

Top Trends Impacting K-12 Education in 2022

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K-12 education's challenges are evolving, but continue to be significant nonetheless. The focus for K-12 CIOs is turning to leveraging all the digital investments made to date, identifying which remain to be made, and to creating an agile, composable digital learning organization.

Overview

Opportunities

Though the COVID-19 situation around the world is still evolving, K-12 education CIOs will continue to feel the echoes of the pandemic's impact into 2022 and beyond. Identifying and understanding K-12's top trends will become critical for responding to the diverse demands facing these organizations today. Opportunities for the CIO to prepare that response include:

- Analyzing how the organization's technology investments to date can be built on to face many new challenges. The ideas in the initial "react" phase represent only the beginning of what's possible.
- Becoming a far more strategic partner with your executive team, building your influence and your image as a leader who understands what's truly important from the organization point of view.
- Preparing compelling digital plans that inspire others to a shared vision of all that's possible with leveraging technology's power to advance the organization into a new digital future.

Recommendations

K-12 education CIOs seeking education digital transformation and innovation should:

- Create innovative technology initiatives by focusing first on the hardest realities currently faced by the organization, and how technology can be used in new ways to tackle them. Enabling remote and hybrid capabilities for the future is still required, but creatively leveraging digital investments to address these new challenges will make your efforts stand out.
- Drive the strategic focus of your efforts by educating and effectively communicating with the executive team about exactly how IT will help deliver on the organization's critical priorities – not on its operational issues.
- Complete digital plans that reflect critical areas of focus by aligning them with the organization's shared vision, goals and strategies to meet those goals. Do this whether or not funding is available to execute this year – be prepared with the plan and the executive support for when it is.

What You Need to Know

For the purposes of this research, the term “K-12 education” is used to reference all primary/secondary education programs.

The impact of the pandemic continues to cast a shadow over the efforts of K-12 organizations around the world, as every country and region faces changing (real or perceived) realities. Parts of the world continue to have to close and reopen schools, demanding agility to address whatever options are available for instructional continuity. Others are challenged with significant shifts in culture and practice driven by sometimes too-rapid changes, as all this newfound technology returning to schools is pushing against the pressures of change resistance and the status quo.

The past year has seen several countries prioritizing internet access as a requirement for everyone to fully participate as productive citizens and contributors to economic health. This is paired with a significantly increased interest in investing more heavily to modernize and digitalize education systems. Part of this year's trends reflect this broader investment in educational technology as a whole.

These trends are in part a refinement of the trends started during the pandemic, and in part a reflection of new realities taking shape. This year, the “hybrid world” trend is refined to the more specific “digital learning environments,” reflecting the need to think in multiple dimensions about how, when and where learning takes place. These changes include not only new additions to classroom technologies, but also those that enable this level of flexibility required to deliver instruction under nearly any conditions.

It continues to be true that countries that did not have capabilities needed are currently exploring ways to build them while making significant technology investments to modernize infrastructure. ¹ Even in countries where schools have reopened, organizations recognize both:

- The need for resilience
- The value of having remote capabilities that can be turned on and off as needed to meet challenges, including weather disasters, snow days or even another medical crisis. ²

The importance of the K-12 CIO role amid all this change, challenge and opportunity has never been greater, as the CIO must be able to tie the organization’s mission-critical priorities to the necessary technology capabilities and investments.

An adaptable, agile and composable K-12 organization of the future will be one that recognizes the key strategic technologies and business trends represented by these top five trends shown in Figure 1.

Figure 1. Top Five K-12 Education Trends 2022

Top Five K-12 Education Trends 2022

 Trend 1	 Trend 2	 Trend 3	 Trend 4	 Trend 5
Digital Learning Environments	Learning Insights/ Analytics	Ransomware in K-12 Education	Education IT Staff Hiring/Retention Issues	Adaptive Learning

Source: Gartner
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Each represents both a response to the crises the pandemic created but, more importantly, trends in business and strategic technologies that will position the organization for that digital future.

