Artificial Intelligence in Education:

West Virginia Stakeholder Survey

Description of Findings

July 2024

wvde.us/ai

Preface

Acknowledgments

The West Virginia Department of Education (WVDE) would like to thank our stakeholders for their interest and time in completing the survey. Hearing feedback from our professional and service personnel, as well as our family and community partners, has been an integral part of planning additional support and guidance for WV districts and schools.

Suggested Citation

West Virginia Department of Education. (2024, July). *Artificial Intelligence in Education: West Virginia Stakeholder Survey. Description of Findings*. Retrieved from: https://wvde.us/ai.

Questions?

For more information regarding up-to-date guidance that the WVDE has created, please see the WVDE AI Guidance document, which can be found at https://wvde.us/ai.

This study has been reviewed and approved by the West Virginia Department of Education Institutional Review Board (Project Number IRB-WVDE-054; IRB Number IRB00008850; IORG Number IORG0007370; FWA Number FWA00018898).

If you have questions about this research study or the methodology, you may contact the WVDE at surveys.wvde@k12.wv.us.

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Executive Summary

Overall Highlights

Scope

Survey responses were received from a total of 1,025 stakeholders, representing school and district staff, as well as family and community members. Questions asked about various perceptions and concerns related to the use of AI in educational settings.

Findings

Nearly 97% of respondents agree or strongly agree that essential learning skills (i.e., literacy, numeracy, research, critical thinking) need to remain a focus of public education, and that students should not become overly dependent upon AI. Similarly, almost all stakeholders want to see transparency surrounding AI usage. Approximately 4 in 5 respondents expressed some degree of concern or worry surrounding the uses and adoption of AI. Nonetheless, opinions were still mixed across various other topics.

Roughly 6 in 10 respondents see AI as an inevitable part of the future of education and the workforce. Numerous open-ended responses from educators and family members advocated for ensuring that WV students have opportunities to learn about AI so that they will be better prepared for the future which awaits them, and so they won't be left behind and at a competitive disadvantage as they prepare for post-secondary success.

Purpose of Report

The purpose of this Executive Summary and the full report is to summarize the results and technical analyses performed with the Spring 2024 **Artificial Intelligence in Education: West Virginia Stakeholder Survey**, which was used to collect stakeholder feedback related to perceptions of using artificial intelligence (AI) in education. The results are being used to inform and enhance the support provided to schools and districts regarding appropriate uses of AI in education, as well as provide stakeholders with transparency about their collective perceptions.

Survey Details

The survey included a total of 22 or 27 questions total, depending on the stakeholder group. A breakdown of the question types is presented below in Table 1. Across all groups, the survey was conveniently completed by many in a short time span, with the median time to complete the survey being 5 minutes and 28 seconds. A total of 1,025 responses were received across 32 calendar days (i.e., 02/09/2024 through 03/11/2024). Feedback was received from educators, counselors, school administrators, district administrators, other school and district staff, family members, community members, and post-secondary/industry professionals.

Table 1. Count of questions by type and stakeholder audience.

Question Type	Number of Questions	Relevant Stakeholders
Survey Consent	1	All
Demographic Group	1	All
Supports Needed	5	Educators and Administrators
Perceptions of AI	14	All
Hypothetical Scenarios	4	All
Open-Ended	1	All
Self-Nominate for Subcommittee	1	All; Separate link, if interested

Results

Respondent Information

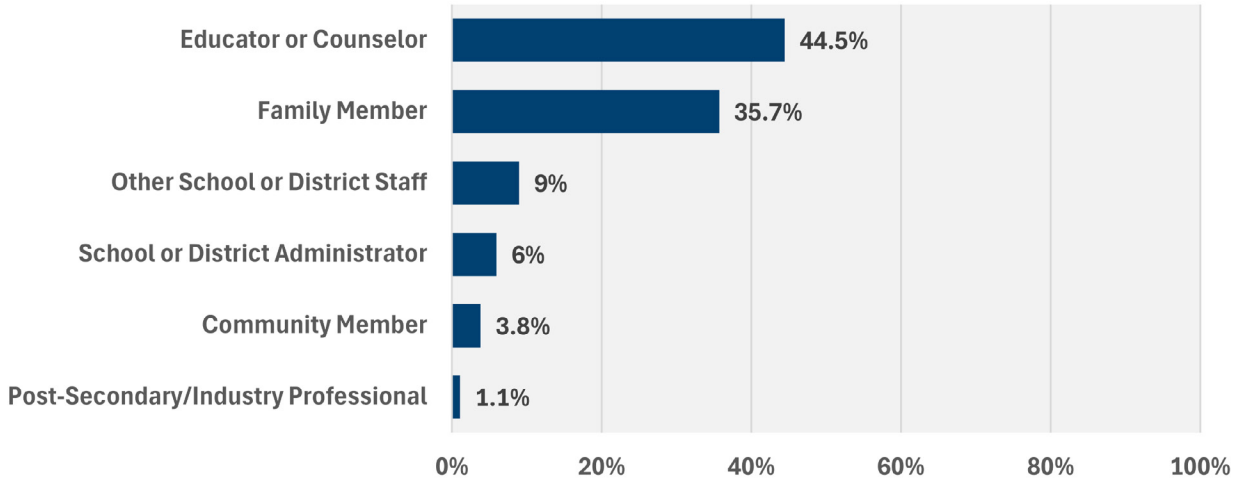
As displayed in Figure 1, roughly 4 in 9 respondents were educators or counselors, while roughly 3 in 9 respondents were family members. Because there were so few respondents in the "Post-Secondary/Industry Professional" category, it was collapsed with "Community Members" to create a category for "Other Stakeholders" in the disaggregated reporting (see Appendix B in the full report).

Figure 1. Respondent representation by stakeholder group.

Demographic Information

Please select the role that best describes you as it relates to public education.

Note: Respondents were asked to select the one category most aligned with their role during a typical school day.



Of the 1,025 respondents, slightly more than two-thirds reported never using AI for work or helping students with school work (see Figure 2). This percentage is fairly comparable to other survey samples across the United States.

Figure 2. Respondent counts by frequency of AI use.

Frequency of Use
How often do you use newer AI chatbots or visual AI tools for work or helping students (e.g., your child) with school work?

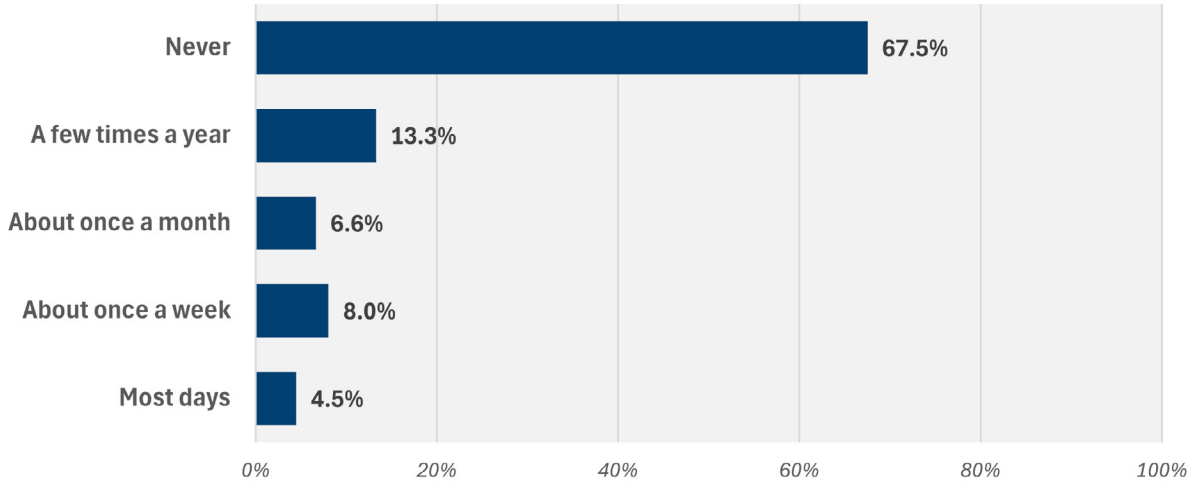


Table 2 contains an overall summary of the question-level findings ordered by the extent of stakeholder agreement (i.e., questions with the highest agreement levels are listed first). It is important to note that some questions measured the degree of concern or worry stakeholders feel, so agreement may assume a different meaning depending on the nature of the question. Overall, stakeholders are universally in agreement that students should learn foundational skills and that any activities and decisions involving AI should be transparent. Roughly 80% expressed some degree of concern or worry related to the impact that AI will have on people. Nearly 6 in 10 indicated that they are confident in their ability to keep up with advancements in AI technologies.

Table 3 contains an overall summary of the vignette findings. The vignettes presented respondents an opportunity to respond to **theoretical scenarios** that are not necessarily already occurring in WV public schools. For example, two-thirds of respondents believed that schools should have the ability to prohibit personal devices that are AI-powered. Half of respondents believed it to be permissible for a company to store location data related to bus routes if it helped to improve the way an associated app works. Only 1 in 5 respondents believed that using facial recognition technology to track daily attendance would be acceptable. There were mixed responses when it came to using automated machines to do routine floor cleaning and supply delivery between classrooms, though open-ended responses more strongly clarified that stakeholders did not want to see any school staff in jeopardy of losing their employment due to decisions involving AI technologies.

Table 2. Question-level survey results for all respondents on questions measuring agreement (sorted by average value from largest to smallest).

	Question	Response Counts						Percentages	Combined Agree %
		Valid	Blank	SD	D	A	SA		
Q13	Students should continue to learn the essential principles and skills of literacy, math, research, & critical thinking so that they can use AI as an assistant or tool rather than becoming dependent upon it.	1,019	6	21	14	160	824	15.7% 80.9%	96.6%
Q9	Schools should communicate with students and families about the emergence of deepfake technology (i.e., fake audio or video created by AI that appears real and was created to confuse or deceive others).	1,022	3	12	15	258	737	25.2% 72.1%	97.3%
Q11	Vendors of AI products for educational use should be required to demonstrate that their algorithms work in the way that is described to users.	1,021	4	3	18	333	667	32.6% 65.3%	97.9%
Q8	I feel that it is important for schools and districts to communicate with students and families about which AI-powered tools are being used and their reasons for being used.	1,022	3	14	38	344	626	33.7% 61.3%	95.0%
Q5	I am concerned about who takes responsibility when AI fails at a task.	1,022	3	23	98	376	525	36.8% 51.4%	88.2%
Q10	I am concerned that the data used by AI algorithms, or the output from AI, may be biased against particular groups of people or points of view.	1,014	11	22	163	375	454	16.1% 37.0% 44.8%	81.8%
Q12	I am concerned about AI technology using multiple types of data to predict behavior of students or staff.	1,014	11	21	220	341	432	21.7% 33.6% 42.6%	76.2%
Q6.	I am concerned about who takes responsibility when AI succeeds at a task.	1,024	1	37	178	455	354	17.4% 44.4% 34.6%	79.0%
Q4	I would like to learn more about data privacy when using AI tools.	1,023	2	71	105	505	342	10.3% 49.4% 33.4%	82.8%
Q7	I worry that AI will replace many job roles currently performed by humans.	1,021	4	64	226	337	394	22.1% 33.0% 38.6%	71.6%
Q2	I believe the adoption of AI is unavoidable in the workforce.	1,023	2	175	195	377	276	17.0% 19.1% 36.9% 27.0%	63.9%
Q1	I believe the adoption of AI is unavoidable in education.	1,023	2	208	210	358	247	20.4% 20.5% 35.0% 24.1%	59.1%
Q3	I am confident in my ability to keep up with advancements in AI technologies.	1,021	4	134	285	470	132	13.1% 27.9% 46.0% 13.0%	59.0%

Legend/Notes: SD = "Strongly Disagree" | D = "Disagree" | A = "Agree" | SA = "Strongly Agree"

Due to space restrictions, parts of the stacked bar charts may not have percentage labels and can be assumed to be a value lower than 10%.

Table 3. Question-level survey results for all respondents on vignette questions.

Question		Response Counts					Percentages
		Valid	Blank	Unacceptable	Unsure	Acceptable	
AI-powered devices sometimes send data they collect to a computer owned by the company that sold the product. Please indicate whether each of the following scenarios are acceptable decisions regarding the use of AI:							
Q14	School limitations or prohibitions on personal devices that collect information about the surroundings if the devices are not medically important for a student. For example, a school should be allowed to prohibit the wearing of personal smart glasses to school, which are able to record pictures and video and store data about the types of objects they see, including potential storage in the cloud.	1,005	20	173	157	675	
Q15	The district is using an app to give parents/caregivers the ability to track bus location in real-time, and the company selling the app stores and uses the location data to improve their algorithm.	1,005	20	236	258	511	
AI-powered devices can potentially use personal data or assume traditionally human roles. Please indicate whether the following scenarios are acceptable decisions regarding the use of AI:							
Q16	Using facial recognition to track classroom attendance.	977	48	563	214	200	
Q17	A school district is purchasing automated machines that clean the floors and deliver items between rooms. These collect data about the environment to navigate the school grounds. These machines could save the district tens of thousands of dollars each year, but it might result in the custodians losing work hours or losing their jobs completely. On the other hand, it might free up custodians to do other maintenance work that still needs to be done.	1,010	15	391	273	346	

Legend/Notes: 

Recommendations for Action Steps

Based upon these survey findings, as well as informal stakeholder feedback that the WVDE has received, multiple supports have been identified that could be further developed to ensure all stakeholders receive the necessary training and materials in adapting to a world filled with AI technologies. The following strategic supports are proposed as action steps and are grouped by the entity which should be best equipped to provide the supports. In crafting these recommendations, consideration was given to the foundational policy ideas proposed by TeachAI (2024)[1].

West Virginia Department of Education

Recommendation 1: Maintain Focus on Essential Skills/Knowledge and Student Well-Being

Maintaining a focus on essential skills and knowledge means a standards-based[2] approach to instruction. Any considerations of AI will always need to be person-centered, done to further advance instructional quality of the WV content standards, and be centered on the whole-child.

Recommendation 2: Provide Additional Guidance and Supports to Promote AI Literacy

The WVDE is creating additional trainings and resources. These supports are being developed such that districts can simultaneously build their capacity and be able to use resources in their own trainings and standard operating procedures.

Recommendation 3: Provide Guidelines regarding District Reviews of Artificial Intelligence Solutions

A process manual will be created that will guide WV districts in their reviews of potential artificial intelligence solutions. The manual will describe a system of AI review, implementation, and transparency. The goal is to provide a framework for WV districts to use before implementing AI-enabled products *en masse*, and address use cases for administration/management, planning and design of instructional materials, as well as real-time interactions with AI technologies.

Public School Districts and Schools

Recommendation 4: Invest in Professional Learning to Build Capacity and Support Innovation

Professional learning surrounding AI cannot simply be lecture-style presentations in isolated instances. Using the existing and forthcoming trainings/resources provided by the WVDE, districts should train professional and service personnel on the opportunities and risks that can arise from using AI in public education.

Recommendation 5: Invest in Leadership

It is crucial for districts to support schools with organizational strategy, goal-setting, as well as monitoring and evaluation practices in the use and adoption of AI. District- and school-level administrators should take steps to build a situational awareness about the professional learning needs of their staff and how parents/caregivers are feeling about various applications of AI tools.

Recommendation 6: Collect Stakeholder Input

Districts and schools should collect input from their stakeholders when considering new applications of AI. Communication is crucial, and collecting feedback is a necessary part of that process. Many parents/caregivers are only aware of AI based upon what is seen in media or social media, so it is important to use common language that is not connotatively laden (either in support or opposition).

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[1] *TeachAI (2024). Foundational Policy Ideas for AI in Education. Retrieved from: http://teachai.org/policy.*

[2] *Standards-based – The system of instructional practices, evaluation and reporting that shows a student's growth towards the mastery of specific skills and knowledge they are expected to learn as they proceed through their education. West Virginia has established College and Career Readiness Standards to prepare students to transition successfully into higher education or the workplace (West Virginia Professional Teaching Standards, 2023).*

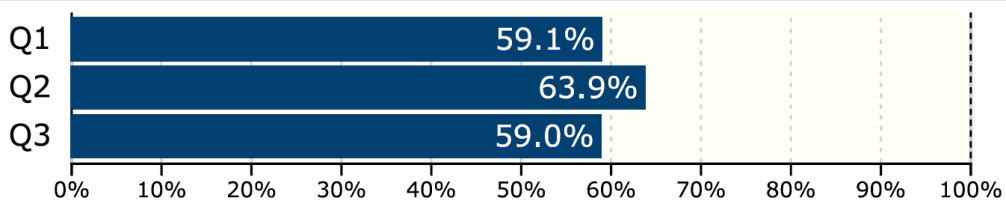
Section 1: Future Outlook

Section Highlights

Relevant Survey Questions

Q1 I believe the adoption of AI is unavoidable in education.
Q2 I believe the adoption of AI is unavoidable in the workforce.
Q3 I am confident in my ability to keep up with advancements in AI technologies.

Combined "Agree" and "Strongly Agree" %



Findings

Overall, the majority of respondents believe that the adoption of AI is unavoidable in both education and in the workforce and are confident in their ability to keep pace with advancements in AI technologies. However, it is worth noting that professional and service personnel (i.e., all people who work in the public school systems) were more inclined to agree with the two questions about the adoption of AI than the family members who responded (see Appendix B). Additionally, there was a notable relationship between the degree to which respondents reported using AI and how much they tended to agree with the statements (i.e., respondents who used AI more frequently were more likely to agree).

As a basis of comparison, the AI usage by respondents in West Virginia is comparable to data sampled nationwide. For instance, compared to 32.5% of respondents from the WVDE survey (see Figure 2 in the Overview and Summary), a survey conducted by the Reuters Institute for the Study of Journalism found that 28% of 2,012 US respondents have used AI at work/school (see Figure 4 in Fletcher & Nielsen, 2024). Interestingly, a survey from the Workforce Lab at Slack also found that 32% of US "desk workers have used AI for work, and half of that group is using AI tools at least weekly" (see p. 24 in Slack, 2024).

To provide a further frame of reference for macroeconomic projections of workforce data, researchers affiliated with Goldman Sachs provide an estimate that approximately two-thirds of current occupations could be partially automated by AI (see Exhibit 4 in Briggs, Kodnani, *et al.*, 2024). In a similar magnitude, just shy of two-thirds of respondents to the WVDE survey indicated that they believe that AI will be adopted by various occupations in the workforce.

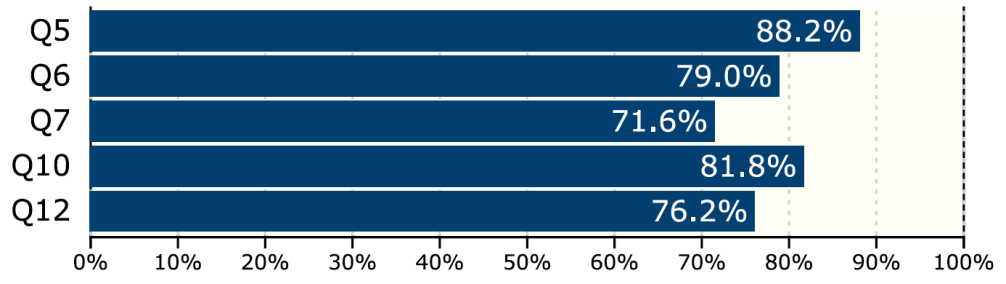
Section 2: Impact on People

Section Highlights

Relevant Survey Questions

Q5 I am concerned about who takes responsibility when AI fails at a task.
Q6 I am concerned about who takes responsibility when AI succeeds at a task.
Q7 I worry that AI will replace many job roles currently performed by humans.
Q10 I am concerned that the data used by AI algorithms, or the output from AI, may be biased against particular groups of people or points of view.
Q12 I am concerned about AI technology using multiple types of data to predict behavior of students or staff.

