustworthy, fair, respectful, and responsible. Students and teachers should give credit to sources and tools and honestly present work that is genuinely their own for evaluation and feedback. AI systems used in education should be developed and used ethically, without bias, discrimination, or harm to students. Guidelines such as those proposed by UNESCO's AI Ethics Framework[8] and the Partnership on AI[9] provide insight on how leaders can evaluate programs on their ethical standards.

Data Quality and Integrity

The KDE will hold to our data governance and data quality standards and partner with experts when appropriate to identify continued development of data best practices when using created or curated AI systems.

5 Family Educational Rights and Privacy Act (FERPA), 20 U.S.C. § 1232g; 34 CFR Part 99.
6 Children's Online Privacy Protection Act of 1998 (COPPA), 15 U.S.C. §§ 6501–6506.
7 KY HB 5 (2015) FAQ https://education.ky.gov/districts/tech/Pages/Best-Practice.aspx
8 United Nations Educational, Scientific and Cultural Organization (UNESCO). (2023). UNESCO Strategy on the Ethics of Artificial Intelligence. Retrieved October 22, 2023, from https://unesdoc.unesco.org/ark:/48223/pf0000386693
9 Partnership on AI. (2023). PAI's Responsible Practices for Synthetic Media. Retrieved October 23, 2023, from https://syntheticmedia.partnershiponai.org/

Community Engagement and Feedback

While this document outlines the position of the KDE on the use of generative AI tools, we understand that districts across the state must have autonomy in developing systems that are right for them. The principles to which we will adhere still give that freedom to district leaders and allow for future iterations of our agency plan as state and national governing policies develop.

Library Media Specialists

Policy-in-Action Spotlight

The Kentucky Academic Standards for Library Media emphasize the importance of ethical decision-making in the creation of knowledge, particularly regarding the proper use of information, sources, and intellectual property. This aligns with the principles of ethical AI usage, where acknowledging authorship, respecting intellectual property, and utilizing valid information are crucial aspects.

We value the feedback and partnership of multiple groups as we develop systems aligned with these policy principles and meet emerging challenges.

As districts think about the implications AI has on their own instructional practices and acceptable use policies, the following resources can be used to guide planning.

- TeachAI AI Guidance for Schools Toolkit
- Use Of Artificial Intelligence (AI) In Education School Policy Template[10]
- Michigan Planning Guide for AI: A Framework for School Districts[11]
- Developing Policy and Protocols for the use of Generative AI in K-12 Classrooms[12]
- Center for the Enhancement of Learning and Teaching - AI and Teaching[13]
- White House Executive Order on the Safe, Secure, and Trustworthy Development and Use of Artificial Intelligence[14]
- Artificial Intelligence and the Future of Teaching and Learning: Insights and Recommendations [15]

As the department works with national and international partnerships, our own policies will mature and further discourse on the topic within the state will take place.

10 Knight, L., & Evans, T. (2023, October 22). Free resource: Use of Artificial Intelligence (AI) in Education school policy template. Retrieved from https://ictevangelist.com/free-resource-use-of-artificial-intelligence-ai-in-education-school-policy-template/

11 Michigan Virtual. (2023). AI in Education: A comprehensive AI framework and resources. Retrieved October 23, 2023, from https://michiganvirtual.org/resources/guides/ai-guide/

12 Oregon Department of Education. (2023). Developing Policy and Protocols for the Use of Generative AI in K-12 Classrooms. [PDF]. Retrieved from https://www.oregon.gov/ode/educator-resources/teachingcontent/Documents/ODE_Developing_Policy_and_Protocols_for_the_use_of_Generative_AI_in_K-12_Classrooms_2023.pdf

13 University of Kentucky Center for the Enhancement of Learning and Teaching (CELT). (2023). CELT AI Resources. Retrieved from https://celt.uky.edu/ai-resources

14 The White House. (2023, October 30). Executive Order on the Safe, Secure, and Trustworthy Development and Use of Artificial Intelligence. [White House website]. Retrieved from https://www.whitehouse.gov/briefing-room/presidential-actions/2023/10/30/executive-order-on-the-safe-secure-and-trustworthy-development-and-use-of-artificial-intelligence/

15 U.S. Department of Education, Office of Educational Technology, Artificial Intelligence and Future of Teaching and Learning: Insights and Recommendations, Washington, DC, 2023. Retrieved from https://tech.ed.gov/ai-future-of-teaching-and-learning/

Application and Research Paradigms

The advancements and promises of AI in K-12 education are clear and have started to take shape in three uniquely positioned paradigms for the applications of AI in learning experiences and for research centered around the effectiveness of AI in learning. Similar to the tenets of technology integration models (SAMR[16], TCoP[17], etc.), the AI paradigms center on the instructional opportunities presented by the tool's integration into practice. The three current paradigms of AI in K-12 education[18] are: AI-directed (where the learner is a recipient); AI-supported (where the learner is a collaborator); AI-empowered (where the learner is a leader). These three paradigms have an equal value proposition in operational or administrative implementations (i.e., school efficiency through technology-enabled services) as well as during instruction and learning design.

AI-Directed

AI-directed learning entrusts AI with the task of content delivery. AI algorithms, guided by an understanding of learners' knowledge levels, learning styles, and progress, autonomously select, present, and sequence educational material.

AI-Supported

AI-supported education integrates AI as a supportive element in the learning landscape. AI complements traditional teaching methods and tools, enabling educators to optimize their teaching strategies and assisting students in their quest for knowledge.