Trend Profiles: Click links to jump to profiles

This Year's Top Five Trends in K-12 Education	
Trend 1	Digital Learning Environments
Trend 2	Learning Insights/Analytics
Trend 3	Ransomware in K-12 Education
Trend 4	Education IT Staff Hiring/Retention Issues
Trend 5	Adaptive Learning

Trend 1: Digital Learning Environments

Analysis by Kelly J. Calhoun Williams

Description:

The trend of digital learning environments (DLEs) represents a narrowed focus on something more specific than last year's hybrid world trend. Requirements for agile, flexible learning environments still include the unique requirements for hybrid learning, but defining and refining great DLEs requires more.

DLEs relate to learning technology ecosystems created to support fully online, hybrid and physical teaching practices.

K-12 organizations are faced with a major opportunity. Previous desires to create a "more digital education system" have meant that investments made over the course of the pandemic represent a giant leap forward that might never otherwise have happened. This has forced a whole new conversation about what we mean when we say we want "digital learning environments."

This trend represents an evolved recognition that K-12 needs a new way to adapt flexible models for instructional delivery under almost any conditions. The new DLE combines the long-standing understanding of what makes a great learning environment with the unique attributes that can be added through the use of digital resources.

Why Trending:

The long-term trend toward the digitalization of the K-12 classroom was accelerated by the pandemic and the return to school (with all these new digital capabilities). The need to define and understand DLEs has been pushed to the front burner for K-12 organizations, needing them now rather than “eventually.”

A good digital learning environment does require classroom technologies, but is not defined by those alone, and discussions should not begin there.

Defining these new spaces and their requirements involves beginning with the end in mind, and should focus as usual on optimizing learning outcomes.

The qualities of a good DLE include:

- The means for students to access high-quality digital learning resources that start fundamentally with great curriculum design, including:
 - Access to devices that can be used flexibly, when and where needed, to execute on the digital learning opportunity at the required moment
 - Significant professional development for teachers to learn how to update pedagogical assumptions to create better learning opportunities
 - Devices that include the video, audio and adaptive accommodations increasingly needed in K-12 content today
 - Devices that can be scaled and managed in a manner the organization can sustain, and where battery and power are available as needed
- Classrooms with physical designs ready to flex rapidly to meet these constantly changing needs throughout the day
- Classrooms with extremely flexible floor plans that can rapidly adapt and change to accommodate whole-group, individual workspace, collaborative team spaces and more

- Technologies designed to flexibly and seamlessly move around in these dynamic learning areas, and ideally meet all of these needs with minimal waste of space or equipment.

Implications:

All K-12 CIOs are now tasked with leveraging technology to its fullest to improve students' lives and learning. Though the challenges to date have been enormous, the potential to shift education in a whole new direction is unmistakable. There is a growing expectation that everything will be digitally enabled and that little to nothing will disrupt a student's education in the future.

Great DLEs will define organizations that excel with this new future, versus those that continue to simply recreate the status quo with technology thrown in.

Actions:

K-12 education CIOs should:

- Enable faculty and students to leverage new skills in 2022 by preparing innovative new in-person digital learning environments for when they return to campus. Start planning that now with organization stakeholders.
- Prepare for increased demand for all digital services by auditing your current infrastructure. Prepare early for the surge in demands these new DLEs will create.

Trend 2: Learning Insights/Analytics

Analysis by Kelly J. Calhoun Williams

SPA: By 2025, 80% of all K-12/primary-secondary education organizations will be leveraging some type of analytics applications designed specifically for K-12 to speed insight.

Description:

“Learning insights” is a broad umbrella term intended to describe a collection of technologies specifically focused on faster, more-accurate and more-actionable insight into a student’s learning. These technologies include (and in some cases, were represented in the 2021 top K-12 trends) digital assessments, analytics and learning management systems (LMSs) (see Top 5 Trends Impacting K-12 Education in 2021).