Combined "Agree" and "Strongly Agree" %



Findings

Nearly 80% of respondents expressed some degree of concern or worry surrounding the uses and adoption of AI. There is some degree of evidence that WV stakeholders may have stronger concerns than other geographic areas of the country. Of WV stakeholder respondents, nearly 72% expressed some degree of worry that AI will replace many job roles currently performed by humans. In a survey conducted by Public First and the Center for Data Innovation (Dupont, *et al.,* 2024), 59% of more than 2,000 responding Americans felt that it was likely that AI will increase unemployment. These concerns may not be entirely unwarranted. One estimate by researchers at Goldman Sachs suggests that more than 300 million full-time jobs globally could be impacted by automation brought about by AI (Briggs, Kodnani, *et al.,* 2024). Though, those same authors also suggest that worker displacement due to technological advancements historically has been followed by the creation of new jobs and industries, that transformative AI could boost US labor productivity growth, and that the annual global GDP could eventually increase by 7%. The societal change due to AI is likely to be on a scale similar to, or even exceed, the Industrial Revolution, the globalization of the Internet, and the widespread adoption of mobile technology. In that light, while AI may not replace all of our jobs, it will certainly be impactful and, therefore, must be taken seriously as it will likely change the workforce for many of our students.

Themes of responsibility and accountability also resonated with respondents. Approximately 8 in 9 respondents (88.2%) were concerned about who takes responsibility when AI fails at a task (see Q5). Such failure could be multifaceted and complex, with ambiguous attribution of errors or complications to the algorithm an AI system uses, a programmer(s) who creates guardrails and restrictions on

output, and/or a user who incorrectly or incompletely prompted the AI system for information. Some researchers have characterized "false attributions", which attribute human credit/error to AI systems, or AI credit/error to humans (Lee & Park, 2023).

Similarly, close to 5 in 6 respondents (81.8%) expressed concerns that AI-powered processes may include biased information and/or output (see Q10). Multiple open-ended comments expressed concerns that data used to train AI are not always publicly available, and that bias is a specific concern because AI can generate information in real-time without an opportunity for prior review. Others drew parallels to the launching of the Internet in public schools and the emerging availability of information (and misinformation), with a continued need for teaching critical thinking and evaluation of output from AI systems.

In any case, students of any age, including those in high school, may not truly grasp the risks behind concepts of bias, which includes (but is not limited to) profiling, surveillance, microtargeting, systemic bias, stereotypes, and non-inclusivity. Reviews of existing research, while focused more heavily on college/university settings in the US, have uncovered evidence of algorithmic bias when considering different demographic groups in certain applications of AI in education (Baker & Hawn, 2022). Nevertheless, it is crucial to understand that specific negative occurrences do not necessarily compromise the integrity of all applications of new AI technology. Instead, it provides backing for the need to thoroughly evaluate AI solutions for the potential of any algorithmic bias.

A little more than 3 in 4 respondents (76.2%) were concerned about AI technology using multiple types of data to predict behavior of students or staff (see Q12). Note, this consideration is somewhat different than "affective computing", which is related to predicting and responding to users' emotional states (c.f., W. Va. Code §§18-2-5h(b)(12) and 18-2-5h(e)(3)). Advances in machine learning have allowed for the creation of statistical models that can be used to predict human behavior (as well as AI "behavior"). For instance, a new technique was recently introduced that can be used to predict people's behavior when they are performing less than their best when pursuing goals unknown to the AI system (Jacob, Gupta, & Andreas, 2023), such as interpreting the intent of spoken speech that is unclear. Behavior prediction may become a fundamental component of AI systems as the algorithms attempt to anticipate and quickly respond during interactions with users.

As such, WV stakeholders are largely in agreement that AI has the potential to have a significant impact on people and within schools. These concerns underscore the need for a person-centered approach to AI.

Section 3: Transparency

Section Highlights

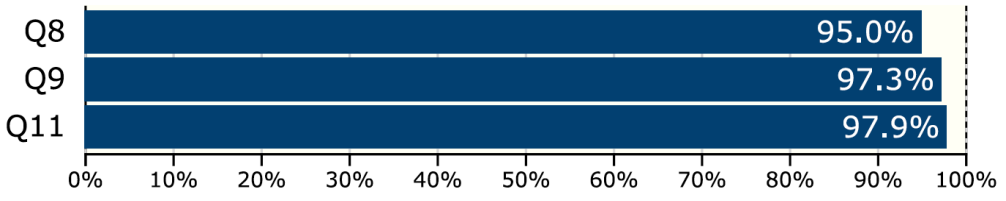
Relevant Survey Questions

Q8 I feel that it is important for schools and districts to communicate with students and families about which AI-powered tools are being used and their reasons for being used.

Q9 Schools should communicate with students and families about the emergence of deepfake technology (i.e., fake audio or video created by AI that appears real and was created to confuse or deceive others).

Q11 Vendors of AI products for educational use should be required to demonstrate that their algorithms work in the way that is described to users.

Combined "Agree" and "Strongly Agree" %



Findings

Overwhelmingly, more than 95% of stakeholders place a very high value on transparency when it comes to applications of AI in education. These values include communication and openness/visibility of procedures. An increased transparency of how an AI algorithm works, and with the data used to train the algorithm(s), is important for easing fears surrounding new AI systems. As a result, the credibility of an AI-powered system directly influences the level of trust that people can place into it, whether that be in terms of output accuracy or moral implications.

The capabilities of deepfake technology are already surreal and will unfortunately improve with time. While there will be an improvement over time with how AI can generate deepfake content, there will also be improvements in the detection methodologies (Gambín, Yazidi, Vasilakos, Haugerud, & Djenouri, 2024). As a result, it may be necessary for people to rely more on trusted AI solutions that will help in identifying deepfake content. Existing research shows a benefit in accuracy when people supplement their judgments using machine-based predictive tools when distinguishing between authentic videos and deepfakes (Groh, Epstein, Firestone, & Picard, 2022). Given this context, it will be pertinent for schools to communicate with families regularly and often about which AI products are being used.

Section 4: Possible AI Scenarios

Section Highlights

Relevant Survey Questions

AI-powered devices sometimes send data they collect to a computer owned by the company that sold the product. Please indicate whether each of the following scenarios are acceptable decisions regarding the use of AI:

Q14 School limitations or prohibitions on personal devices that collect information about the surroundings if the devices are not medically important for a student. For example, a school should be allowed to prohibit the wearing of personal smart glasses to school, which are able to record pictures and video and store data about the types of objects they see, including potential storage in the cloud.

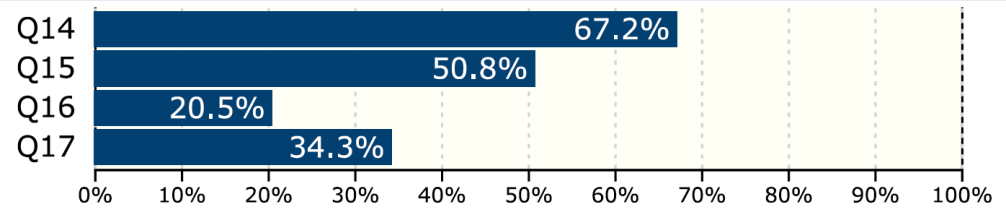
Q15 The district is using an app to give parents/caregivers the ability to track bus location in real-time, and the company selling the app stores and uses the location data to improve their algorithm.

AI-powered devices can potentially use personal data or assume traditionally human roles. Please indicate whether the following scenarios are acceptable decisions regarding the use of AI:

Q16 Using facial recognition to track classroom attendance.

Q17 A school district is purchasing automated machines that clean the floors and deliver items between rooms. These collect data about the environment to navigate the school grounds. These machines could save the district tens of thousands of dollars each year, but it might result in the custodians losing work hours or losing their jobs completely. On the other hand, it might free up custodians to do other maintenance work that still needs to be done.

"Acceptable" %



Findings

The respondents expressed a general sense of reluctance on the scenarios and the open-ended responses. It may come as a surprise to some readers that "the future" is already here, some of which has occurred in school districts outside of West Virginia.

Two in three of those responding found it acceptable for schools to prohibit personally-owned AI-powered devices unless they are medically necessary. Assistive technology for individuals with visual impairments has been developing at a rapid pace, with solutions becoming increasingly available (e.g., Waisberg, et al., 2024). However, there have been non-educational uses (such as augmented reality

displays, playing music, and connectivity to social media), as opposed to professional or educational uses, of such products advertised. Another example class of products is wearable pins, which have yet to find a strong market, but are capable of performing many of the same functions as smart phones, including recording audio and video. In the open-ended comments, multiple respondents expressed fears of wearable devices being abused in schools, with scenarios ranging from academic dishonesty, compromising school safety, and video recording in restrooms.

Some districts are turning to AI to help solve transportation issues. One such example is Colorado Springs Schools District 11, which used AI tools to help optimize bus routes and even reportedly save enough money to preserve the jobs of at least 10 educators (Domingo, 2024). On the contrary, one school district in Kentucky had substantial issues that were characterized as a "disaster" on the first day of school using route optimization software based on machine-learning models (Gifford, 2023; Loller, O'Brien, & Schreiner, 2023). Route optimization, however, is not a new phenomenon. In 1969, a school district in Trenton, New Jersey, used an IBM System/360 program called VSP/360 (vehicle scheduling program) to find more efficient bus routes (Computer World, 1969). While the algorithms used then are different than our modern notions of "machine learning" and "deep learning", there are similarities that are structural, statistical, and conceptual in nature. Similarly, real-time bus location tracking via GPS has been used by many districts across the country for decades. This type of information has been used by districts to enhance safety, speed, and cost savings. As AI continues to evolve, so will discussions related to new and innovative ways AI algorithms can be applied to existing data on school bus routes, schedules, and costs.

Facial recognition technology also has existed for some time, sometimes unknowingly to consumers. Nearly a decade ago, and in years since, news emerged of large retailers that have been using facial recognition technology to reduce theft and identify potential shoplifters, including cameras at store entrances and/or self-checkout lanes (Roberts, 2015). Some companies have confirmed the collection of biometric data (such as face geometry) for specific uses in their privacy notices/policies (e.g., Walmart, Kroger). When it comes to WV public schools, just 1 in 5 (20.5%) stakeholders found it acceptable to use such technology in the classroom to expedite attendance tracking. Some open-ended comments addressed privacy concerns and the unease respondents feel with not knowing who would have access to that sort of data about their children.

Some districts outside of WV have opted to use floor cleaning robots. For example, Denver Public Schools purchased AI-enabled robotic floor scrubbers during the COVID-19 pandemic to help meet demands for increased sanitation and ease the workload on existing personnel (Tennant, 2023). While WV stakeholders expressed some interest in similar automation, many were clear in the open-ended responses that they did not want such decisions to be used to eliminate existing personnel positions. This sentiment aligns with a person-centered approach to using AI.

Section 5: Additional Topics

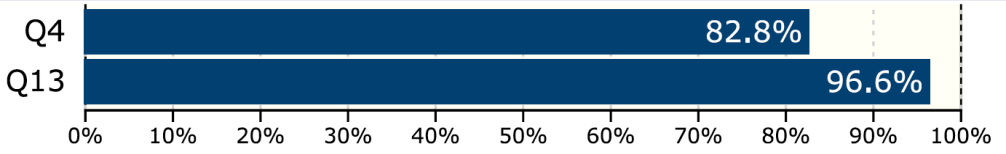
Section Highlights

Relevant Survey Questions

Q4 I would like to learn more about data privacy when using AI tools.

Q13 Students should continue to learn the essential principles and skills of literacy, math, research, & critical thinking so that they can use AI as an assistant or tool rather than becoming dependent upon it.

Combined "Agree" and "Strongly Agree" %



Findings

A large majority of respondents (82.8%) indicated an interest in learning more about data privacy when using AI tools, with little difference between stakeholder groups and amount of AI usage (see Q4 in Appendix B). Even more, the vast majority of respondents (96.6%) across all stakeholder groups and levels of AI usage agreed that a continued focus on essential principles and skills without a dependency on AI is needed (see Q13 in Appendix B). Maintaining a focus on the essentials requires a *standards-based approach to instruction* (which is described in more detail in the Recommendations section later in this report). Stakeholders coherently agree that preparing students for the future requires essential skills in literacy, numeracy, evaluating information found using technology, and critically thinking about how to solve new problems that are encountered, all in a way that can be performed without requiring AI.

Contemplating the future necessitates a closer look at its foundation, the past. The introduction of new technology at different stages required adaptations in educational settings, with technologies such as typewriters, radio, television, calculators, the Internet, mobile phones, and so forth. Closer to the advent of electrical computing, there was a technology-based recommendation in the Strayer report (1945) that every WV school "should be equipped with up-to-date electrical teaching aids, such as radio, sound film projector, film and slide projector, etc., adapted for use by various groups in the school" (see Table 53.IV.B.1.a on p. 593), and that elementary schools would have ideally been supplied with radios (see p. 66). When television was first being introduced into classrooms, the promises and benefits it could bring were heralded, but not without fears that it could replace educators' jobs and could turn learning into a passive endeavor (Stoddard, 1957). In that same year, television was being explored for its first introduction in WV schools (Charleston Gazette, 1957).

Just 37 years after TV entered WV schools, 50 pilot schools in WV were connected to the Internet during the summer and fall of 1994. Around that time, Public Law 103-227 (U.S. 103rd Congress, 1994), the *Goals 2000: Educate America Act*, set forth funding for technology integration and required a state-level task

force to address various requirements (see § 317). The plan developed in October 1995 by the resulting Education First Technology Committee and the Technology Task Force, part of West Virginia's Education First Panel, contained many details related to an implementation plan that laid the groundwork for the introduction of Internet access for all WV schools (incorporated by reference in the legacy *WVBE Policy 2470, Use of Technology by Students and Educators,* 1997). A subsequent initiative, *Reinventing Education*, was in effect by 1998 to use the Internet to improve student achievement. By December 1998, more than a quarter of a century ago, more than 820 schools (nearly 98% of public schools at that time) were connected to the Internet, with roughly half of all classrooms directly wired and connected. Before the conclusion of the last millennium, the West Virginia Basic Skills/Computer Education (BS/CE) "had a powerfully positive effect in West Virginia" and "Significant gains in reading, writing, and math were achieved" (Mann, Shakeshaft, Becker, & Kottkamp, 1999).

This historical context is critical for understanding the issues surrounding the introduction of AI into everyday society, and the speed at which colossal technological change has occurred and will continue to occur. There are some major differences that make considerations of AI in education much different than the introduction of radio, television, and the Internet. To summarize three key distinctions:

- AI is interactional in nature, meaning that it allows for a two-way exchange of information between the source and the receiver, as well as among multiple receivers. For example, a person using an AI-enabled educational tool can actively interact with the tool, by asking questions, checking their understanding, getting feedback, and creating their own content. This interaction is in stark contrast to the transactional nature of educational media used in the past, such as television, which only delivers information from the source to the receiver. With AI, content can be generated in real-time.
- The pace of how quickly AI can change is unparalleled. Advances in radio, television, and the Internet typically followed punctuated periods of growth/change (visually, it would look more like stair steps with sudden periods of large growth, followed by periods of slow or very little change). On the other hand, AI is continuously evolving, with growth/change that is exponential (visually, the growth curve would look more like a capital "J"). In fact, AI itself is actively being used to further develop and expand the capabilities of AI over time, with time spans to expand computer programming code and algorithms being a matter of minutes or days instead of weeks or months.
- A deeper understanding of AI requires a working knowledge of statistics and machine learning. While understanding radio and television required a working knowledge of electromagnetic waves, electrical components, and interconnected networks, AI builds upon those concepts and uses statistical models that can have up to hundreds of billions of parameters (i.e., akin to unknown variables that would need to be solved in Algebra equations).

With these differences in mind, the ways in which AI is approached in education will require different criteria than those used before for evaluating capacity, risk, and reward with implementation. Also, a reflection on the history of technology in education illuminates a collective limitation the field has experienced in fully predicting what the future holds. Nonetheless, it is crucial to attend to stakeholder perspectives so that we can fully deal with the present.

Open-ended comments were received from more than one-third of respondents (n = 378). Figures 3 and 4 have been structured to display samples of comments received. Figure 3 contains sample comments received from school and district staff, while Figure 4 contains comments received from family and community partners. In both figures, a two-row by three-column grid is used to characterize

different stances that respondents have. The two rows are “Uses AI” and “Never Uses AI”, which splits the answers described in Figure 2 (see the Overview and Summary) into two groups. The three columns represent the spread of sentiment towards AI being taught/used in public schools, ranging from “Opposed”, to “Mixed Emotions”, and finally “Supportive”. Ellipsis, expressed as [..], are used to denote that the quote may have other text that precedes or follows it.

Figures 3 and 4 illustrate that all stakeholders groups expressed varied opinions related to AI use, irrespective of whether they have used it before. To summarize the findings, there are people who have never touched AI who are in support of it being an important part of the educational process, and those who have used it who do not want to see new applications of AI anywhere near schools.

Common themes emerged across the comments that show unity across the diversity of opinions. Stakeholders tended to be in agreement with concerns about potential misuses of AI and felt that students are too distracted by technology, in general, in ways that contribute to missed learning opportunities, social-emotional health issues, and misbehavior. Other stakeholders expressed a dire need to ensure that WV does not fall behind (sometimes characterized as “further behind”) others nationally and internationally. Others said not addressing it at all or banning AI altogether would be a disservice to students.

Areas where stakeholders tended to disagree were how AI would impact jobs within school systems, as well as the degree of danger/risk that could arise from nefarious or careless applications of AI systems. Some stakeholders felt that the level of risk could be managed relative to the reward involved, while others believed that AI is not understood well enough to be managed in any capacity at this point in time. Other differences emerged when discussing the person-centered component of AI, with some stakeholders feeling that humanity is too untrustworthy or morally immature to personally handle AI safely and others seeing people largely as innocent bystanders who will only be negatively affected by AI that is autonomous or controlled by private entities with unknown interests/intentions.

Taken altogether, the disparate nature of the comments underscores the strong need to ensure that stakeholders are working with the same knowledge and understanding of AI systems. Without a common and calibrated understanding, the potential for naivety, fear-stoking, and other divisive pitfalls only serve to create unproductive barriers as West Virginians work together, as well as with the rest of the United States, in solving these issues in unison.

Figure 3. Sample comments received from school and district staff (including educators, counselors, administrators, and other staff) by AI usage and sentiment of open-ended response.

	Opposed	Mixed Emotions	Supportive
Uses AI	*Individuals at this level indicated that they used AI for work or helping students with school work at least a few times a year, about once a month, about once a week, or most days.*	• "Machines CAN NOT educate or teach students what is critical in the classroom: respect, social skills, and empathy. [...] " • "Students need a person to teach them, not a machine or electronic devices." • "Technology runs into problems daily. Not only would this tamper with privacy and create more problems for schools, but people need to be available to troubleshoot AI tech programs regularly. I worry it will cut jobs, then overload those who are still in the educational workforce with more responsibility in dealing with troubleshooting."	• "AI is great. However, it needs to be on a tight leash. It should not eliminate jobs and we really need to make sure that it is safe and effective." • "I think AI is going to be everywhere very soon. Technology has many pros, but it also comes with many cons. I think AI will be the same. It will be great in some areas, but could create chaos in other areas." • "Regarding AI, there is a shiny toy effect. Although I think it's fresh and new and am tempted to jump in head first, there are plenty of reasons to put on the brakes, step back, and analyze. Perhaps we should be thorough at the beginning. Let's be proactive, not reactive."	• "AI belongs in the same category as internet literacy, i.e., the tools are unavoidable aspects of contemporary life and attempts to ban them will not serve our students well. Rather, we should help students learn how to effectively use them and recognize when they are being misused." • "Same conversations and fears resurfacing from the introduction of the internet in schools. Teach responsibility and proper usage. Teach how important it is to take the results and research for accuracy and non -biased responses. Teach."
Never Uses AI	*Individuals at this level indicated that they never use AI for work or helping students with school work.*	• "I feel we need to teach students basics, there are too many problems now with students having technology in their hands. They can not read, write, study, or do math without technology." • "We do not need AI in public education in any sphere. This is opening a can of worms that can never be closed. Kids are already struggling FAR too much with basic reading, comprehension, and critical thinking skills. No amount of teaching this 'as a tool' will help in this area. We should just focus on education. We are behind. We are struggling."	• "When used appropriately, like with the internet and the integration of technology as a whole, it can be effective. However, when a student uses AI like they did in my classroom last week to complete and assignment, I'm concerned. We are raising kids and teaching students to use other means to think for them, rather than teaching them to think and use assistance when needed." • "I am not familiar with AI other than what I have heard on the news."	• "AI is inevitable so the more proactive we are the better. It is moving faster than our govt. can regulate. It we learned anything from Social Media is to be prepared and proactive." • "I feel that AI technology should be taught to students and teachers, because it is starting to become part of our society. Teachers and students need to understand what it is, and how it is used, and how people abuse the use of AI. Students and teachers need to be up to date on the newest technology, so they can grow with society, and our ever changing world."