AI-Empowered

AI-empowered learning empowers learners and educators to surpass individual achievements, fostering the creation of innovative pedagogical approaches, diverse learning artifacts, and enriched instructional resources. It cultivates collaborative learning environments and supports lifelong learning beyond traditional classroom settings.

Leveraging an understanding of these three paradigms can be valuable through an implementation, adoption, and application phase as district leaders learn when, where, and how current technology-enabled partners use AI in their products and services. An example use case would be for district leaders to approach a currently contracted technology vendor or partner, request a detailed roadmap of AI integrations, determine which paradigm the integration fits into, and determine the value and policy around the integration use.

16 Hamilton, E. R., Rosenberg, J. M., & Akcaoglu, M. (2016). The Substitution Augmentation Modification Redefinition (SAMR) model: A critical review and suggestions for its use. TechTrends, 60(5), 433–441.
17 Curry, J.H., Jackson, S.R. & Morin, H. It's Not Just the HOW, But Also the WHO: The TCoP Model of Technology Integration. TechTrends 66, 980–987 (2022). https://doi.org/10.1007/s11528-022-00797-8
18 Ouyang, F., & Jiao, P. (2021). Artificial intelligence in education: The three paradigms. Computers and Education: Artificial Intelligence, 2, 100020.

Post-Adoption Monitoring and Evaluation

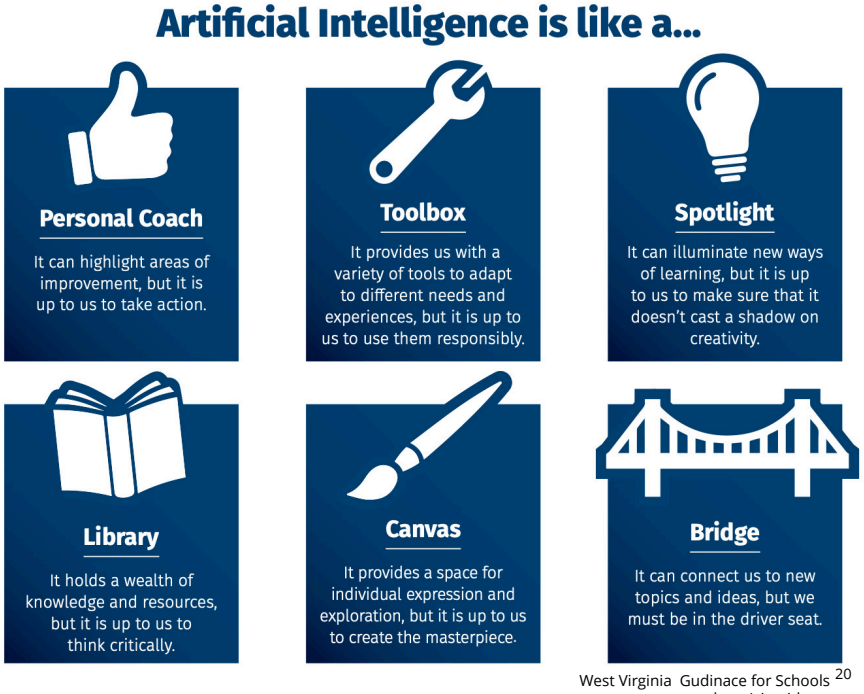
The KDE will continue to establish mechanisms for ongoing monitoring and evaluation of AI applications in education in regard to the areas of emphasis found in the KETS Master Plan for Education Technology. The *Emerging Technology Adoption Framework: For PK-12 Education*[19] provides sample structures to guide this evaluation. Centered on investigation, fidelity, and effectiveness, the framework offers applicable paths to develop evaluative designs that can be applied to many technologies. Regular assessments will be conducted to measure the impact of AI technologies on education outcomes and to address any concerns.

Online, Virtual & Remote Learning

Policy-in-Action Spotlight

Online/virtual programs incorporating AI tools have a crucial responsibility: safeguarding content/curriculum through rigorous vetting and adhering to data security standards. Resources and oversight models can empower these programs to fulfill this duty, ensuring vendor AI integrations enhance learning while protecting sensitive information.

Conclusion



West Virginia Gudinace for Schools [20]
wvde.us/ai-guidance

Committed to harnessing the potential of AI for every student, the Kentucky Department of Education champions its responsible integration into Kentucky's schools. This guide lays out considerations and imperatives for equitable and innovative school experiences powered by AI, while upholding the highest ethical and safety standards. Through collaboration with local districts, we can encourage, engage, and empower teachers and students to safely and responsibly harness AI's potential, both in maximizing school efficiency and enriching the learning environment, always ensuring human control over AI implementations.

[18] Ruiz, P., Richard, E., Chillmon, C., Shah, Z., Kurth, A., Fekete, A., Glazer, K., Pattenhouse, M., Fusco, J., Fennelly-Atkinson, R., Lin, L., Arriola, S., Lockett, D., Crawford-Meyer, V., Karim, S., Hampton, S., & Beckford, B. (2022). Emerging technology adoption framework: For PK-12 education. [Educator CIRCLS white paper]. Digital Promise. https://doi.org/10.51388/20.500.12265/161

[19] West Virginia Department of Education. (2023, December 29). AI Guidance for West Virginia Schools, v1. [PDF document]. Retrieved January 8, 2024, from https://wvde.us/wp-content/uploads/2023/12/29354-AI-Guidance-v1.pdf.