Why Trending:

The pandemic created a shocking impact on students around the world, as they faced weeks or months or, in some cases, nearly two years of missed school. This gap in time spent in quality learning environments (or spent in less than ideal ones) created terrible losses for students in subject matter areas that now hold them back from reaching their appropriate grade levels. Some organizations have responded more quickly and effectively than others to execute on strategies to address this. Organizations have rapidly moved to leverage digital to improve learning insights and assess the critical gaps (and how best to fill them).

This requires tools that are much more capable and useful than the traditional means of assessment that education has long depended on, such as simple quizzes and tests. A combination of technologies and creative ways to combine them are needed to gain critical insight faster, and more specifically to target and address students’ learning gaps as quickly as possible.

Analytics can provide a roadmap for the organization, school or teacher to map out a plan of attack via traditional interventions. However, technologies can make this process more personalized, scalable and faster to get to the best course of action. For example, adaptive learning systems (see Trend 5) can be leveraged to create assessments of a particular curriculum provider’s content, target key prerequisite skills and recommend a personalized remediation plan for each student. Effective analytics tools can be used as well to continuously reassess and identify any students not ready to move forward.

With a problem so large and complex, education leadership is turning to these technologies to meet those challenges, which it would likely be unable to address well at scale otherwise.

Implications:

No organization is likely to be able to redo 2020-21 entirely, and even if they could, it would only set students further behind. The ability to quickly identify the “stepping stone” skills for students that will be needed to do a collapsed version of instructional plans to catch up will be required, but it will be very challenging.

Looking at the combination of technologies and capabilities they bring to the organization will be a necessary and important part of leveraging digital to help address a major problem. The K-12 CIO, along with key stakeholders across the organization, will need to share in some creative thinking to address the challenge. The CIO must have a greater grasp of these technologies’ capabilities to help position the organization to leverage them, both to address learning losses, and to create new educational systems for a new future.

Actions:

K-12 education CIOs should:

- Assess the organization’s current capabilities across the full spectrum of learning insights technologies by engaging partners from the teaching and learning/curriculum division, as well as key expertise within your department, to help clearly define the need.
- Advance your organization’s analytics capabilities to meet challenges such as these described above by “rightsizing” analytics applications and solutions to meet the needs of your organization, creating something all your key stakeholders can actually use.

Trend 3: Ransomware in K-12 Education

Analysis by Paul Furtado

SPA: K-12 Education will remain a prime target for ransomware through 2025.

Description:

Ransomware is malware that employs encryption to hold a victim’s information at ransom. A ransom is then demanded to provide access. Ransomware is often designed to spread across a network and target database and file servers, and can thus quickly paralyze an entire organization.

Why Trending:

Education has become a favorite target for ransomware attacks for several reasons. K-12 education has for many years lacked the resources (or reasons for concern) to make big investments in cybersecurity. This lack of attention has been costly, as the past few years have shown a massive increase in cybercriminal interest in education. Indeed, it is now viewed as the ideal “soft target.” Defenses have been easy to penetrate, and organizations have been slow to address this problem, often for lack of expertise (see IT Key Metrics Data 2022: IT Security Measures – Analysis).

Additionally, bad actors are very aware of the impact of shutting down a K-12 environment. They know these organizations not only manage sensitive data, but are also under significant time pressures. Unlike the private sector, the K-12 environment operates on fixed terms and schedules, and maintains mission-critical data that drives funding, student safety and daily classroom activities, none of which can be compromised. These constraints, compounded by the ransomware countdown timer, put a lot of pressure on K-12 administrators to fall prey and pay ransoms as expeditiously as possible. Indeed, millions of dollars of ransom have been quietly paid to date.^{4,5} And in several states, organizations are not required to report these events, suggesting losses may actually have been higher.

Implications:

Expect that your environment will be targeted for a ransomware attack in the near future and prepare for an acceptable level of response. Education typically employs the least number of security employees when compared to other industries (see IT Key Metrics Data 2022: Industry Measures – Education Analysis). This reduced staffing typically results in gaps in coverage, monitoring and incident response.

Actions:

In order to be able to successfully defend and respond to a ransomware attack CIOs and security leaders in K-12 must:

- Have a comprehensive incident response plan (IRP).
- Implement a ransomware playbook to augment the IRP.
- Lock down endpoints, preventing access to command prompt, running PowerShell scripts.