Figure 4. Sample comments received from family and community partners (including family members, community members, and post-secondary/ industry professionals) by AI usage and sentiment of open-ended response..

	Opposed	Mixed Emotions	Supportive
Uses AI	*Individuals at this level indicated that they used AI for work or helping students with school work at least a few times a year, about once a month, about once a week, or most days.*	• "AI technology has not been properly vetted to ensure the personal safety/ personal information of our students." • "I don't believe AI is the answer to our problems in education. AI will only further potentiate the systemic problems seen within our education system. Fix the problems within our systems such as, low test scores related to inability to read, then maybe talk about the use of AI. [...]" • "It is not acceptable to make everything in life run by AI. This country is already in bad shape with young generation not learning basic skills let alone complex skills. AI is the last thing that the public school should be implementing. [...]"	• "Most issues with surrounding AI will not be discovered until AFTER it has been implemented. That's unavoidable. So, please ensure it's necessary before moving forward." • "While AI could be useful in an academic study, we should not forget our academic roots. Students are becoming more and more dependent on technology and AI, causing holes in their education. Students should be taught the fundamentals such as reading, writing (including cursive) and arithmetic and be able to do it themselves without technology and AI. AI should be used as a tool to help, not take over human intelligence. [...]"	• "AI is here and ever evolving. School districts need to stay on top of how students are using it and how they can integrate the technology into instruction safely." • "How to use AI, as well as how AI works, is already essential knowledge to be successful in the workforce (aside from manual labor). I would rather students be taught about it, and exposed to it, at school instead of experimenting on their own." • "Since our students will engage with this the rest of their lives, teaching them how to use it properly is extremely important."
Never Uses AI	*Individuals at this level indicated that they never use AI for work or helping students with school work.*	• "AI can be and is hackable. Technology is not 100% fool proof or safe." • "AI may be the end of human intelligence as we know it. We must protect the child from dependence on AI. How can we be certain that it will only be used as a resource?" • "I believe we have lost touch with reality the further we deep dive into technology. Mental health in this generation is at a serious decline. School should be a learning environment that also has a social experience."	• "I believe there can be many benefits to AI, however it is important to consider which human aspect it may be replacing. [...] AI could never truly form the emotional connection that the teachers and staff have with our students." • "[...] We are putting the 'tools of the gods' into the hands of people with motivations we don't fully know or understand. If we are going to adopt AI into the school system, I would suggest we know what exactly we are using, what 'it' is capable of, and how 'it' can be manipulated for malevolence."	• When PCs started to emerge, people were worried about losing jobs. Same when the internet was introduced to the public. Adapting to change is scary and even though some jobs were initially lost, entire job industries were created as a result of these advancements." • "Our US students need to be proficient and prepared for AI in the workplace. It's important to protect our children and teachers but ensure our children can compete internationally and understand the pros/cons of AI."

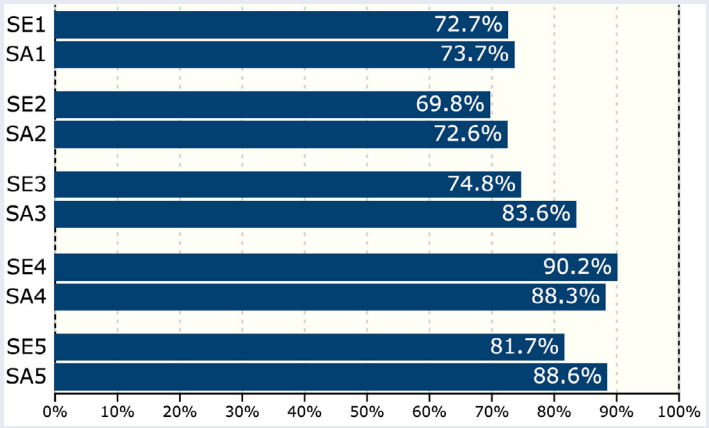
Section 6: Supports for Educators, Counselors, and Administrators

Section Highlights

Relevant Survey Questions

For Educators and Counselors		For Administrators	
SE1	How much support do you need in implementing protections for students (such as data privacy and ethical use of AI) when using AI technologies in your school?	**SA1**	*Identical wording as SE1*
SE2	How much support do you need in learning about how to effectively use AI technologies in planning instruction?	**SA2**	How much support do you need in providing training for educators to effectively teach and use AI technologies?
SE3	How much support do you need in learning about AI technologies for non-instructional purposes (such as planning school events, classroom layout, general record keeping) in your school?	**SA3**	How much support do you need in learning about AI technologies for non-academic purposes (such as improving scheduling, enhancing school safety, optimizing resource allocation) in your school?
SE4	How much support do you need in effectively communicating and maintaining transparency about the implementation of AI technologies with students and families?	**SA4**	How much support do you need in effectively communicating and maintaining transparency about the implementation of AI technologies with students, families, educators, partner organizations, and the community at large?
SE5	How much support do you need in evaluating the safety, transparency, ethical use, and impact of AI products used in your school?	**SA5**	*Identical wording as SE5*

Combined "Moderate Support Needed" and "High Support Needed" %



Findings

Responding educators/counselors shared that they needed moderate or high support in similar amounts as administrators. Overall, more than 90% expressed needing some level of support, while roughly three-quarters needed moderate or high support across the five domains asked about in the questions. The highest levels of need were reported in wanting to know the best ways to communicate and maintain transparency about any uses of AI-powered products (see SE4 and SA4). In using AI as part of instructional planning and pedagogy (see SE2 and SA2), more than two-thirds of respondents expressed needing moderate/high support.

Another survey of teachers across the US found that 80.4% of respondents said "Probably Yes" or "Definitely Yes" to having professional development for teachers and school administrators that includes curriculum specifically designed to help them learn about the implications of AI (aiEDU, 2024). That number is similar in magnitude to the results obtained from WV educators/counselors and administrators. Yet another survey from May–June 2023 of more than 1,000 teachers nationwide found that 58% were interested in professional development or coaching in AI (HMH, 2023), which was considerably less than was reported by WV educators/counselors.

In the open-ended comments, multiple educators expressed a need for on-going AI training and professional learning. They stressed that the training and learning should not be occurring exclusively in their personal time, and that such professional learning would be supported by their school and district administrators. Some cautioned that many of the adults in their buildings were unaware of the capabilities and possibilities of AI and are at-risk of falling further behind in a very short time period without urgently needed training. Other educators mentioned specific technology-related incidents (e.g., cybersecurity, hacking/infiltration, issues during technology upgrades) as reasons as to why an over-reliance on technology needs to be avoided and why training on AI is needed. Still, others described scenarios they found acceptable, which included using AI for finding fiscally responsible solutions and certain managerial tasks.

Notably, one respondent summarized a survey they did with staff at their own high school and learned that academic dishonesty and skill replacement for students were some of the larger concerns that were shared. The teachers in their school wanted to learn how to create assignments that could not be completed by AI, and a desire for hands-on training regarding ways to use AI creatively and ethically.

Collectively, educators and administrators are clear that they need more support and training, and they need it as soon as possible.

Recommendations for Action Steps

Based upon these survey findings, as well as informal stakeholder feedback that the WVDE has received, multiple supports have been identified that could be further developed to ensure all stakeholders receive the necessary training and materials in adapting to a world filled with AI technologies. The following strategic supports are proposed as action steps and are grouped by the entity which should be best equipped to provide the supports. In crafting these recommendations, consideration was given to the foundational policy ideas proposed by TeachAI (2024).

West Virginia Department of Education

Recommendation 1: Maintain Focus on Essential Skills/Knowledge and Student Well-Being

- Stakeholders were manifestly clear in their responses to Q13 and the open-ended feedback: it is important not to lose focus on ensuring that students are equipped with a solid foundation in "the basics." However, it is important to clarify that maintaining a focus on essential skills and knowledge means a **standards-based** approach to instruction. To be clear, an adherence to "the basics" does not imply ignoring decades of research on evidence-based practices and technological advancements in pursuit of a view of education that is unaligned with the future world that students will inherit. Just because we focus on foundational knowledge and skills does not mean we can forget all the research and new technologies that have improved teaching over the past few decades. In other words, we should not just do things the "old way" because it is familiar, but we also cannot adopt and use AI simply for the sake of chasing after innovation. This same theme permeated public discourse nearly 70 years ago in the report "Time for Action. West Virginia Public Schools: A Survey Report." released by the George Peabody College for Teachers (1956). As a basis of comparison, early computer programming languages (e.g., COBOL, FORTRAN) were being created just a few years prior. The report not only had historical ramifications for public education in WV, but it also discussed the expansion of human knowledge that parallels many discussions surrounding AI in education today (see p. 5):
    - *"The important thing for all concerned now is to recognize that the scope of knowledge will continue to expand, and that now and in the future both educators and lay citizens will need to give consideration continuously to the problem of what schools are to teach. If lay citizens assume that the schools should continue to function exactly as they functioned "when I went to school," the result will be fatal. On the other hand, it may prove disastrous if educators are too ready to change the curriculum upon the assumption that change is identical with progress."*
- Any considerations of AI will always need to be person-centered, done to further advance instructional quality of the WV content standards, and be centered on the whole-child. To this end, existing initiatives will continue to be expanded in a continued focus on essential skills/knowledge and student well-being:

[1] *Standards-based – The system of instructional practices, evaluation and reporting that shows a student's growth towards the mastery of specific skills and knowledge they are expected to learn as they proceed through their education. West Virginia has established College and Career Readiness Standards to prepare students to transition successfully into higher education or the workplace (West Virginia Professional Teaching Standards, 2023).*

Ready, Read, Write, WV — Ready, Read, Write, West Virginia is an initiative created by the West Virginia Department of Education to increase literacy proficiency for all students. It is rooted in the science of reading and based on the belief that all students can learn to read proficiently with effective reading instruction.

Unite with Numeracy — Unite with Numeracy is a comprehensive plan to improve student achievement in mathematics by providing supports focused on the daily classroom experience (e.g., enhancing teacher content knowledge and pedagogy and increasing student engagement).

Supporting the Mental Health Needs of Children — The WVDE is broadening the availability and accessibility of support materials aimed at improving the well-being of children. Resources are being provided to families, educators, and caregivers to bolster the mental health of students. The website ParentGuidance.org offers round-the-clock assistance to caregivers, focusing on mental well-being and self-care. The Cook Center for Human Connection, a national nonprofit organization, has created these resources to strengthen the essential personal relationships necessary for school communities.

STRIVE WV — The WVDE is launching an initiative that combines multiple existing resources and supports to better address chronic absenteeism, discipline issues, and academic challenges in West Virginia. The initiative recognizes that student safety, mental health, and well-being significantly impact these areas. Despite numerous, existing supports being available from various educational entities, there is a general lack of awareness among teachers and schools that the supports are available. The approach involves regional coordination based on a quadrant model (as determined by W. Va. Code §18-5-13b). This process initially will bring together specialists in literacy, numeracy, school safety, and behavior support to facilitate knowledge sharing and collaboration. The launch will include four pilot programs in middle schools starting in Fall 2024, as well as a grant funding opportunity for up to eight districts for elementary school alternative programs. The goal is to integrate existing supports effectively and measure their impact on student behavior and academic data.

STRIVE WV stands for:

- **S**trengthened Behavior Responses
- **T**argeted Assistance
- **R**egular Attendance
- **I**ncreased Achievement
- **V**alid Data Practices
- **E**mpowered Support Teams

Recommendation 2: Provide Additional Guidance and Supports to Promote AI Literacy

» Many educators shared in the open-ended comments a strong desire for additional training and supports related to learning about AI. In alignment with that request, the WVDE is creating additional trainings and resources. These supports are being developed such that districts can simultaneously build their capacity and be able to use resources in their own trainings and standard operating procedures.

- There will be regular updates to the AI guidance released by the WVDE. Currently, the guidance is on Version 1.1, and can be found at *https://wvde.us/ai/*.
- A resource site is available within Canvas (the WVDE's learning management system) and contains more than 50 resources/guides/toolkits. Within the resource site, there are links to multiple training guides and documents for educators. For districts, there are also sample communication templates, resources for technology management and data privacy, as well as links to additional guidance documents. The WVDE will continue to add resources to this site as new developments occur.
- A self-paced credit-bearing Canvas course will be created for educators.
- Content related to AI is being included in large professional learning opportunities (e.g., Student Success Summit, CTE Administrators Conference, Adult Education Conference), and such learning opportunities will persist.

Recommendation 3: Provide Guidelines regarding District Reviews of Artificial Intelligence Solutions

» The WVDE has received feedback both within the open-ended comments, as well as from e-mails, phone calls, and discussions during district administrative meetings that there is a strong need for additional processes and guidance that districts should use when considering the adoption and procurement of new technology solutions that use AI algorithms. In a similar vein, advocates from non-profit organizations, as well as technology leaders in the private sector, have increasingly been calling on state education agencies to quickly mobilize efforts in providing a framework that districts should be using in adopting new AI tools.

» To meet that growing need, a process manual will be created that will guide WV districts in their reviews of potential artificial intelligence solutions. The manual will describe a system of AI review, implementation, and transparency. The goal is to provide a framework for WV districts to use before implementing AI-enabled products *en masse*, and address use cases for administration/management, planning and design of instructional materials, as well as real-time interactions with AI technologies.

Public School Districts and Schools

Recommendation 4: Invest in Professional Learning to Build Capacity and Support Innovation

- Districts should provide avenues for transformational change that leverage a culture of collaboration and organizational learning with the goal of building capacity at all levels of the educational system. Professional learning surrounding AI cannot simply be lecture-style presentations in isolated instances. Districts should more directly use the trainings and resources being provided by the WVDE, in addition to the new resources that are being developed (c.f., Recommendation #2 above), to train professional and service personnel on the opportunities and risks that can arise from using AI in public education.
- In efforts to build capacity, districts should support innovative uses of AI that help streamline standard operating procedures. To be certain, this recommendation is not suggesting that AI processes should be given any agency or decision-making capacity. Instead, districts should be open to exploring ways to support innovation with educational practices that are aligned with grade-level academic content standards. This idea does not simply mean procuring an AI-powered solution as a means to solve a shortage of content-area certified educators. Instead, innovation must consider educational technology integration frameworks (e.g., SAMR — Puentedura, 2006; PIC-RAT — Kimmons, Graham, & West, 2020). The use of AI in instructional design, instructional delivery, and assessment is only innovative if it actually enhances the efficiency and effectiveness of teaching and learning.

Recommendation 5: Invest in Leadership

- It is crucial for districts to support schools with organizational strategy, goal-setting, as well as monitoring and evaluation practices in the use and adoption of AI.
- District- and school-level administrators should take steps to build a situational awareness about the professional learning needs of their staff and how parents/caregivers are feeling about various applications of AI tools.
- Technological leadership related to AI is not just about cheating/plagiarism but setting new academic expectations for school-wide implementation. The school culture surrounding any AI tools should be one of transparency, rationales, and honest evaluations of risk.

Recommendation 6: Collect Stakeholder Input

- Districts and schools should collect input from their stakeholders when considering new applications of AI. Communication is crucial, and collecting feedback is a necessary part of that process. Many parents/caregivers are only aware of AI based upon what is seen in media or social media, so it is important to use common language that is not connotatively laden (either in support or opposition).
- In light of Recommendation #3 above, collecting feedback and establishing open communication is an important undertaking even prior to the release of the process manual.

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APPENDIX A

Survey Questions

Page 1: Description of Survey and Consent

Artificial Intelligence in Education
WV Stakeholder Survey

* Required

Welcome

Introduction & Consent

The West Virginia Department of Education is conducting the **Artificial Intelligence in Education: WV Stakeholder Survey** to gather input from community stakeholders. Information from this survey will be used to guide future planning for resources and supports provided to WV public schools, as well as informing potential policy considerations.

By filling out the questions in this survey, you are consenting to take part in the survey. Your participation is completely voluntary:

- Your responses are anonymous. No one will know your identity.
- We may quote written responses that are provided to explain the results, but we won't connect them to any information that could potentially identify you.
- You may choose not to participate.
- You may choose not to answer any questions you do not want to answer or do not understand.
- You may stop participating at any time during the survey.
- Filling out the survey should take 10-20 minutes.

Taking part in this survey will put you at no more risk than you would experience during any typical day. Although you may not benefit directly by taking part in the survey, it is possible that because of what we learn, schools in West Virginia may improve to better meet the needs of students and staff.

You will receive no money or other reward for taking part in this survey. If you decide not to take part or to stop at any time, there will be no penalties or loss of benefits to you. For more information about the **Artificial Intelligence in Education: WV Stakeholder Survey**, you may contact the survey team at surveys.wvde@k12.wv.us.

Thank you for taking part in this important effort.

