Information Technology Industry Standards

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Many educators know there are technology standards in the classroom that define how teachers should utilize it to encourage student learning. But there are many other standards that impact the quality of technology use in education. This monograph will examine some teaching and learning technology standards, along with other standards that educators should be aware of.

TEACHING AND LEARNING TECHNOLOGY STANDARDS

Most of the technology teaching and learning standards adopted by states have originated from the International Society for Technology in Education (ISTE). ISTE was started by David Moursund at the University of Oregon in 1979. As stated on the organization's website:

"ISTE's vision is that all educators are empowered to harness technology to accelerate innovation in teaching and learning, and inspire learners to reach their greatest potential" ***(Image 1)***.

To that end, ISTE has created a comprehensive set of standards for technology use in K-12 schools over the years. These standards have expanded to include students, teachers, administrators, coaches and computer science teachers. They've also added computational thinking competencies for teachers. For a better understanding of the standards, visit www.iste.org/standards. You'll find the following information on page 3:

These standards are more relevant today than ever before. While technology has become ubiquitous and a major component of our lives, our understanding of technology has, in some cases, not kept pace.

Most people would agree that today's students are "tech savvy." But what does that mean? If simply using a cell phone to communicate or play computer games is the measure by which one is "tech savvy," then yes, they are.

Image 1

But the question should be, can today's students use technology to think, to research, to do complex computation and to connect to other technologies that leverage the power of their cell phones, laptops or Chromebooks? One need only ask a typical high school senior to construct a simple cross-tab analysis in a spreadsheet to find the answer.

Research for many of our student's consists of "Googling" for data without any context or analysis. They take the first few entries of their Google search and then stop there. Many of our students are unaware of more powerful curated and analytical tools like Google Scholar, https://scholar.google.com; or WolframAlpha, www.wolframalpha.com.