- Enable monitoring of endpoints to protect against process thread sprawl.
- Deploy strong endpoint protection to limit against lateral spread of malware.
- Segment student and faculty/employee networks.
- Stay vigilant with patching and vulnerability management.
- Implement multifactor authentication (MFA) for all faculty/staff accounts.
- Implement strong network monitoring with traffic analytics to identify deployed payloads quickly.
- Control outbound access routing to limit connectivity to known care-and-control domains.
- Augment internal staff with external resources (e.g., MSSP, MDR, EDR), which can also include sharing of CISO or other expertise across multiple organizations or agencies.

Further Reading:

Toolkit: Creating a Ransomware Playbook

Toolkit: Cybersecurity Incident Response Plan

How to Prepare for Ransomware Attacks

Quick Answer: Ransomware – What Happens If You Pay?

Trend 4: Education IT Staff Hiring/Retention Issues

Analysis by Kelly J. Calhoun Williams, Tony Sheehan and Saher Mahmood

SPA: By the end of 2024, 80% of K-12/primary-secondary organizations will be forced to increase their use of third party support as a result of IT staff challenges.

Description:

Education IT staff are experiencing unprecedented demand due to a need to both preserve pre-pandemic practices and to support organizational transformation. Critical skills are in short supply, IT capacity is severely stretched and many educators appear to be reevaluating their roles.

Why Trending:

- The COVID-19 pandemic has exacerbated staff shortages, mirroring the broader trend in countries that have witnessed “the great resignation.” A historic high 4.4 million Americans quit their jobs in September 2021 alone, and according to a Microsoft study, over 40% of the global workforce is considering leaving their employer in the next year.
- Teachers are experiencing increased fatigue from insufficient staffing, increased workload and a scramble to move back and forth into virtual schooling. This, coupled with the flexibility of the burgeoning gig economy and attractive options afforded by remote-work (and safer) opportunities outside of education, have contributed to challenges with critical staff retention, particularly IT personnel, across the K-12 sector.
- According to a survey by RAND Corporation, nearly one in four teachers said that they were likely to leave their jobs by the end of the 2020-2021 school year. Nearly one in three teachers were responsible for the care of their own children along with teaching and related tasks. Many were unwillingly forced to drop out of the workforce. High levels of teacher retirement and challenges in recruiting new teachers have also been noted.
- As schools reopen in person, they find themselves with fewer people than required to manage students on campus, with new demands to address post-COVID-19 issues, such as:
 - Learning loss
 - Online teaching for those currently unable or unwilling to return to school

Implications:

- As schools evolve more robust digital models to provide online learning, dependence on trained faculty, staff and IT support will increase. Staff shortages mean many will have to continue to double up on responsibilities, forcing educators to do more with less. This is likely to add to the burnout of the past year.

- Early professionals will seek to better understand potential career paths within education. This will be important in improving “match quality” and job satisfaction in IT careers.
- Differences of opinion of school authorities on mandates for vaccination or continued fears of infection upon return to campus add to the reasons for the churn— especially among those considering or being sought by employers with more attractive terms and working environments.
- As schools increase their digital operations, CIOs and district leaders will have to look at tools with greater support from vendors to reduce the internal administrative burden on faculty, teachers and IT.

Actions:

K-12 education CIOs should:

- Quantify the problem by identifying which departments/units are seeing greater turnover and assess the impact of this turnover on the enterprise in terms of time delays, reduced output and so on. Allocate resources for professional development and identify clear paths for career growth. Develop retention tailored retention plans to key cohorts of employees.
- Supplement interventions around wages and benefits by designing greater work flexibility and proactively creating a compelling “employer brand” and “total experience” to attract the right talent in an increasingly competitive market. Design flexible working options, simplified and automated hiring processes with reduced administrative hurdles, comprehensive childcare facilities on campus, mental health support etc. to improve the value proposition for potential employees.