I agree to participate in the **Artificial Intelligence in Education: WV Stakeholder Survey**. (By clicking "Yes" below, the survey will begin on the next page) *

- ◯ Yes
- ◯ No

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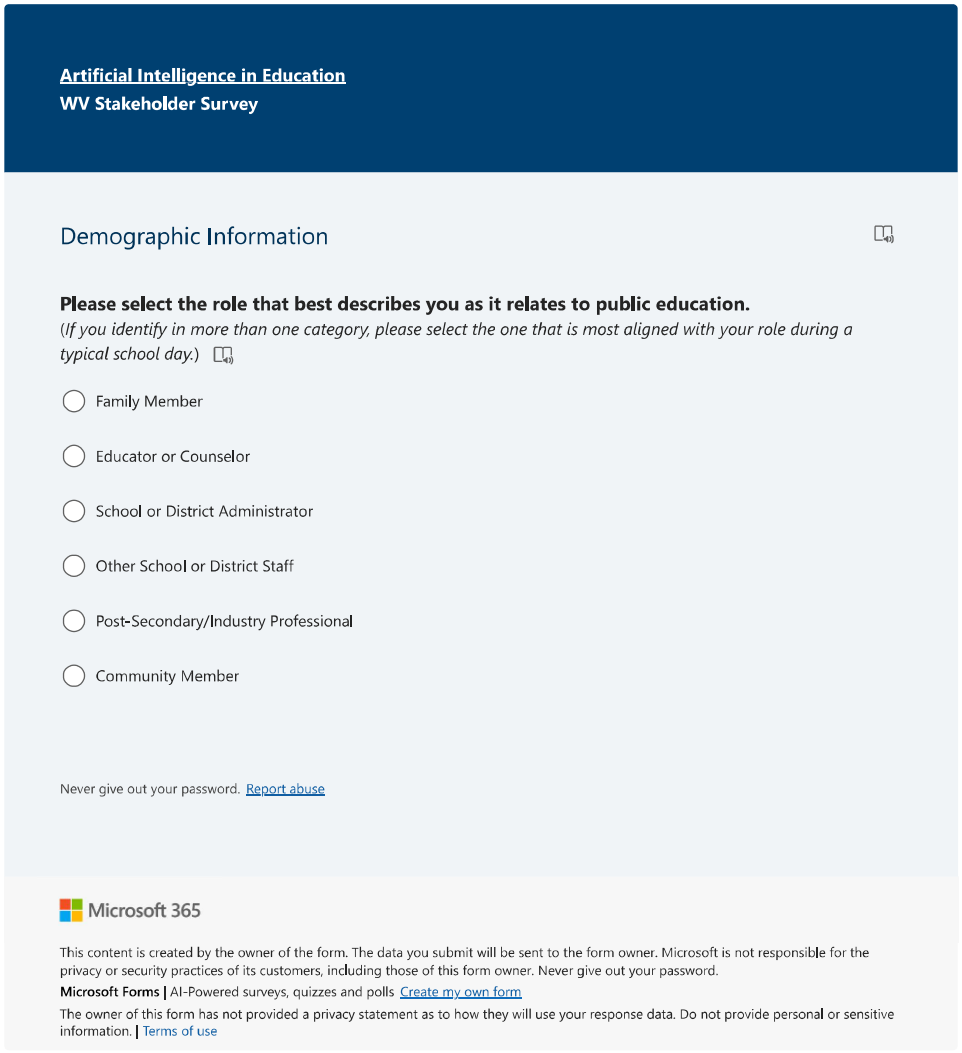
Page 2: Demographic Information



Artificial Intelligence in Education
WV Stakeholder Survey

Demographic Information

Please select the role that best describes you as it relates to public education.
(*If you identify in more than one category, please select the one that is most aligned with your role during a typical school day.*)

- ◯ Family Member
- ◯ Educator or Counselor
- ◯ School or District Administrator
- ◯ Other School or District Staff
- ◯ Post-Secondary/Industry Professional
- ◯ Community Member

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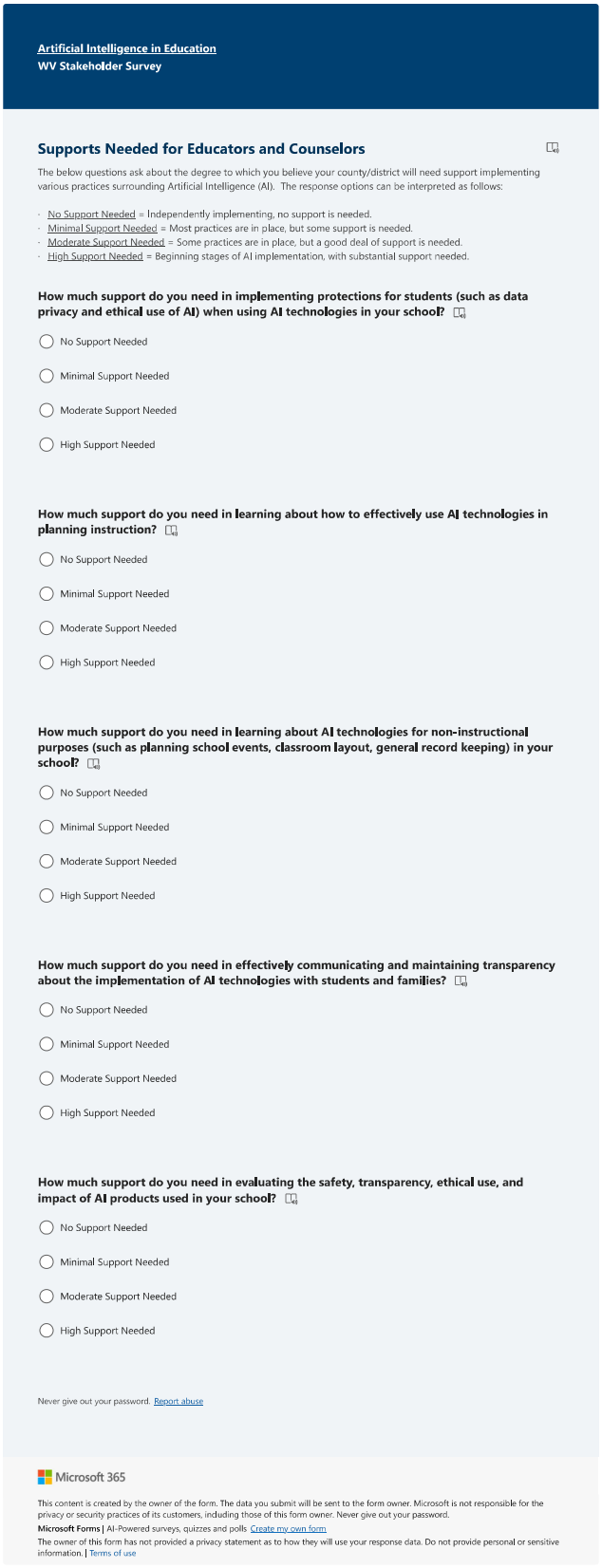
Page 3A: Supports Needed for Educators and Counselors



Artificial Intelligence in Education
WV Stakeholder Survey

Supports Needed for Educators and Counselors

The below questions ask about the degree to which you believe your county/district will need support implementing various practices surrounding Artificial Intelligence (AI). The response options can be interpreted as follows:

- No Support Needed = Independently implementing, no support is needed.
- Minimal Support Needed = Most practices are in place, but some support is needed.
- Moderate Support Needed = Some practices are in place, but a good deal of support is needed.
- High Support Needed = Beginning stages of AI implementation, with substantial support needed.

How much support do you need in implementing protections for students (such as data privacy and ethical use of AI) when using AI technologies in your school?

- ◯ No Support Needed
- ◯ Minimal Support Needed
- ◯ Moderate Support Needed
- ◯ High Support Needed

How much support do you need in learning about how to effectively use AI technologies in planning instruction?

- ◯ No Support Needed
- ◯ Minimal Support Needed
- ◯ Moderate Support Needed
- ◯ High Support Needed

How much support do you need in learning about AI technologies for non-instructional purposes (such as planning school events, classroom layout, general record keeping) in your school?

- ◯ No Support Needed
- ◯ Minimal Support Needed
- ◯ Moderate Support Needed
- ◯ High Support Needed

How much support do you need in effectively communicating and maintaining transparency about the implementation of AI technologies with students and families?

- ◯ No Support Needed
- ◯ Minimal Support Needed
- ◯ Moderate Support Needed
- ◯ High Support Needed

How much support do you need in evaluating the safety, transparency, ethical use, and impact of AI products used in your school?

- ◯ No Support Needed
- ◯ Minimal Support Needed
- ◯ Moderate Support Needed
- ◯ High Support Needed

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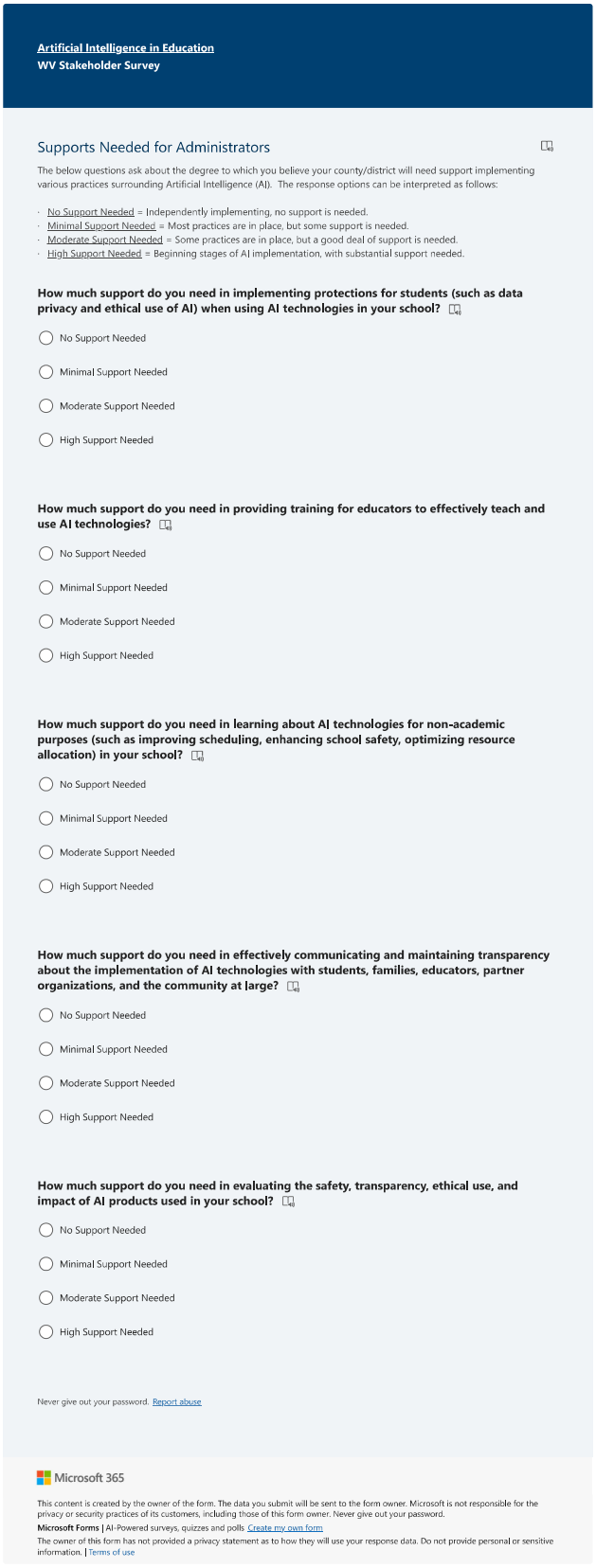
Page 3B: Supports Needed for Administrators



Artificial Intelligence in Education
WV Stakeholder Survey

Supports Needed for Administrators

The below questions ask about the degree to which you believe your county/district will need support implementing various practices surrounding Artificial Intelligence (AI). The response options can be interpreted as follows:

- No Support Needed = Independently implementing, no support is needed.
- Minimal Support Needed = Most practices are in place, but some support is needed.
- Moderate Support Needed = Some practices are in place, but a good deal of support is needed.
- High Support Needed = Beginning stages of AI implementation, with substantial support needed.

How much support do you need in implementing protections for students (such as data privacy and ethical use of AI) when using AI technologies in your school?

- ◯ No Support Needed
- ◯ Minimal Support Needed
- ◯ Moderate Support Needed
- ◯ High Support Needed

How much support do you need in providing training for educators to effectively teach and use AI technologies?

- ◯ No Support Needed
- ◯ Minimal Support Needed
- ◯ Moderate Support Needed
- ◯ High Support Needed

How much support do you need in learning about AI technologies for non-academic purposes (such as improving scheduling, enhancing school safety, optimizing resource allocation) in your school?

- ◯ No Support Needed
- ◯ Minimal Support Needed
- ◯ Moderate Support Needed
- ◯ High Support Needed

How much support do you need in effectively communicating and maintaining transparency about the implementation of AI technologies with students, families, educators, partner organizations, and the community at large?

- ◯ No Support Needed
- ◯ Minimal Support Needed
- ◯ Moderate Support Needed
- ◯ High Support Needed

How much support do you need in evaluating the safety, transparency, ethical use, and impact of AI products used in your school?

- ◯ No Support Needed
- ◯ Minimal Support Needed
- ◯ Moderate Support Needed
- ◯ High Support Needed

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Page 4: Perceptions of AI in Education

Artificial Intelligence in Education
WV Stakeholder Survey

Perceptions of AI in Education

How often do you use newer AI chatbots or visual AI tools for work or helping students (e.g., your child) with school work?

- Never
- A few times a year
- About once a month
- About once a week
- Most days

I believe the adoption of AI is unavoidable in education.

- Strongly Disagree
- Disagree
- Agree
- Strongly Agree

I believe the adoption of AI is unavoidable in the workforce.

- Strongly Disagree
- Disagree
- Agree
- Strongly Agree

I am confident in my ability to keep up with advancements in AI technologies.

- Strongly Disagree
- Disagree
- Agree
- Strongly Agree

I would like to learn more about data privacy when using AI tools.

- Strongly Disagree
- Disagree
- Agree
- Strongly Agree

I am concerned about who takes responsibility when AI fails at a task.

- Strongly Disagree
- Disagree
- Agree
- Strongly Agree

I am concerned about who takes responsibility when AI succeeds at a task.

- Strongly Disagree
- Disagree
- Agree
- Strongly Agree

I worry that AI will replace many job roles currently performed by humans.

- Strongly Disagree
- Disagree
- Agree
- Strongly Agree

I feel that it is important for schools and districts to communicate with students and families about which AI-powered tools are being used and their reasons for being used.

- Strongly Disagree
- Disagree
- Agree
- Strongly Agree

Schools should communicate with students and families about the emergence of deepfake technology (i.e., fake audio or video created by AI that appears real and was created to confuse or deceive others).

- Strongly Disagree
- Disagree
- Agree
- Strongly Agree

I am concerned that the data used by AI algorithms, or the output from AI, may be biased against particular groups of people or points of view.

- Strongly Disagree
- Disagree
- Agree
- Strongly Agree

Vendors of AI products for educational use should be required to demonstrate that their algorithms work in the way that is described to users.

- Strongly Disagree
- Disagree
- Agree
- Strongly Agree

I am concerned about AI technology using multiple types of data to predict behavior of students or staff.

- Strongly Disagree
- Disagree
- Agree
- Strongly Agree

Students should continue to learn the essential principles and skills of literacy, math, research, & critical thinking so that they can use AI as an assistant or tool rather than becoming dependent upon it.

- Strongly Disagree
- Disagree
- Agree
- Strongly Agree

Page 5: Hypothetical Scenarios

Artificial Intelligence in Education
WV Stakeholder Survey

Hypothetical Scenarios

This section presents a set of hypothetical scenarios involving uses of AI in schools or by districts. The West Virginia Department of Education (WVDE) is not suggesting that these scenarios should occur nor that any particular outcomes should occur based solely on the content of each question. The intent is to present potentially challenging situations to gather public feedback and inform further discussions.

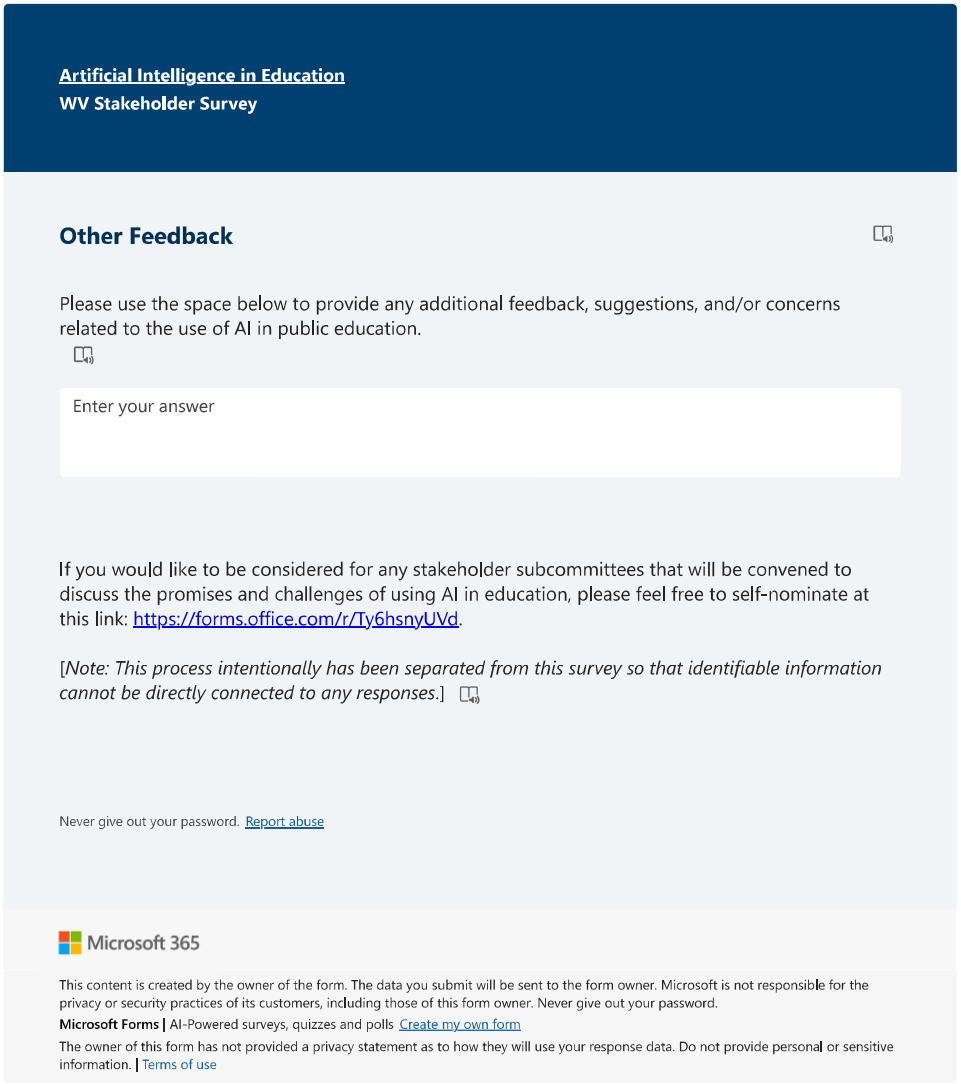
AI-powered devices sometimes send data they collect to a computer owned by the company that sold the product. Please indicate whether each of the following scenarios are acceptable decisions regarding the use of AI:

	Unacceptable	Unsure	Acceptable
School limitations or prohibitions on personal devices that collect information about the surroundings if the devices are not medically important for a student. For example, a school should be allowed to prohibit the wearing of personal smart glasses to school, which are able to record pictures and video and store data about the types of objects they see, including potential storage in the cloud.	◯	◯	◯
The district is using an app to give parents/caregivers the ability to track bus location in real-time, and the company selling the app stores and uses the location data to improve their algorithm.	◯	◯	◯

AI-powered devices can potentially use personal data or assume traditionally human roles. Please indicate whether the following scenarios are acceptable decisions regarding the use of AI:

	Unacceptable	Unsure	Acceptable
Using facial recognition to track classroom attendance.	◯	◯	◯
A school district is purchasing automated machines that clean the floors and deliver items between rooms. These collect data about the environment to navigate the school grounds. These machines could save the district tens of thousands of dollars each year, but it might result in the custodians losing work hours or losing their jobs completely. On the other hand, it might free up custodians to do other maintenance work that still needs to be done.	◯	◯	◯

Page 6: Other Feedback and Self-Nomination Form



Artificial Intelligence in Education
WV Stakeholder Survey

Other Feedback

Please use the space below to provide any additional feedback, suggestions, and/or concerns related to the use of AI in public education.

Enter your answer

If you would like to be considered for any stakeholder subcommittees that will be convened to discuss the promises and challenges of using AI in education, please feel free to self-nominate at this link: https://forms.office.com/r/Ty6hsnyUVd.