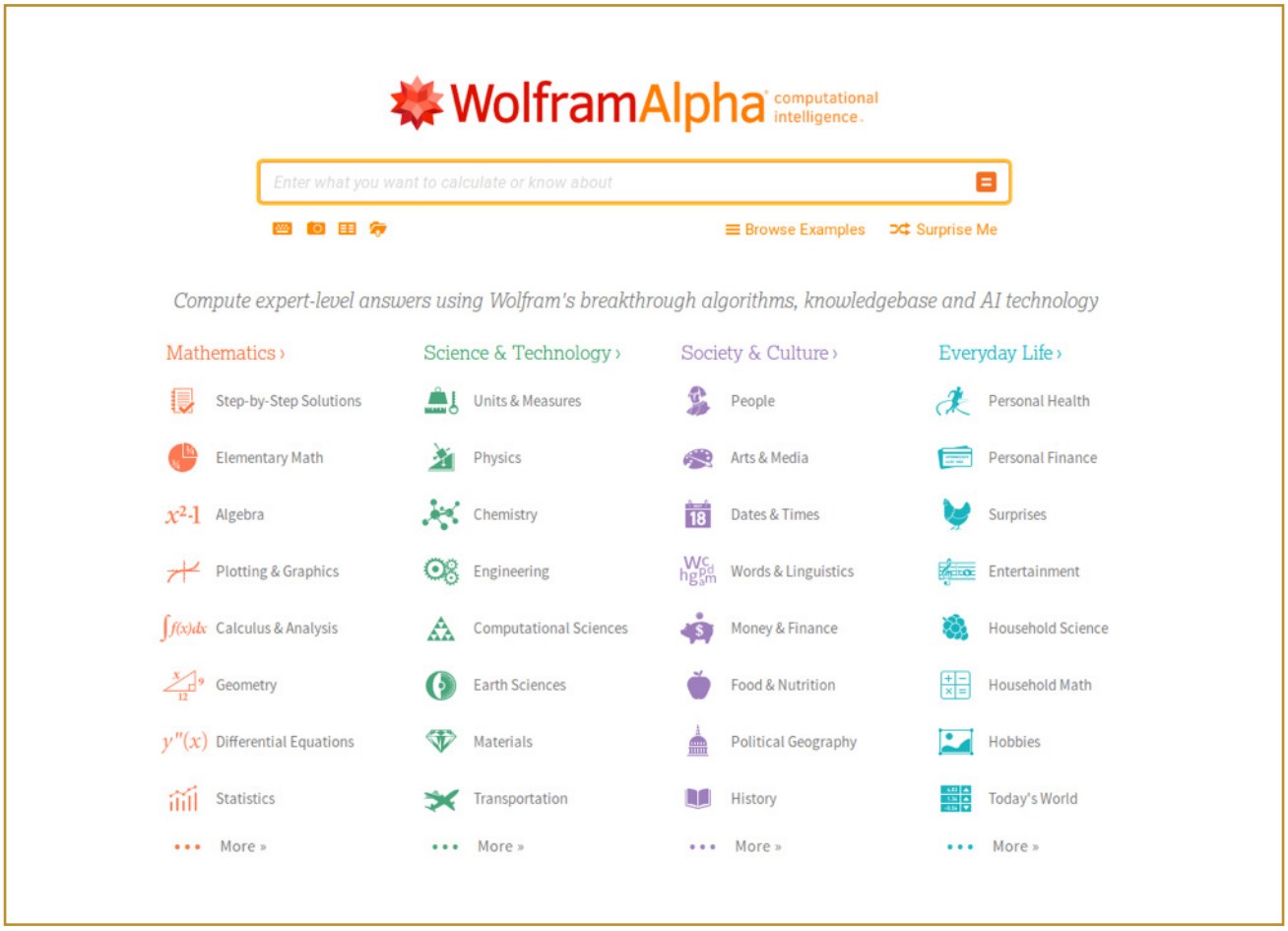

Image 2

These are powerful tools that enable us to leverage our technology to study and solve problems as well as communicate and collaborate. But we can only leverage technology in a constructive, effective way if we know it exists and how to use it. That's why technology standards are so important. They prescribe (generally) what we should know, what skills we should have and what we should be able to do with what we've learned.

FUTURE READY FRAMEWORKS

Unlike ISTE, the Future Ready Schools Framework is not a standard. However, it does provide a process methodology and map to guide districts as they implement and integrate technology. From their website, the Alliance for Excellent Education states:

"The Alliance for Excellent Education (the Alliance) is a Washington, DC-based national policy and advocacy organization dedicated to ensuring that all students, particularly those who are traditionally underserved, graduate from high school ready for success in college, work, and citizenship. During 2015, the Alliance created a separate project under its umbrella called Future Ready Schools (FRS) to help school districts develop comprehensive plans to achieve successful student learning outcomes by (1) transforming instructional pedagogy and practice while (2) simultaneously leveraging technology to personalize learning in the classroom" ***(Image 2)***.

There are Seven Gears in the Future Ready Framework:

1. ***Curriculum, Instruction and Assessment***
2. ***Personalized Professional Learning***
3. ***Robust Infrastructure***
4. ***Budget and Resources***
5. ***Community Partnerships***
6. ***Data and Privacy***
7. ***Use of Space and Time***

Image 3

The interconnected gears of the framework function together to improve student outcomes ***(Image 3)***. A key component supporting the framework is an interactive planning and process dashboard, which empowers various stakeholders to work collaboratively in the implementation.

"Upon completion (the dashboard), districts will have created a digital learning implementation plan, full of practitioner recommended strategies, including stakeholder input, local context, and district team leadership responsibilities" ***(Image 3)***.

TECHNOLOGY SUPPORT STANDARDS

Beyond the ISTE standards, which focus on teaching and learning, there is another group that is focused on supporting the technology that students and staff use. These are technology support standards. Unlike the ISTE-based standards, technology support standards are derived from a variety of different sources.

These technology support standards are defined within the certifications linked to them. Some of the more common certifications/standards found in schools include the following:

CompTIA A+ Technician

This is an entry-level certification/standard for techs to handle PC maintenance, operating systems, printers, mobile devices and laptops.

CompTIA Network+

CompTIA Network+ verifies the ability to design, manage and troubleshoot wired and wireless networks.

Cisco Certified Network Associate (CCNA)

The CCNA assures that techs are able to install, operate and configure enterprise-level networks as well as detect and solve common network problems.

CCNA Collaboration

CCNA Collaboration certification is for techs who support IP telephony and IP video.

Microsoft Certified Solutions Expert (MCSE)

The MCSE is for advanced techs responsible for managing modern data centers.

Google IT Support Professional Certificate

This certification standard is for districts that use Google as their main productivity platform. It provides a framework for troubleshooting, networking, operating systems, system administration and basic security.

Google G Suite Administration

This is for techs who are responsible for deploying, administering and extending the Google G Suite set of applications.

Having one of these certifications means that the individual had to study and learn established material to obtain the certification and was able to pass a test, or series of tests, to prove it. That said, it isn't always true that knowing the information and passing the test guarantees that the individual is able to apply the information they learned, nor the skills they acquired. It does, however, mean the person has met a standard for technology support in the area for which the certification was established.

TECHNOLOGY MANAGEMENT STANDARDS

Another step beyond the technology support standards one expects to find in schools are those addressing fundamental principles of technology management. These standards are commonly referred to as the Information Technology Service Management standards and have been codified within the Information Technology Infrastructure Library (ITIL). ITIL is a set of IT Service Management practices that focus on aligning IT services with the needs of business ***(Image 4)***.