Further Reading:

CIOs Must Reinvent Their IT Employment Value Proposition to Compete for Top Talent

Quick Answer: Benchmark Retention Tactics Amid the “Great Resignation”

Trend 5: Adaptive Learning

Analysis by Kelly J. Calhoun Williams

Description:

Using technology as an interactive teaching tool, adaptive learning platforms and content deliver learning resources customized to meet the needs of an individual student.

According to Gartner, adaptive learning dynamically adjusts the way instructional content is presented to students based on their responses or preferences (see Hype Cycle for K-12 Education, 2021). It is increasingly dependent on a large-scale collection of learning data and algorithmically derived (including artificial intelligence [AI]) pedagogical responses.

Dependent on the foundation in learning insights, adaptive learning uses continuous assessment and learning analytics, ideally allowing the alteration of sequence, pace and type of learning resource to meet a user's unique needs. The advances in the use of AI and related technologies will likely be the means to significantly advance and scale up adaptive learning in the future.

Why Trending:

Adaptive learning becomes an especially timely capability today, as organizations continue to struggle to quickly identify individual learning gaps and help students catch up to where they need to be for the new year. Today, vendors provide products and platforms that achieve varying degrees of adaptivity through a variety of means, from the simple to the significantly complex.

Again, as with learning insights, K-12 organizations are being offered more options today for adaptive learning, thanks to the advent of AI enhancements in this area. However, due to the complexity of this endeavor, progress remains slow: ³

- A significant amount of learning data is needed to power these adaptive platforms, which remains a sensitive and technically necessary aspect to adaptive learning that requires further advancing trust and security in the use of student data.
- LMSs and other instructional products now often include AI-enhanced adaptive learning tools, with more diverse subject matter than ever before.
- Vendors continue to use the term “adaptive learning” in a less-than-accurate manner, suggesting capabilities the product may not actually have.

Implications:

K-12 is seeing progress on the adaptive learning front, as AI-based enhancements advance and add new capabilities and insights. The advent of these capabilities marks the significant progress of reaching this category's massive potential in K-12. However, progress continues to be slow.

For all its progress, some of the learning theories and algorithms on which a number of these technologies are based are not necessarily highly sophisticated yet. However, this may change significantly as:

- AI-based technologies mature and improve (and personal comfort improves as trust builds).
- AI is constantly learning, and over time, its value increases if appropriately designed. This potentially brings a much greater level of sophistication to the personalized adaptation of curricula.

Expect to see continuing progress in this arena in the next few years as technology improvements for commercial uses continue to deliver opportunities for education.

Actions:

K-12 education CIOs should:

- Anticipate the increased volume of learning data being collected (especially as AI-enhanced products arrive) by developing policies that address concerns around data privacy and security. Ensure that stakeholders are aware of the benefits and the purpose (as well as the ethics) of this additional data and build trust.
- Identify any adaptive learning capabilities you may already have, such as options that integrate with your LMS. Expand on these by creating pilot projects on a small scale to explore the practical applications of this technology in your environment.

Evidence

¹ Remote Learning During COVID-19: Lessons from Today, Principles for Tomorrow, World Bank Group.

² COVID-19 and Student Performance, Equity, and U.S. Education Policy, Economic Policy Institute (EPI).

³ Challenges and Contexts in Establishing Adaptive Learning in Higher Education: Findings From a Delphi Study, Springer.

⁴ “Hackers have received at least \$2.95 million in ransom payments with the average payment being \$268,000” — Ransomware Attacks on U.S. Schools and Colleges Cost \$6.62 Billion in 2020, Comparitech.

⁵ University of Maastricht Says It Paid Hackers 200,000-Euro Ransom, Reuters.

Acronym Key and Glossary Terms

adaptive learning	Adaptive learning platforms and content deliver learning resources that are customized to meet the needs of an individual student.
digital learning environments	Learning technology ecosystems created to support fully online, hybrid and physical teaching practices.
ransomware	Malware that employs encryption to hold a victim’s information at ransom. A ransom is then demanded to provide access. Ransomware is often designed to spread across a network and target database and file servers, and can thus quickly paralyze an entire organization.

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