[*Note: This process intentionally has been separated from this survey so that identifiable information cannot be directly connected to any responses.*]

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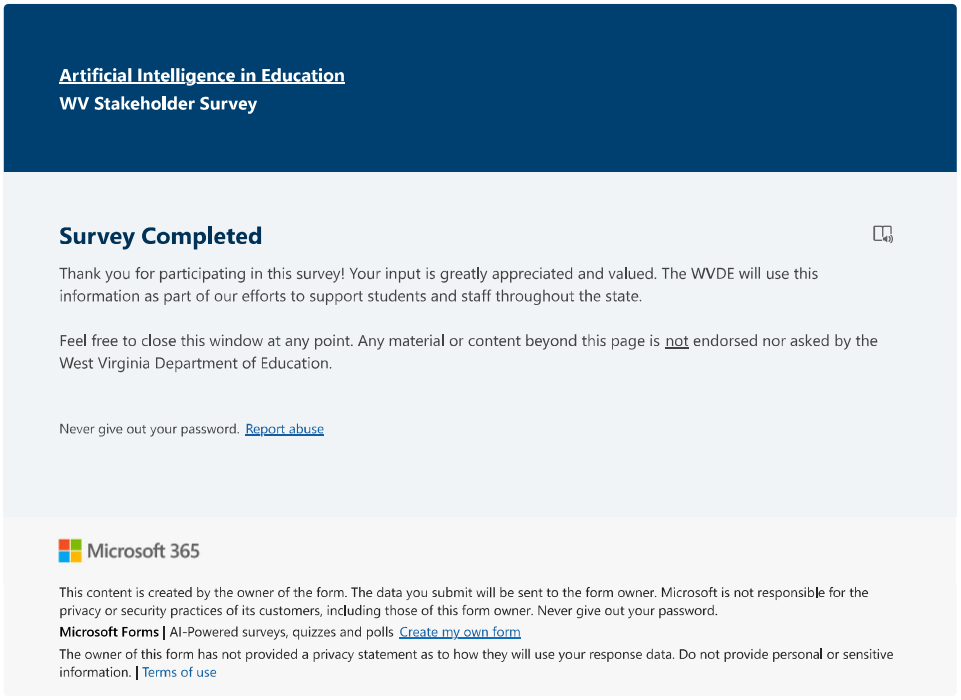
Page 7: Survey Completion

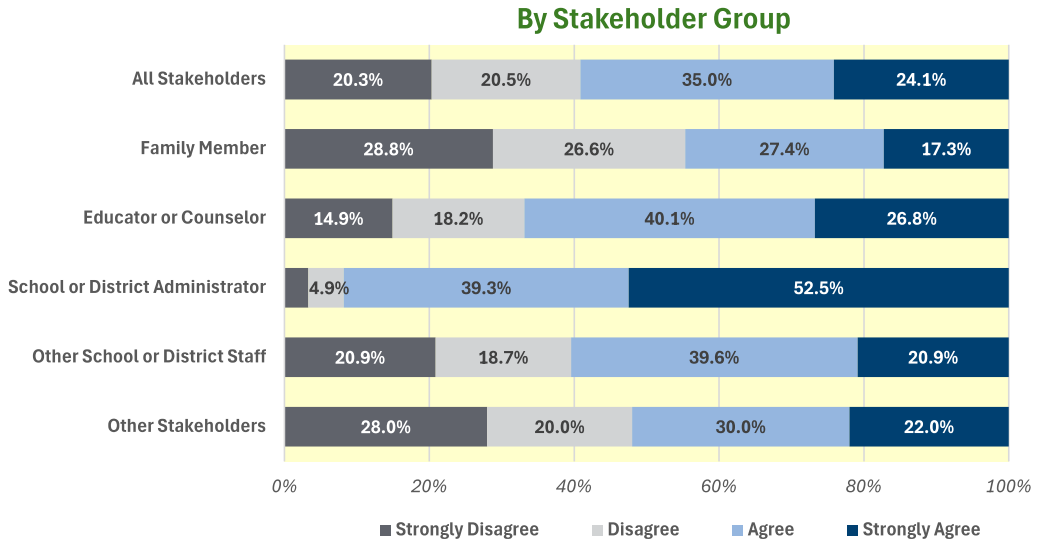


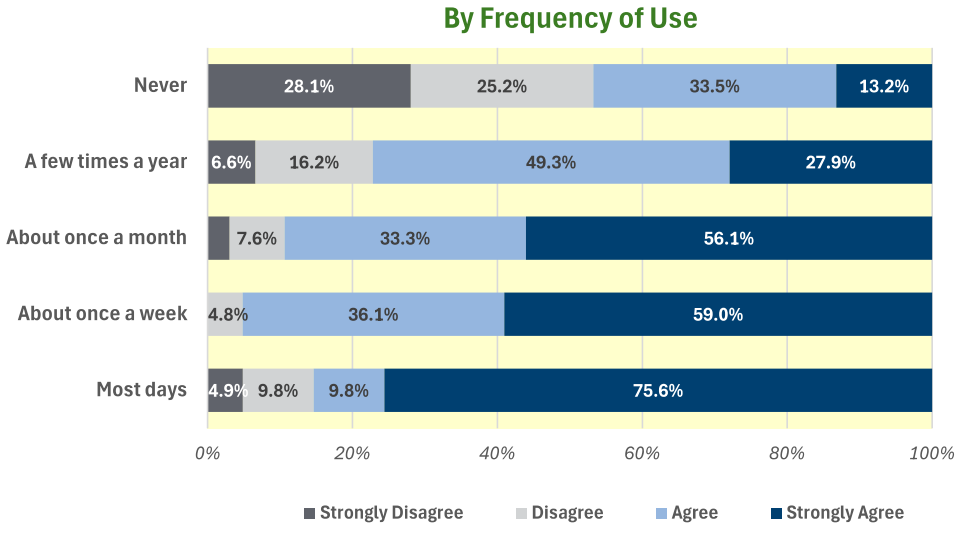
APPENDIX B

Disaggregated Question Results

Perceptions of AI in Education

Q1. I believe the adoption of AI is unavoidable in education.

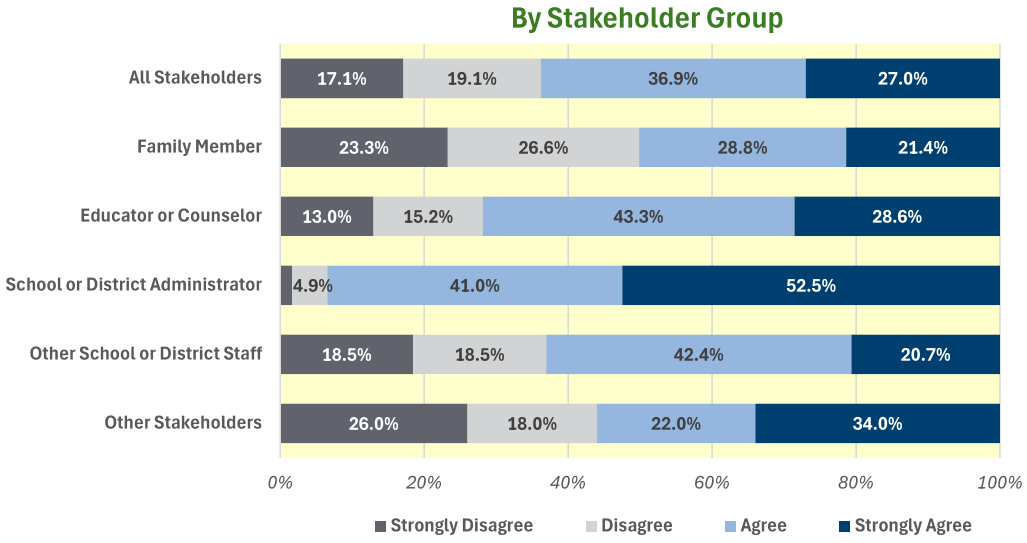


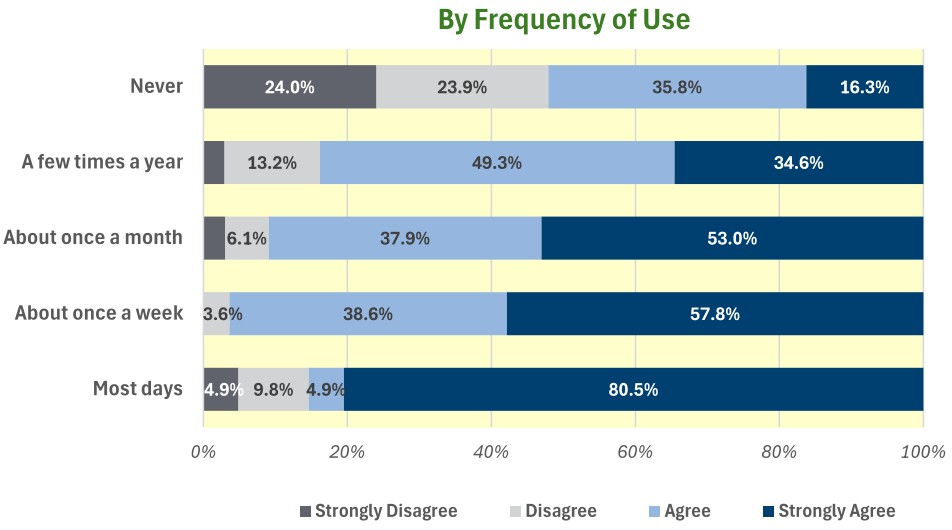


Due to space restrictions, parts of the stacked bar charts may not have percentage labels and can be assumed to be a value lower than 3%.

Perceptions of AI in Education

Q2. I believe the adoption of AI is unavoidable in the workforce.

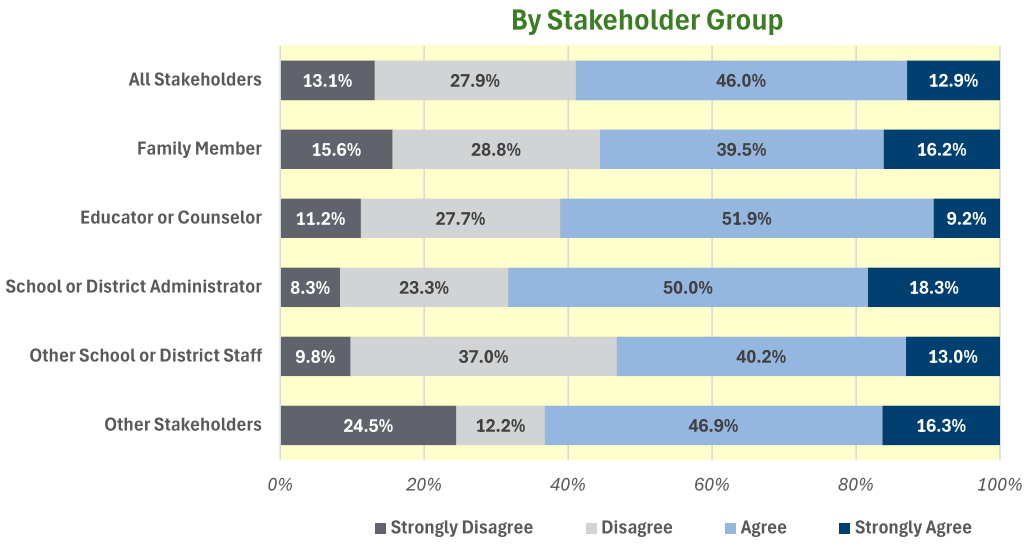


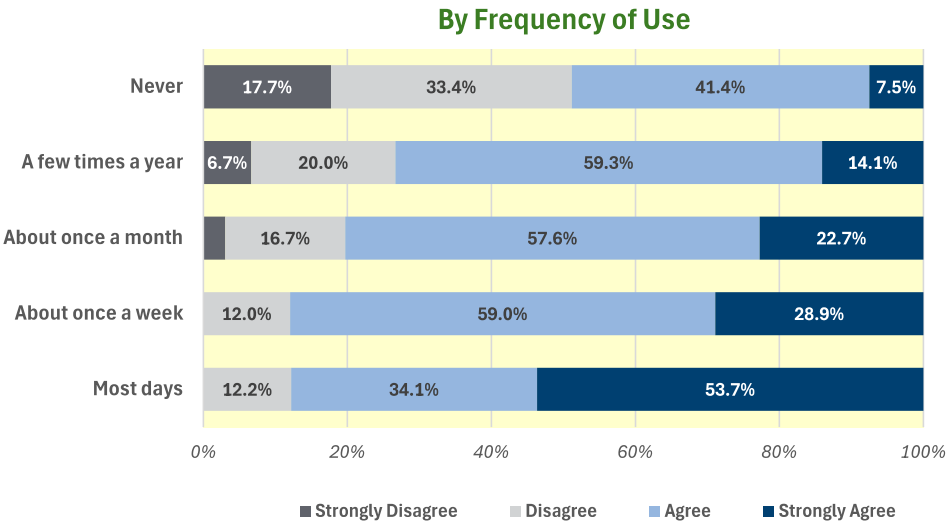


Due to space restrictions, parts of the stacked bar charts may not have percentage labels and can be assumed to be a value lower than 3%.

Perceptions of AI in Education

Q3. I am confident in my ability to keep up with advancements in AI technologies.

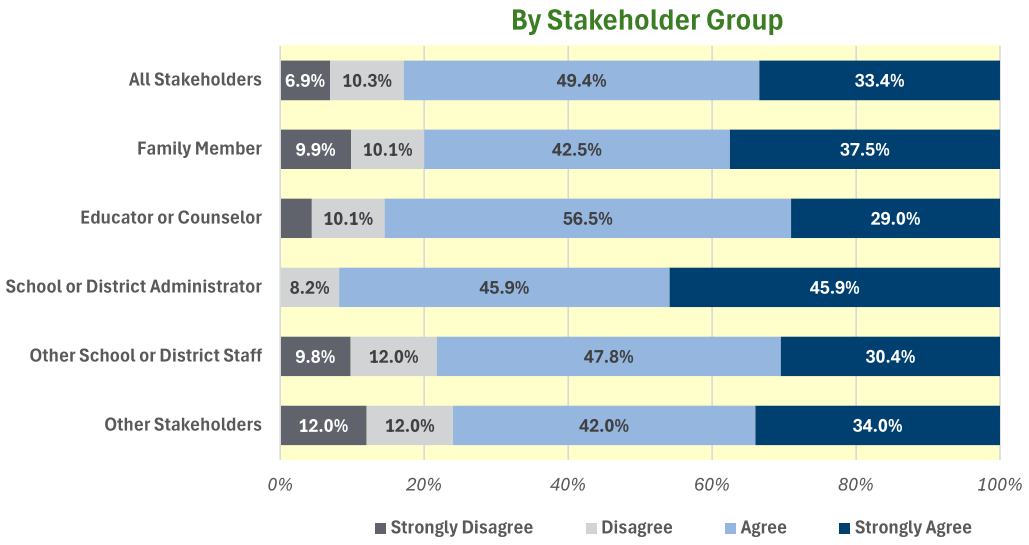


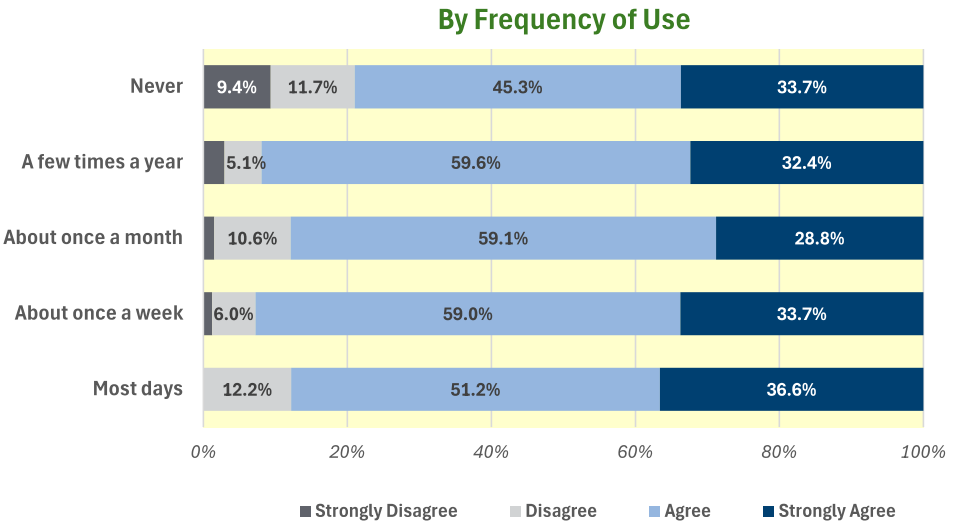


Due to space restrictions, parts of the stacked bar charts may not have percentage labels and can be assumed to be a value lower than 3%.

Perceptions of AI in Education

Q4. I would like to learn more about data privacy when using AI tools.



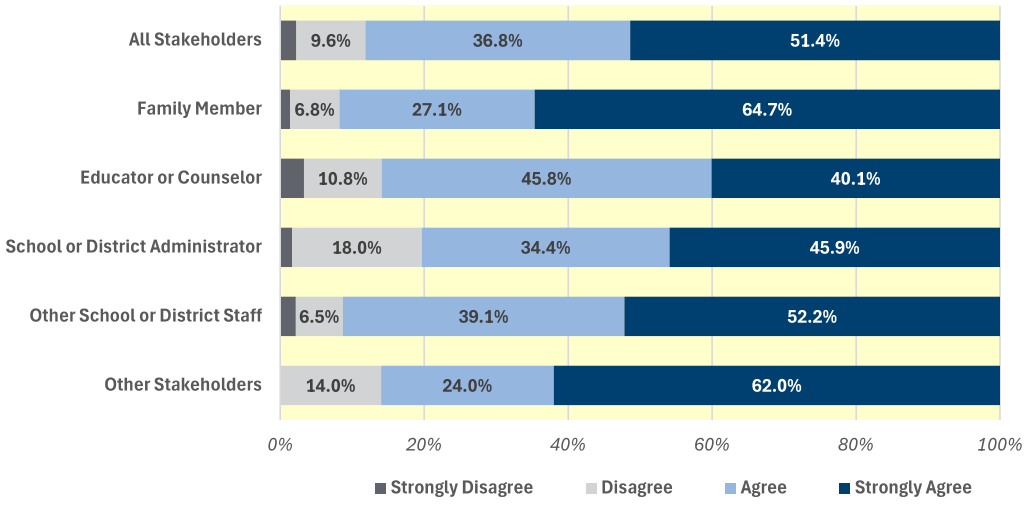


Due to space restrictions, parts of the stacked bar charts may not have percentage labels and can be assumed to be a value lower than 3%.

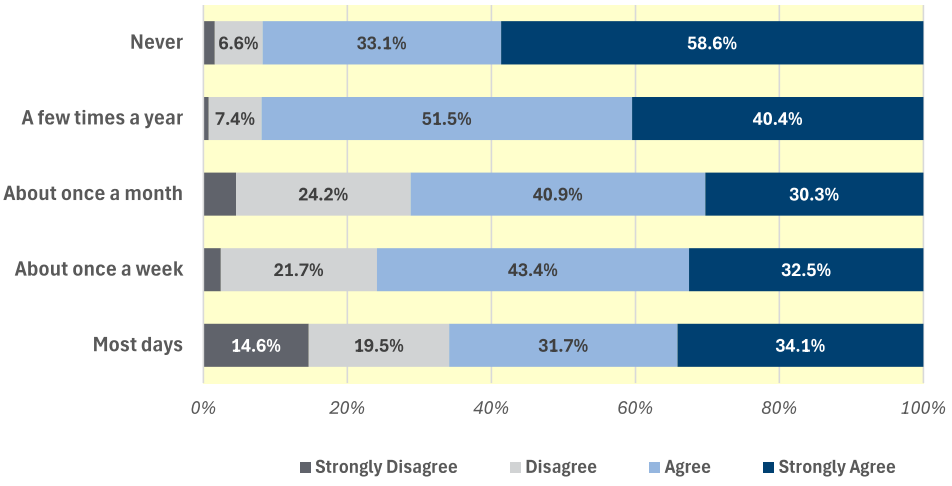
Perceptions of AI in Education

Q5. I am concerned about who takes responsibility when AI fails at a task.

By Stakeholder Group



By Frequency of Use

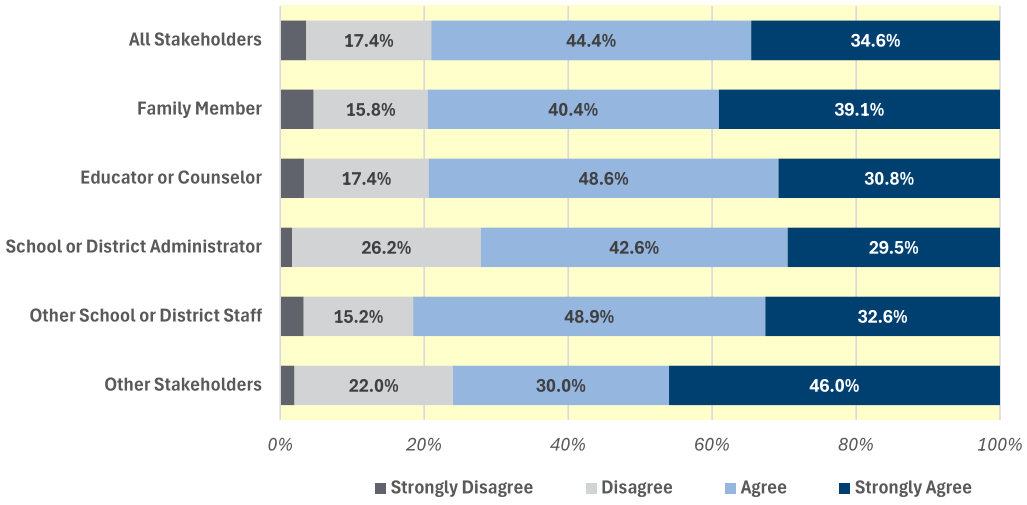


Due to space restrictions, parts of the stacked bar charts may not have percentage labels and can be assumed to be a value lower than 3%.