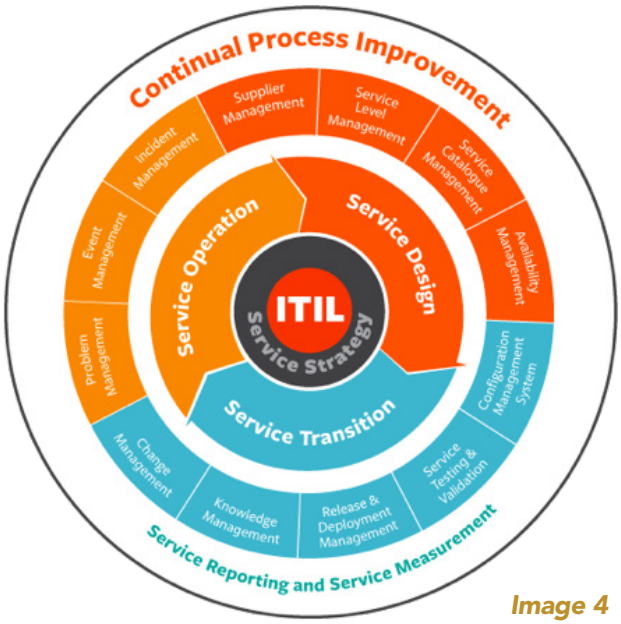

Image 4

There are five stages within the ITIL framework:

1. ***Managing Service Strategy***
2. ***Managing Service Design***
3. ***Managing Service Transition***
4. ***Managing Service Operation***
5. ***Managing Continual Service Improvement***

ITIL is important to schools because the organizations that school districts connect to should be invested in, and using, ITIL standards. These standards provide the framework for strategically examining the best products and services to make and keep schools successful. They provide a framework for ongoing support, continuous improvement and change management. The focus throughout is service and how those organizations can best serve the organizations that connect to them.

The Ohio Educational Computer Network (OECN) has adopted ITIL standards. As a result, many of the regional Information technology centers have adopted ITIL and are now using the standards contained within the framework to improve services to their constituent school districts.

For instance, NEOnet uses Cherwell – software specifically designed to address and manage ITIL standards within their organization. With Cherwell, NEOnet has been able to streamline operations by automating many of their core functions.

Image 5 provides a simple picture of the range of information available through Cherwell to the NEOnet staff. Beyond standard Help Desk functionality, staff are able to post, share, collaborate and track information on customers (districts), software, new technology strategies, new products, change processes and more. By adopting and embracing the ITIL standards and using Cherwell to manage them, NEOnet has streamlined current operations and begun to use the tool for proactive strategic work on behalf of the districts they serve.

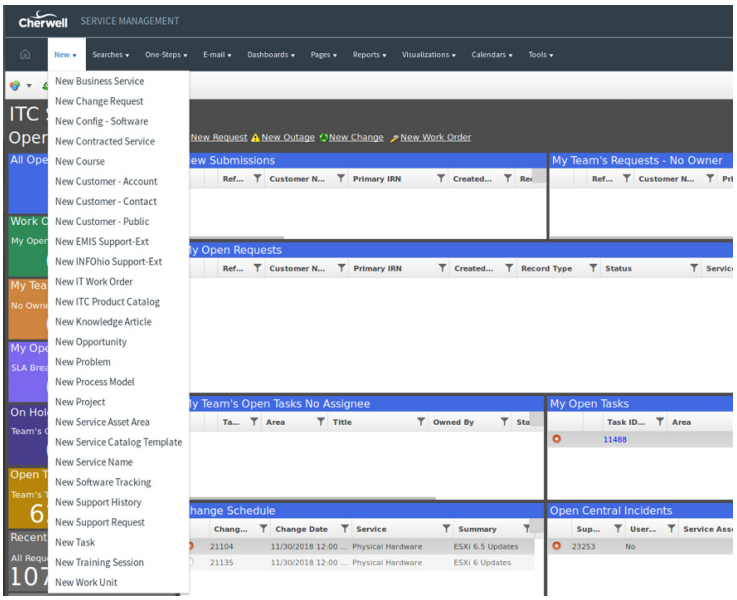

Image 5

Technology in schools has evolved rapidly over the past two decades. In Ohio specifically, we've gone from stand-alone computer clusters (SchoolNet) to Bring Your Own Device (BYOD), to 1:1 ubiquitous computing using WiFi-connected Chromebooks, laptops and tablets.

Making sense of this rapid change has only been possible by:

- ***adopting and implementing standards that ensure students and teachers know how to use the technology to learn more effectively;***
- ***creating benchmarks for service technicians so they are able to keep the technology in the classrooms and offices of our schools operating;***
- ***providing the connectivity, up-time and service that 24/7 computing demands.***

ENDNOTES

(1) https://www.iste.org/about/about-iste
(2) https://futureready.org/about-the-effort/framework/
(3) Ibid

Image 1. https://www.iste.org/standards
Image 2. https://www.wolframalpha.com/
Image 3. https://all4ed.org/
Image 4. https://www.bmc.com/guides/itil-introduction.html
Image 5. https://servicedesk.neonet.org/CherwellClient/Access#0

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