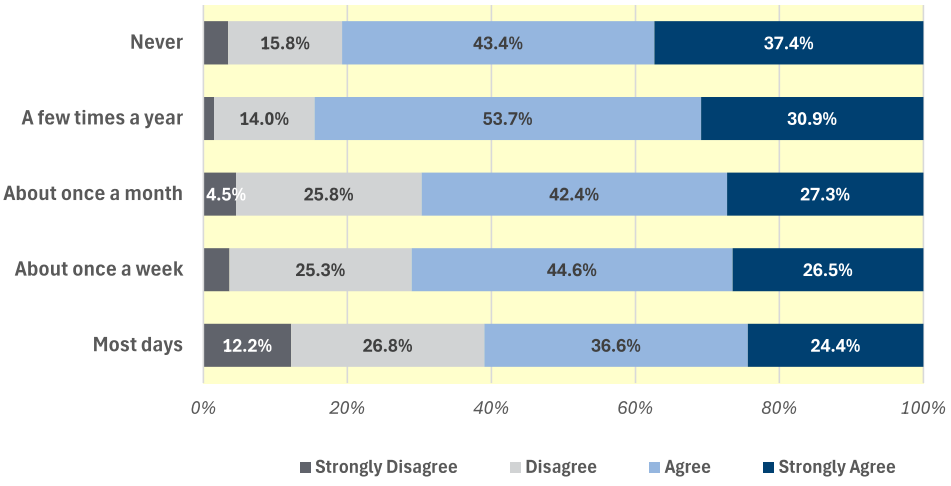
Perceptions of AI in Education

Q6. I am concerned about who takes responsibility when AI succeeds at a task.

By Stakeholder Group



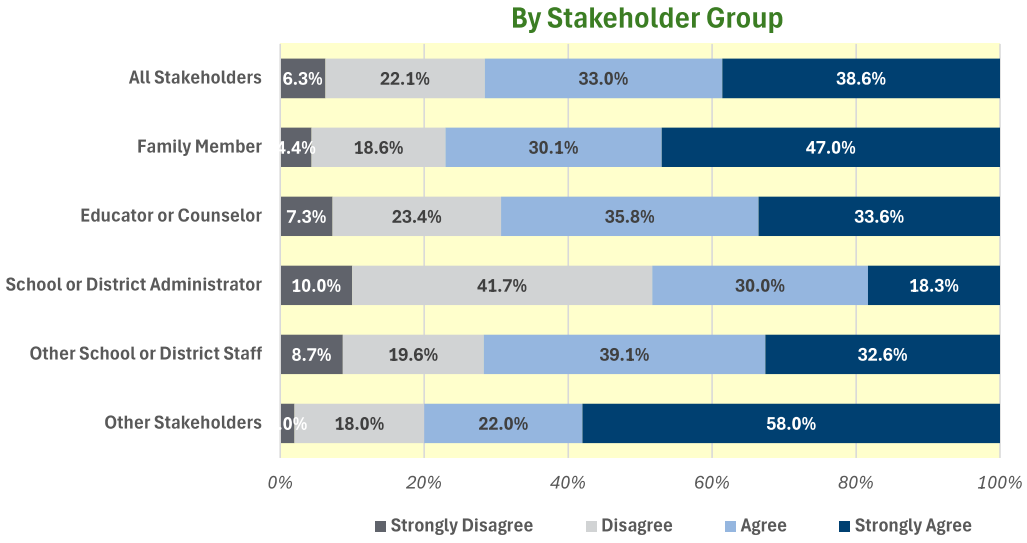
By Frequency of Use

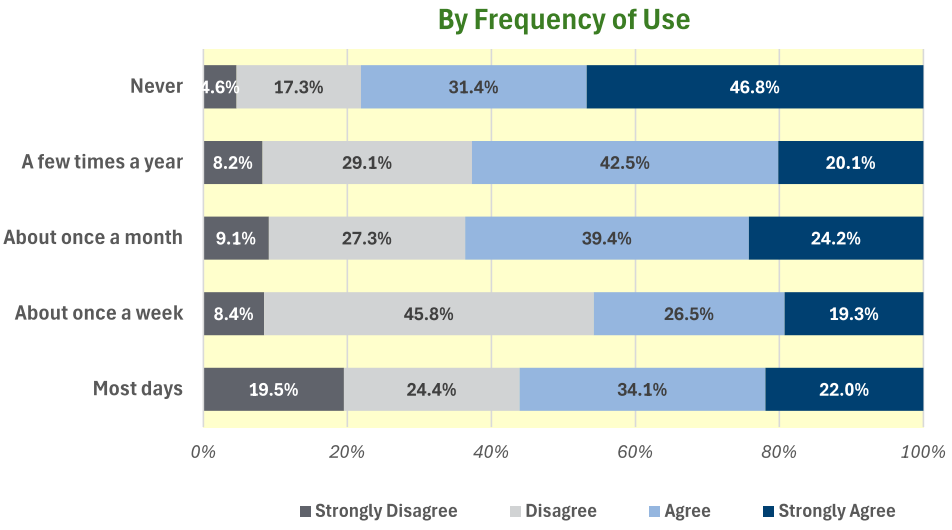


Due to space restrictions, parts of the stacked bar charts may not have percentage labels and can be assumed to be a value lower than 3%.

Perceptions of AI in Education

Q7. I worry that AI will replace many job roles currently performed by humans.



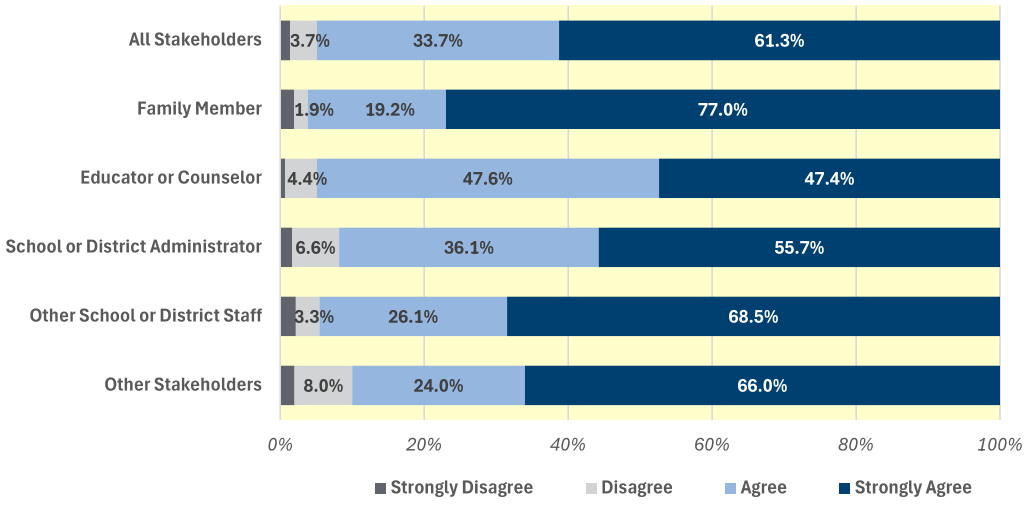


Due to space restrictions, parts of the stacked bar charts may not have percentage labels and can be assumed to be a value lower than 3%.

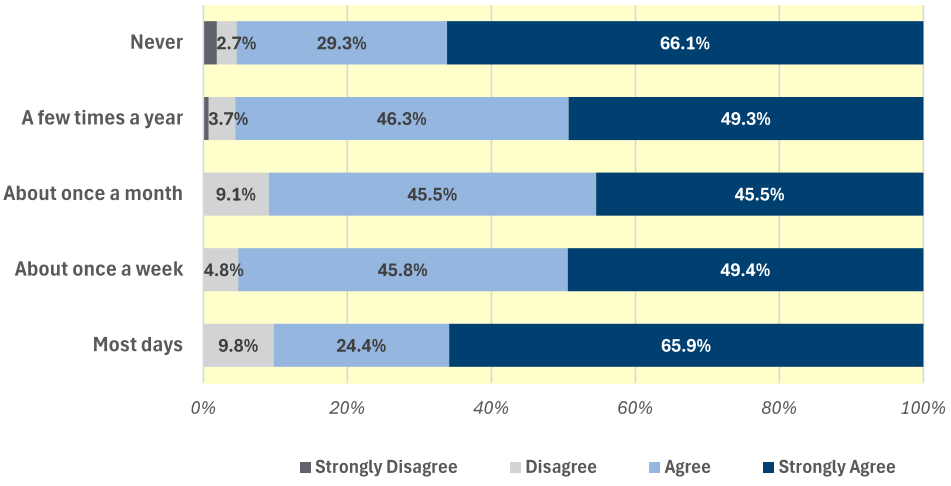
Perceptions of AI in Education

Q8. I feel that it is important for schools and districts to communicate with students and families about which AI-powered tools are being used and their reasons for being used.

By Stakeholder Group



By Frequency of Use

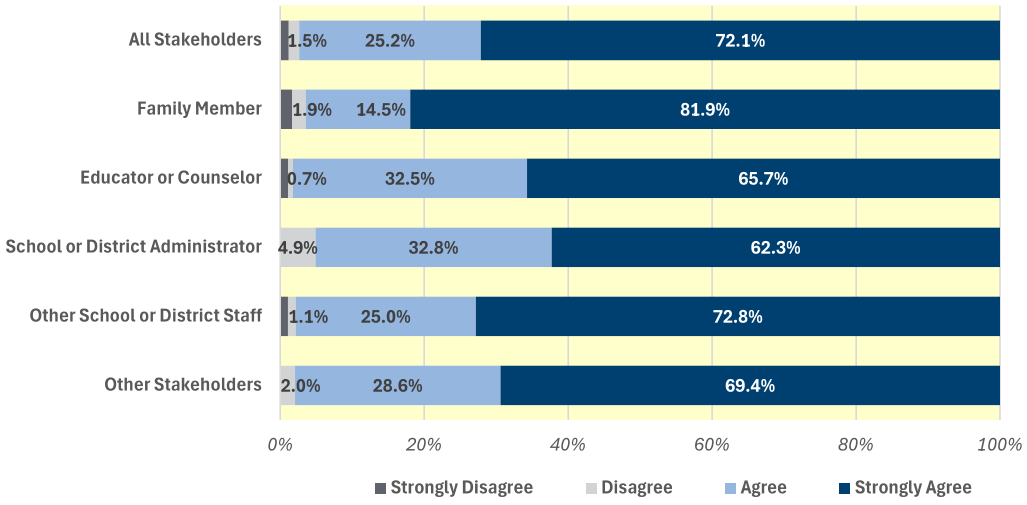


Due to space restrictions, parts of the stacked bar charts may not have percentage labels and can be assumed to be a value lower than 3%.

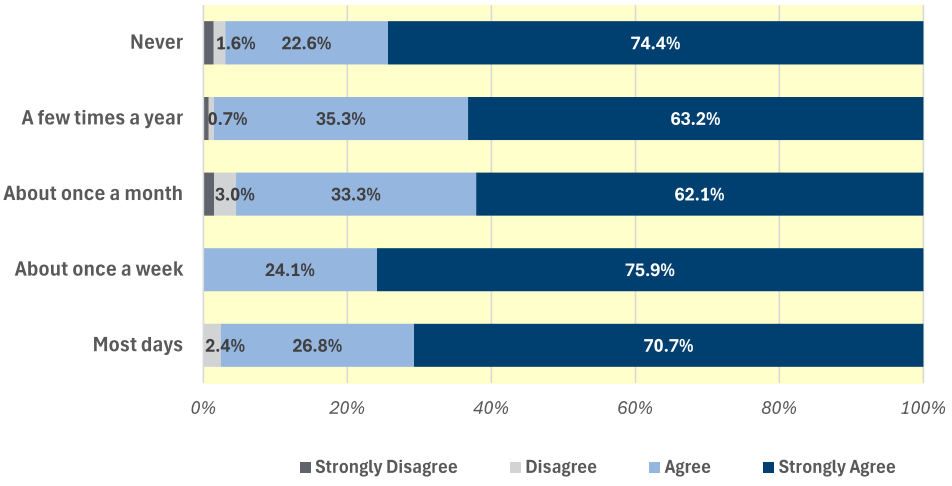
Perceptions of AI in Education

Q9. Schools should communicate with students and families about the emergence of deepfake technology (i.e., fake audio or video created by AI that appears real and was created to confuse or deceive others).

By Stakeholder Group



By Frequency of Use

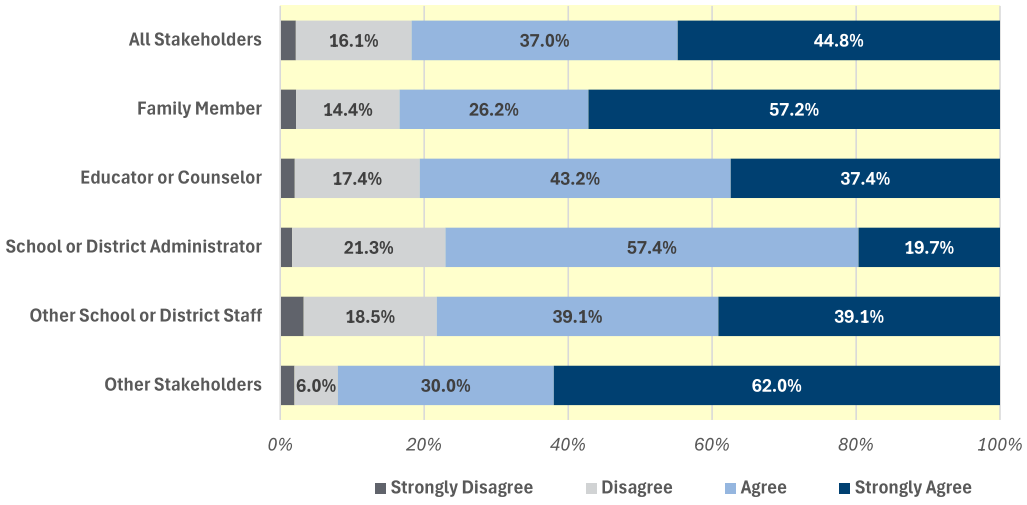


Due to space restrictions, parts of the stacked bar charts may not have percentage labels and can be assumed to be a value lower than 3%.

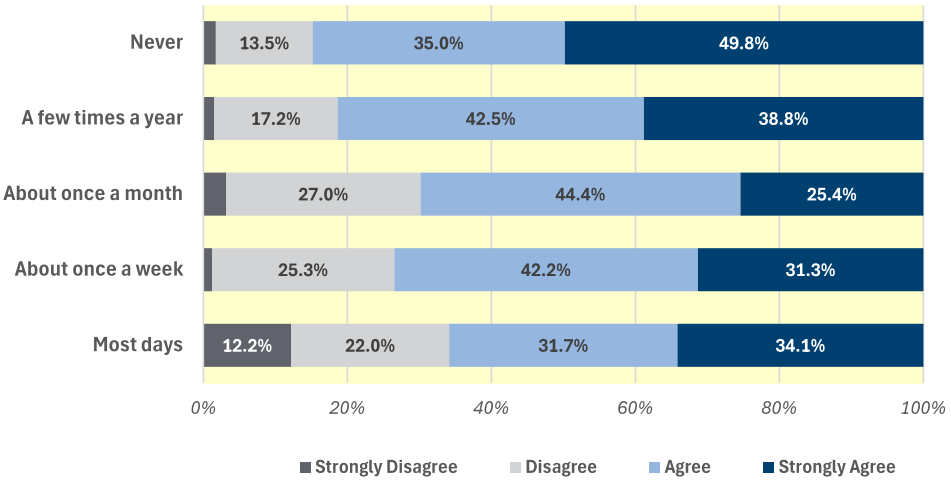
Perceptions of AI in Education

Q10. I am concerned that the data used by AI algorithms, or the output from AI, may be biased against particular groups of people or points of view.

By Stakeholder Group



By Frequency of Use

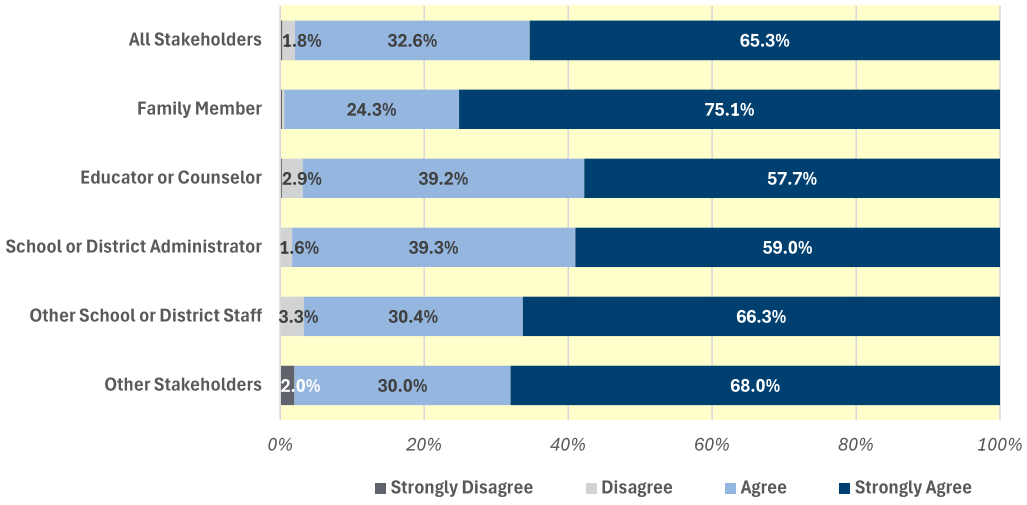


Due to space restrictions, parts of the stacked bar charts may not have percentage labels and can be assumed to be a value lower than 3%.

Perceptions of AI in Education

Q11. Vendors of AI products for educational use should be required to demonstrate that their algorithms work in the way that is described to users.

By Stakeholder Group



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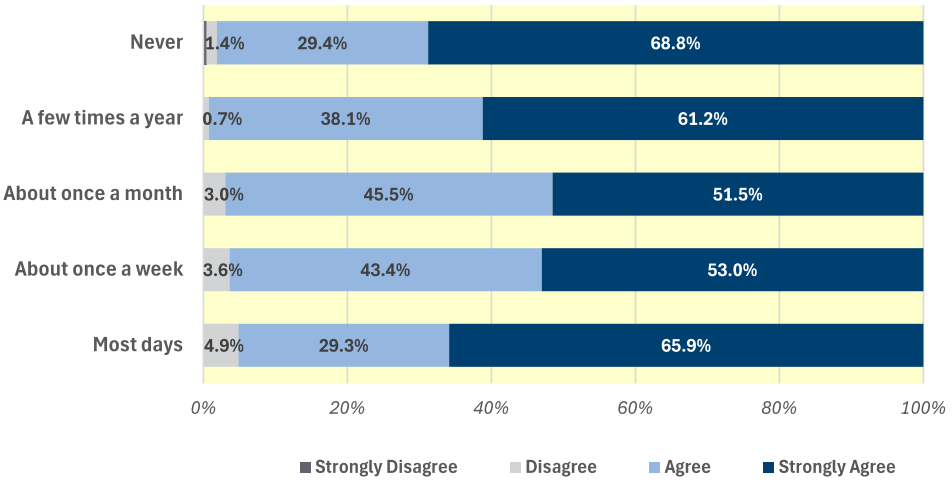
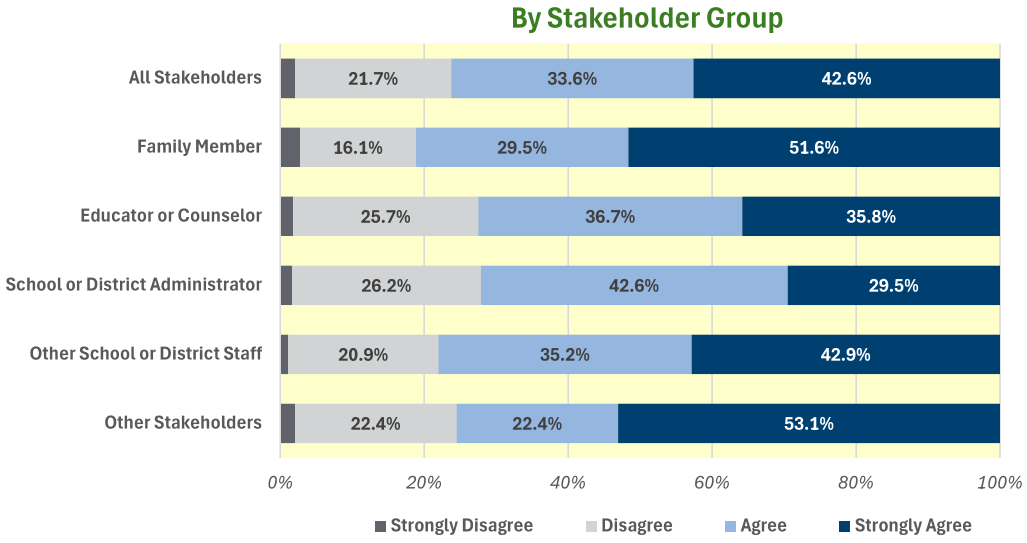
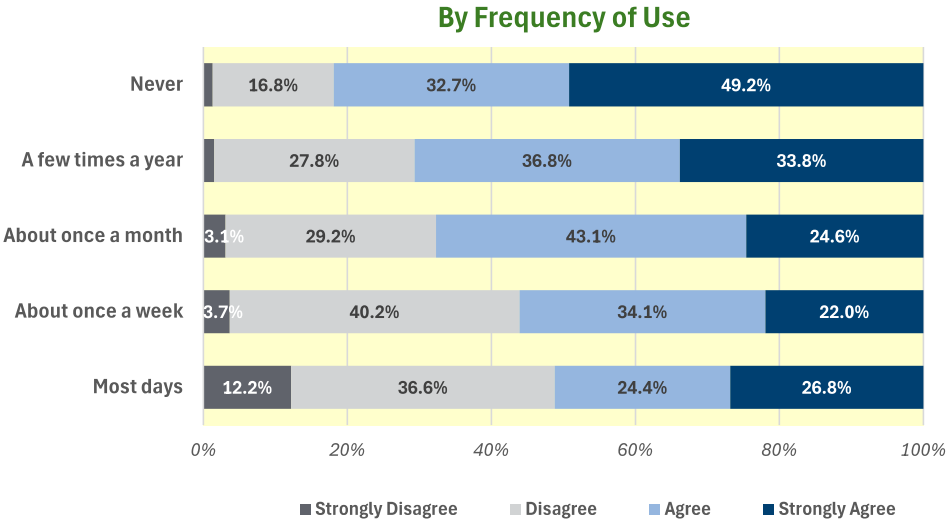


Due to space restrictions, parts of the stacked bar charts may not have percentage labels and can be assumed to be a value lower than 3%.

Perceptions of AI in Education

Q12. I am concerned about AI technology using multiple types of data to predict behavior of students or staff.



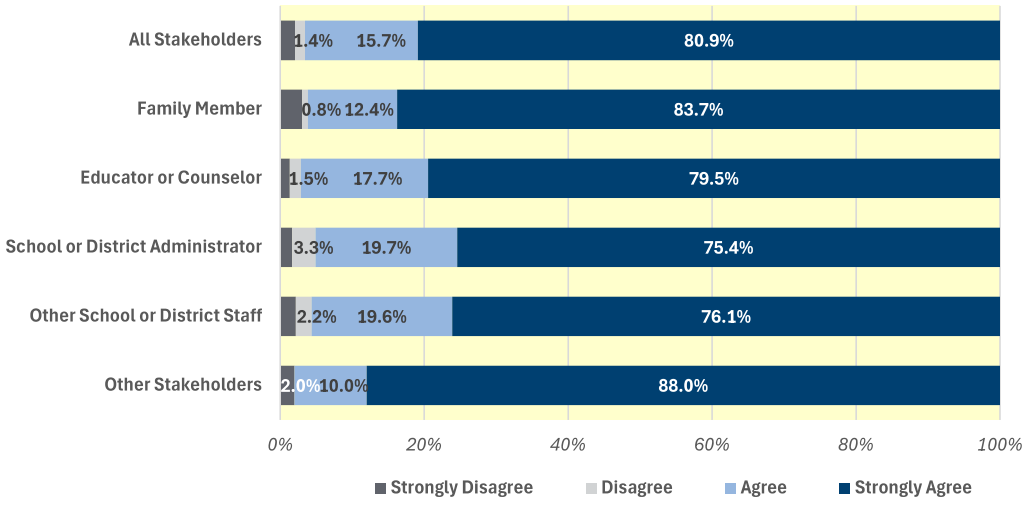


Due to space restrictions, parts of the stacked bar charts may not have percentage labels and can be assumed to be a value lower than 3%.

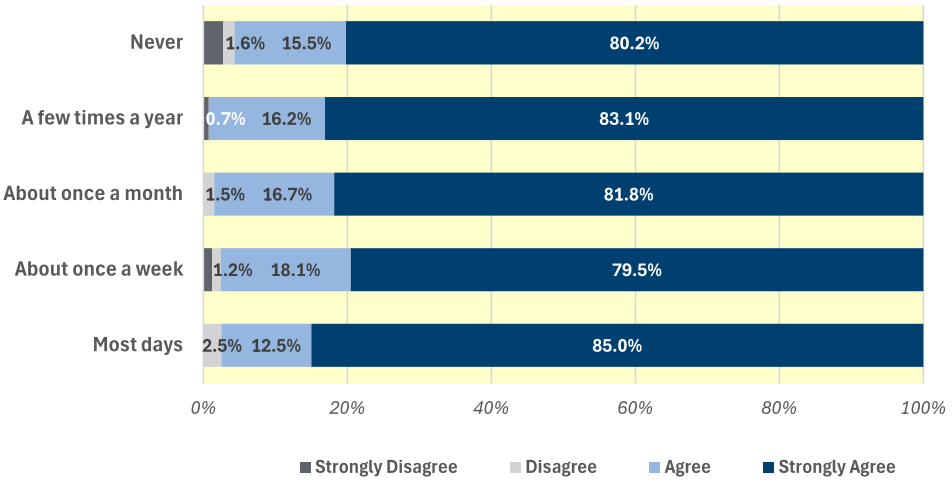
Perceptions of AI in Education

Q13. Students should continue to learn the essential principles and skills of literacy, math, research, & critical thinking so that they can use AI as an assistant or tool rather than becoming dependent upon it.

By Stakeholder Group



By Frequency of Use

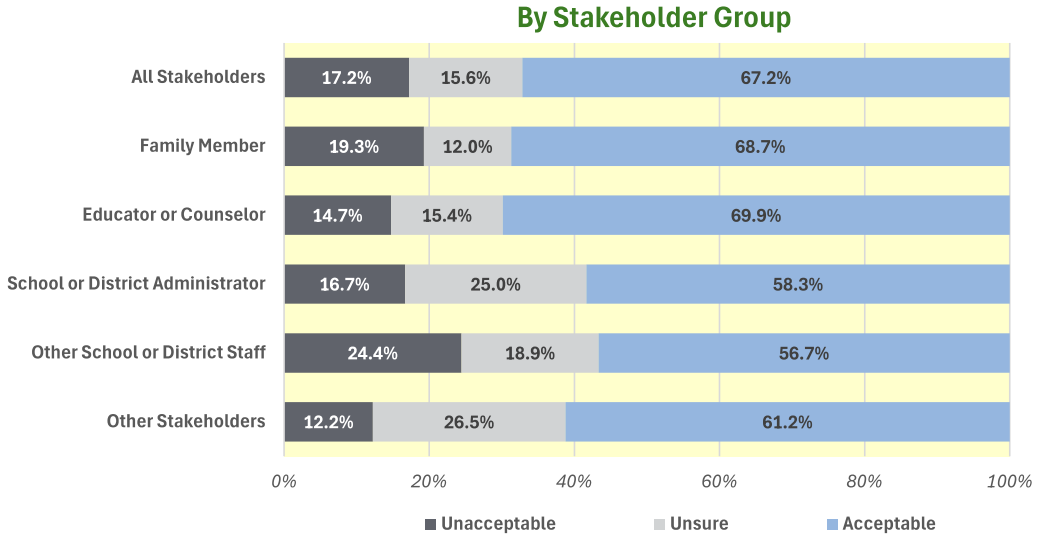


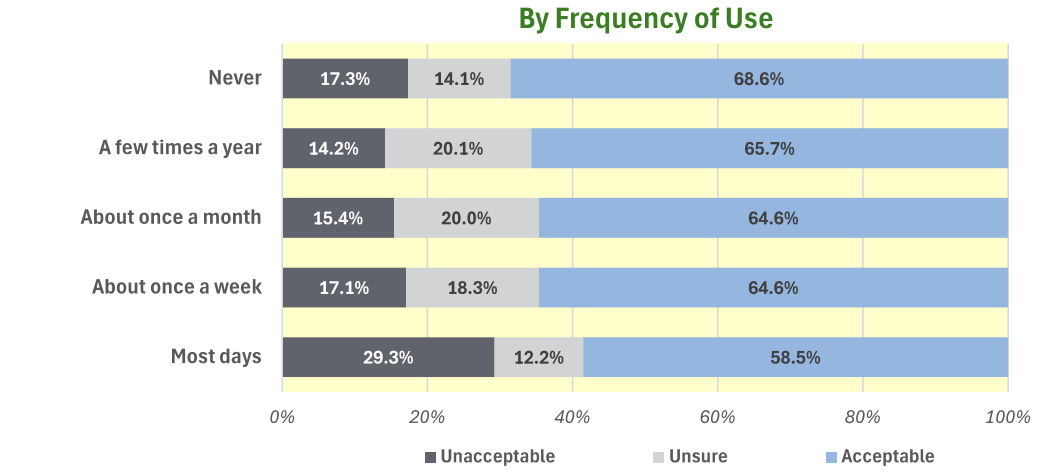
Due to space restrictions, parts of the stacked bar charts may not have percentage labels and can be assumed to be a value lower than 3%.

Hypothetical Scenarios

Q14. AI-powered devices sometimes send data they collect to a computer owned by the company that sold the product. Please indicate whether each of the following scenarios are acceptable decisions regarding the use of AI:

School limitations or prohibitions on personal devices that collect information about the surroundings if the devices are not medically important for a student. For example, a school should be allowed to prohibit the wearing of personal smart glasses to school, which are able to record pictures and video and store data about the types of objects they see, including potential storage in the cloud.



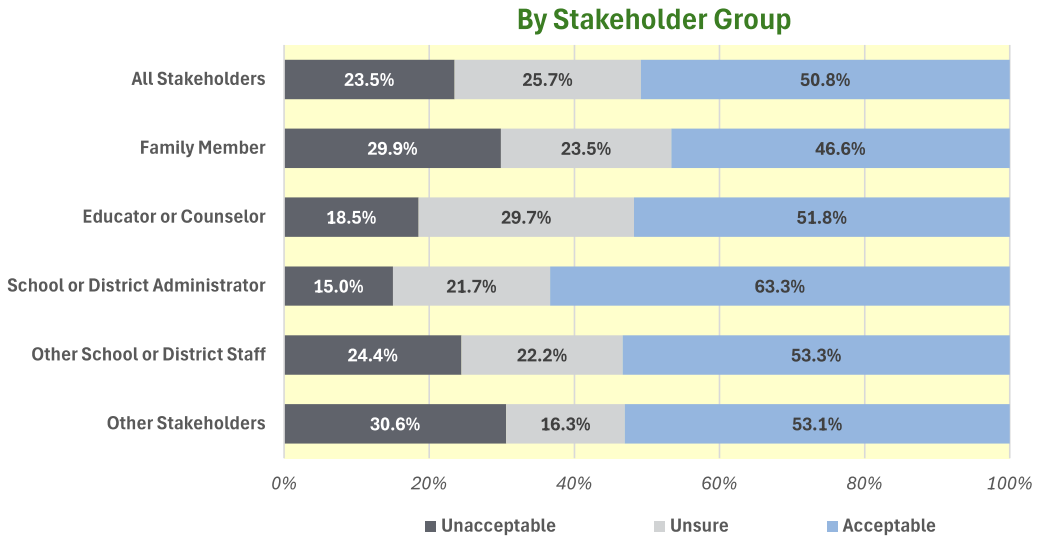


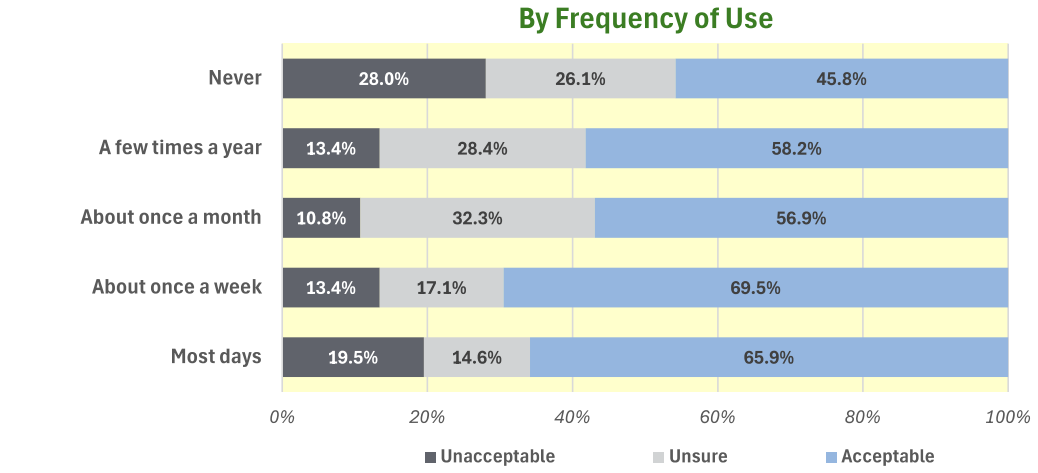
Due to space restrictions, parts of the stacked bar charts may not have percentage labels and can be assumed to be a value lower than 3%.

Hypothetical Scenarios

Q15. AI-powered devices sometimes send data they collect to a computer owned by the company that sold the product. Please indicate whether each of the following scenarios are acceptable decisions regarding the use of AI:

The district is using an app to give parents/caregivers the ability to track bus location in real-time, and the company selling the app stores and uses the location data to improve their algorithm.



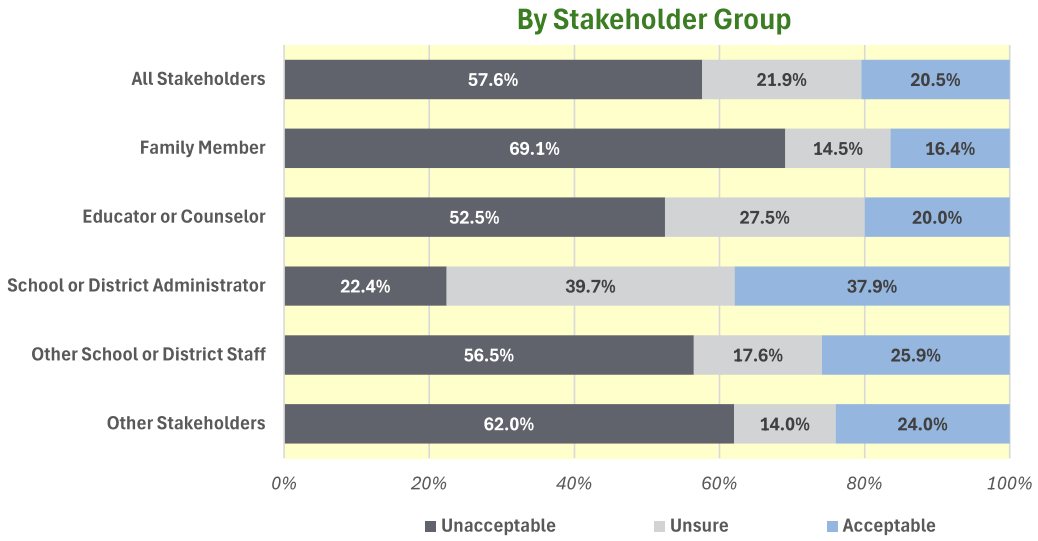


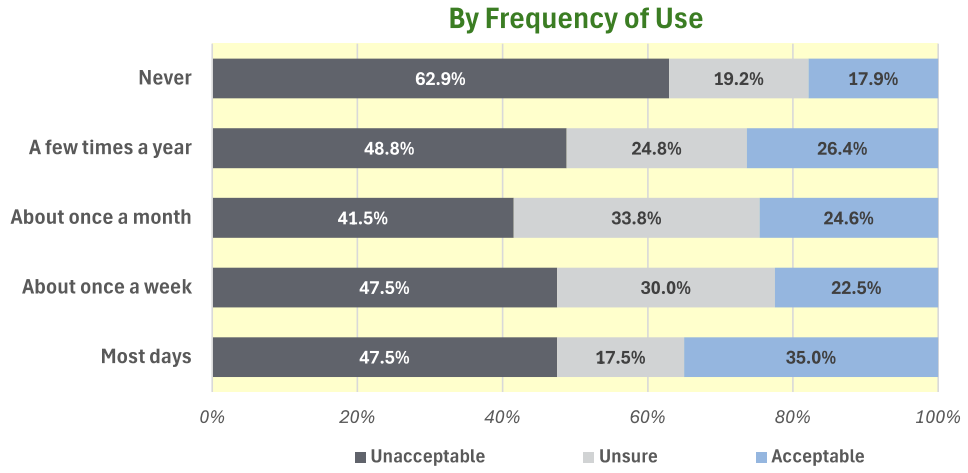
Due to space restrictions, parts of the stacked bar charts may not have percentage labels and can be assumed to be a value lower than 3%.

Hypothetical Scenarios

Q16. AI-powered devices can potentially use personal data or assume traditionally human roles. Please indicate whether the following scenarios are acceptable decisions regarding the use of AI:

Using facial recognition to track classroom attendance.



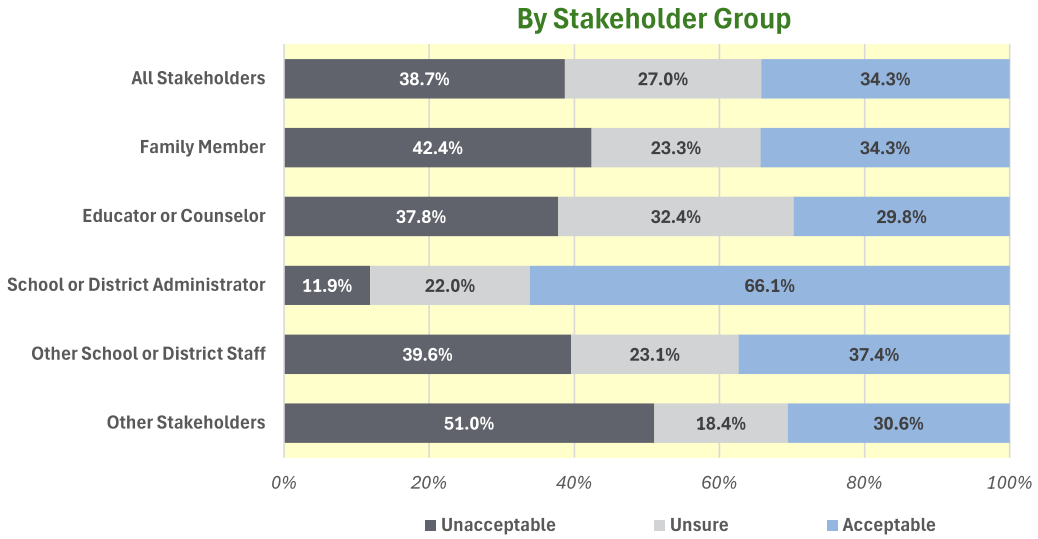


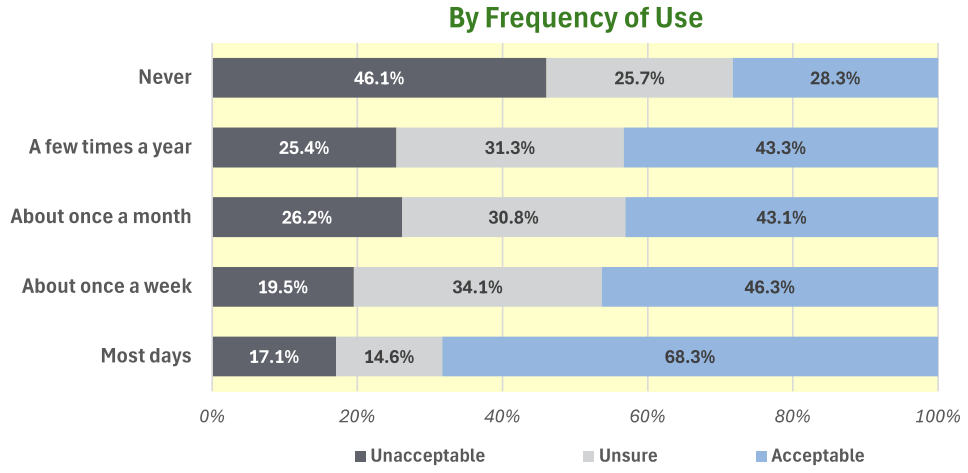
Due to space restrictions, parts of the stacked bar charts may not have percentage labels and can be assumed to be a value lower than 3%.

Hypothetical Scenarios

Q17. AI-powered devices can potentially use personal data or assume traditionally human roles. Please indicate whether the following scenarios are acceptable decisions regarding the use of AI:

A school district is purchasing automated machines that clean the floors and deliver items between rooms. These collect data about the environment to navigate the school grounds. These machines could save the district tens of thousands of dollars each year, but it might result in the custodians losing work hours or losing their jobs completely. On the other hand, it might free up custodians to do other maintenance work that still needs to be done.





Due to space restrictions, parts of the stacked bar charts may not have percentage labels and can be assumed to be a value lower than 3%.

APPENDIX C
Technical Analyses

Aims of Technical Analyses

The technical analyses described herein were performed for multiple reasons:

- confirm the WVDE's understanding of the constructs that were measured in the survey;
- summarize latent trait findings that may not have been salient in interpreting descriptive statistics alone;
- evaluate and compile validity evidence that supports and/or refutes intended interpretations and uses of aggregate survey scores (i.e., scores by section instead of only the item-level), in which the survey items measure the intended constructs; and,
- share findings related to scale construction so that state education agencies (SEAs) and local education agencies (LEAs) can build upon the results as they proceed with similar survey construction efforts.

Confirmatory Factor Analysis

The common factor model is used to specify a factor analytic model. It parses variability into common variance (i.e., variance inherent in the latent factor across items) and unique variance (i.e., variance which is not seemingly caused by the latent factor). Different constraints can be placed on the common factor model to perform exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). Because a factor structure was hypothesized a priori, a CFA was performed.

When compared to EFA, CFA has more restrictions placed on the model which exclude the need for a geometric rotation to be used on the solution. Additionally, the confirmatory nature of the model permits the use of hypothesis testing to determine the extent to which a given CFA model fits the observed data. This feature allows separate models to be compared against one another to determine which model best fits the data. Statistical significance is tested on unstandardized solutions, but interpretation is typically reserved for standardized solutions. The basic model equation is provided in Equation C1.

Equation C1. Basic model equation for confirmatory factor analysis.

$$\boldsymbol{\Sigma = \Lambda\Phi\Lambda' + \Theta_{\delta}}$$

$\boldsymbol{\delta}$ = population covariance matrix
$\boldsymbol{\Lambda}$ = factor loading matrix
$\boldsymbol{\Phi}$ = Covariance matrix of latent variables
$\boldsymbol{\Theta_{\delta}}$ = Covariance matrix of model errors

The estimated parameters in a CFA model belong to a system of equations. Whenever data are continuous, the default procedure is typically maximum likelihood estimation (MLE). On the contrary, discrete data (such as survey data collected on a Likert scale) are usually better estimated with least squares techniques. Using ordinal data is an explicit violation of normality, which is assumed in MLE. Violation of this assumption can result in (i) a bias toward higher dimensional factorizations over lower dimensional ones (Bernstein & Teng, 1989), and (ii) downwardly biased parameter estimates for factor loadings and potentially biased estimates in cases of non-normally distributed data (DiStefano, 2002).

The least squares approaches rely upon partial-information (i.e., summary statistics), and can reduce error propagation by preventing mis-specified portions of a model from impacting the estimation of other model components (Kline, 2010). The diagonally weighted least squares (DWLS) method is

commonly used to analyze ordinal data due to the lack of distributional assumptions made with respect to the observed variables (DWLS is also referred to as WLSMV; Muthén & Muthén, 2017). However, normality is assumed for the latent distribution(s) that are specified (Li, 2016), which may not be a tenable assumption given the descriptive analyses from within the body of this report. Though, it is worth noting that DWLS is more robust to non-normality than other estimation methods.

Two multidimensional models were specified according to the construct delineations provided in Tables C1 and C2: one where all factor loadings were fixed to unity (which would provide parsimony in allowing all items to have equal influence towards the latent traits) and another where the factor loadings were freed in the estimation (provided a constraint that the first item under each factor was set to unity). Various model-fit indices are listed in Table C1. In short, the parsimonious model with fixed loadings did not truly have adequate model-data congruence. However, the model with freed loadings provides more evidence that subsequent latent trait analyses could be tenable.

The lavaan package (Rosseel, 2022) within the R programming environment (R Core Team, 2024) was used to perform the confirmatory factor analyses (CFAs). Only listwise complete responses were considered in the CFAs (n = 947). A covariance matrix of the data set was analyzed using DWLS estimation. A probit link was specified due to the ordinal nature of the data. The model specification with freed loadings is interpreted and used hereafter (see Tables C1, C2, and C3). The exact fit hypothesis was rejected ($\chi^2(71) = 388.227$, $p < .001$), absolute model fit was supported given the standardized difference between the observed correlation and the predicted correlation (SRMR = .060), relative fit of the model was roughly a 99.3% improvement over that of the independence model fit (CFI = .993), and the hypothesis of close fit was adequately supported (RMSEA = .069), but model specification was somewhat uncertain (WRMR = 1.728). Taken collectively, the CFI, TLI, SRMR, and RMSEA can be interpreted to suggest sufficient model-data congruence. However, the χ^2 statistic and the WRMR value seem to suggest non-trivial model misspecification (though, the χ^2 statistic may be inflated due in part to sample size and the ordinal nature of the data). While the preponderance of evidence suggests that the model results can be safely interpreted, caution must be taken to avoid high-stakes interpretations and uses of the latent trait scores.

Table C1. Comparison between the CFA Models Using Various Model-fit Indices.

Model	χ^2		CFI	TLI	SRMR	WRMR	RMSEA		
	Value	*df*					*LB*	*Est*	*UB*
Fixed Loadings	1291.401*	81	.974	.971	.106	3.152	.120	.126	.132
Freed Loadings	388.227*	71	.993	.991	.060	1.728	.062	.069	.075

*Denotes significance at the α = .001 level.

Given the parameter estimates (see Table C2), the standardized factor loadings were moderate-to-high, with the lowest loading belonging to Q3. Two items which were initially included in the *a priori* factor structure were excluded from the analysis after negligible loadings were obtained (namely, Q4 and Q14, which respectively asked about a desire to learn more about data privacy as well as a vignette question related to personal device usage in schools). While a similar fitting model would have been obtained if those two polytomous items were assigned to their own fifth factor, there was no strong theoretical justification for doing so.

Table C2. Probit-scaled DWLS Estimates (Delta Parameterization) for Factor Loadings and Thresholds.

Construct *Item [Brief Description]*	Unstandardized Loading (SE)		Standardized Loading	$T_{(0\|1)}$	$T_{(1\|2)}$	$T_{(2\|3)}$
Future Outlook						
Q1 *[Adoption in Education]*	1.000	(----)	.984	-.821	-.226	.680
Q2 *[Adoption in Workforce]*	.954	(.033)	.938	-.938	-.350	.586
Q3 *[Keep up w/ Advancements]*	.511	(.020)	.503	-1.112	-.228	1.112
Transparency						
Q8 *[Communication w/ Families]*	1.000	(----)	.761	-2.176	-1.609	-.300
Q9 *[Deepfakes]*	.913	(.036)	.695	-2.236	-1.920	-.605
Q11 *[Vendors]*	1.099	(.040)	.836	-2.730	-2.052	-.407
Impact on People						
Q5 *[Responsibility AI Fails]*	1.000	(----)	.857	-1.972	-1.152	-.052
Q6 *[Responsibility AI Succeeds]*	.716	(.022)	.614	-1.774	-.777	.395
Q7 *[AI Replace Jobs]*	.777	(.022)	.666	-1.510	-.555	.286
Q10 *[Bias]*	.825	(.022)	.708	-2.011	-.897	.129
Q12 *[Predict Behavior]*	.961	(.024)	.824	-2.011	-.714	.190
Possible AI Scenarios (Vignettes)						
Q15 *[Bus Location]*	1.000	(----)	.617	-.711	-.025	(----)
Q16 *[Facial Recognition]*	1.089	(.051)	.672	.207	.839	(----)
Q17 *[Self-Operating Machines]*	1.209	(.053)	.746	-.294	.398	(----)

The relationships among factors/constructs are displayed in Table C3. Negative correlations were expected given the differently valanced directions of the subscales (i.e., level of concern vs level of acceptability). Moderately strong correlations existed between constructs, but they could explain just roughly half of the variability if using one to predict another, which suggests that they are reasonably distinct with respect to one another.

Table C3. Relationships among Constructs (i.e., variances on the diagonal, covariances in the upper right triangle, and correlations in the lower left triangle), as estimated by the CFA model.

	Future Outlook	Transparency	Impact on People	Possible AI Scenarios (Vignettes)
Future Outlook	.968	-.161	-.444	.424
Transparency	-.215	.579	.480	-.159
Impact on People	-.527	.736	.735	-.328
Possible AI Scenarios (Vignettes)	.699	-.339	-.620	.380

Additional verification was performed to compare observed sum scores on each construct with the model-implied expected scores derived from the CFA model estimates (see Figure C1). It appears that one source related to the model misspecification could be due to a violation of the assumption of normality of the latent traits. Particularly for two constructs, *Impact on People* and *Transparency*, the statistical skew in the distribution of perceptions could not be properly captured, even with a robust estimator such as DWLS. This departure from the normality assumption, and hence linear relationships among constructs, is further corroborated by Table C4. With these caveats in mind, subsequent analysis using the CFA latent trait estimates was not pursued.

Figure C1. Comparison of observed scores and expected scores from the CFA model, by construct.

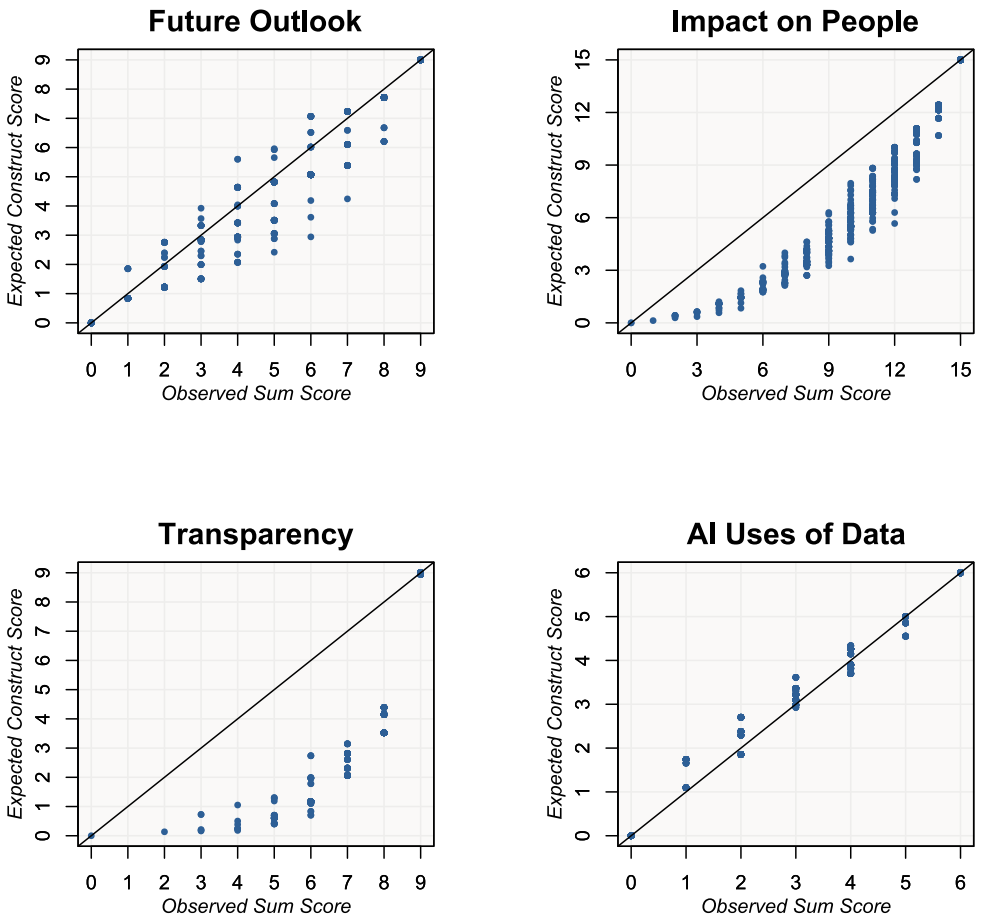


Table C4. Relationships among Constructs (i.e., variances on the diagonal, covariances in the upper right triangle, and correlations in the lower left triangle), as calculated using latent trait estimates.

	Future Outlook	Transparency	Impact on People	Possible AI Scenarios (Vignettes)
Future Outlook	11.168	-.359	-2.915	3.625
Transparency	-.044	6.075	2.472	-.701
Impact on People	-.338	.388	6.679	-1.240
Possible AI Scenarios (Vignettes)	.438	-.115	-.193	6.146

Partial Credit Model with Educator/Counselor Responses

Educator and counselor survey data (which are summarized in Section 6 in the body of this report) were analyzed using a Partial Credit Model (PCM, Masters, 1982). The calibration was performed using the MINIFAC (i.e., FACETS) Rasch analysis software (Linacre, 2024), and quality assured using the *mixRasch* (Willse, 2014) package in the R programming environment (R Core Team, 2024). Joint maximum likelihood estimation (JMLE) was used as the estimation procedure and is free of distributional assumptions with the latent trait.

Psychometric unidimensionality was substantiated with 60.67% of the raw-score variance explained by Rasch measures. Model-data congruence was evaluated through statistics for fit, reliability, and separation for items (see Table C5) and persons (see Table C6). For items (assuming sample statistics as opposed to population statistics), the model RMSE was 0.11, the true SD was 0.41, separation was 3.79, and reliability was 0.94.

Table C5. Item Statistics from PCM calibration.

Item	Observed Average	Pt Biserial Correlation	Measure	S.E.E.	Infit		Outfit	
					MnSq	*ZStd*	*MnSq*	*ZStd*
SE1	2.05	.84	-.06	.11	1.30	3.5	1.34	3.9
SE2	2.05	.89	-.10	.11	.91	-1.1	.88	-1.5
SE3	1.92	.86	.73	.11	1.29	3.3	1.39	4.0
SE4	2.04	.91	-.20	.11	.77	-3.2	.75	-3.4
SE5	2.11	.90	-.37	.11	.71	-4.0	.70	-4.0

Table C6. Person Statistics from PCM calibration.

Statistic	Measures	Infit		Outfit	
		MnSq	*ZStd*	*MnSq*	*ZStd*
Mean	2.14	.99	-3.72	1.01	-3.68
Median	1.68	.69	-1.21	.68	-1.17
Sample SD	3.39	1.07	7.04	1.15	6.94
Min	-3.60	.02	-18.42	.03	-18.05
Max	6.52	7.60	7.48	7.75	8.18

To better estimate the number of educators who assuredly need moderate or high support with approaching AI, Equation C2 was used to solve for bookmark difficulty locations (BDLs) for each item and obtain the percentage of latent trait, θ, values above the location where educators would select "Moderate Support Needed" or higher, when considering the uncentralized threshold between score points 1 and 2 (Lewis et al., 1998; see Equation D8 in Beretvas, 2004). The cubic equation is solved by finding the θ value in which the result equals zero, where the scaling constant D and the slope parameter a both are set to one. The same percentage was obtained for all five questions due to the distribution of θ estimates compared with the small range of BDLs, with at least 72.6% of educators being twice more probable than not (i.e., response probability of ⅔) to indicate that they needed moderate or high support.

Equation C2. Bookmark difficulty location for a score of two or higher on a four-point item.

$$(e^{Da\theta})^3 + e^{(Da\hat{\delta}_3)} * (e^{Da\theta})^2 - 2 * e^{Da\hat{\delta}_2} * e^{Da\hat{\delta}_3} * e^{Da\theta} - 2 * e^{Da\hat{\delta}_1} * e^{Da\hat{\delta}_2} * e^{Da\hat{\delta}_3} = 0$$

Furthermore, it is fair to critically examine if the seemingly small sample size (n = 452) could be representative of the nearly 19,000 teachers throughout WV. Equation C3 is used to determine that at least 377 teachers would be needed to have sample-level estimates that approximate population-level values. However, it is unknown if the sample is randomly distributed and demographically representative. This limitation is considerable and restricts the degree to which the findings in this section can be confidently generalized. Given the comparisons to external survey collections in Section 6 in the body of this report, however, the results may be reasonably representative.

Equation C3. Asymptotic estimate of sample size needed to approach population-level precision (Krejcie & Morgan, 1970).

$$Sample\ Size\ Needed = \frac{\chi^2 * N * p * (1\text{-}p)}{\alpha^2 * (N - 1) + \chi^2 * p * (1 - p)}$$

Variable	Value and Meaning
N	18,774; Approximate total number of teachers in WV
χ^2	3.841; The table value of chi-square for one degree of freedom at the desired confidence level of .05
p	0.5; The population proportion (assumed to be 0.5 given this would provide the maximum sample size when multiplied by (1-p))
α	0.05; Degree of accuracy (expressed as a proportion)

Suggestions for SEAs and LEAs with Survey Construction

Other state education agencies (SEAs), as well as local education agencies (LEAs), should consider the following suggestions as they develop and deploy similar surveys:

- If the use case(s) for your survey involves the creation of aggregate scores, develop items that are more likely to elicit a wider array of sentiment. For instance, if using or adapting items from the WVDE survey, consider substituting items within the "Impact on People" and "Transparency" constructs to obtain more varied feedback. For use cases that privilege individual descriptive statistics on an item-by-item basis, this recommendation would not be necessary.
- Consider developing more than four vignette items to elicit thoughts and opinions on a wider range of scenarios that your SEA or LEA is specifically considering. While the vignettes used in the WVDE survey were meant to measure general sentiments, there could be substantial value in tying such questions to specific decisions.
- Additional consideration may be given to the grain-size of the content being asked in the questions/vignettes. Some of the vignettes in the WVDE survey, in particular, were deliberately compounded to more accurately reflect the murky, multifaceted reality of finding applications of AI acceptable or unacceptable. There may be value in simplifying such questions to isolate specific aspects of scenarios.
- Considering adding more demographic questions. Given the sensitive and relatively early nature of the topic, extensive demographic questions were not included so that respondents would feel freer to respond with their honest thoughts and feelings. As such, the trade-off is that the representativeness of the sample is not fully known. Other SEAs and LEAs may want to give in-depth consideration to the relative reward versus risk by including such questions.

Notes

Notes

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