Tomorrow's Technology Today

Technology Transforming Teaching & Learning in Connecticut Schools

A Technology Futures Projection Report
The Connecticut Association of Public Schools Superintendents

CAPSS Technology Futures Projection Preface

Today, Maria got off the bus and headed directly to the middle school's library media center. Today wasn't her best start of the day. Both her lunch and her personal netbook computer are on the counter at home and not in her backpack as she thought. She worked last night on her assignments and projects but forgot to put her netbook in her backpack. She planned to leave the computer on the kitchen counter so she would remember it when she packed her lunch. That simply did not happen today.

Maria stepped into the library to see another student waiting at the counter. He was returning a netbook he borrowed while his was being repaired by the school technician. As he received his netbook, he turned to Maria and said, "I'm all set. Don't worry they are really nice to you." Maria explained to the media specialist that she left her netbook at home. The media specialist provided her with a netbook loaner for the day. Maria signed the form to borrow the computer. She was a bit embarrassed that she was now an eighth grader and this is the first time she did not have her netbook with her at school.

On some days, assignments on her personal computer related to support for her daily lesson or preparing for the next day's lesson. But today she had a number of projects that she worked on at home. In English class, she would be working with other students as they developed a position paper on the choice between drinking water from a school fountain or bringing in bottled water. Her team was researching articles on water purity using *Newsela*, an electronic resource of thousands of current event articles scaled at five different Lexile reading comprehension levels. She had extracted a number of articles with evidence to compare and contrast the positions of her team. Everyone would be bringing in their research. She needed to have her work to contribute. In her French class, she would be quizzed on her accuracy and pronunciation when the teacher monitors her vocabulary response through the computer. And, since the district purchased digital versions of the social studies textbooks, Maria was researching some great resources and websites aligned to her social studies chapter review which she developed on Google Docs to include in her presentation for Social Studies. This was not the day to forget her computer.

Maria reported to homeroom and logged in on the computer. What a relief! Because all of her work is saved to the cloud, her work was there. She would be ready for her classes. Other than having to take the standard lunch when you forgot your lunch or money, the day might not be so bad after all!

The teachers here really incorporated the use of technology in their teaching. With students having personal access to technology in school and at home, classes seem to be more engaging and personal. Teachers spend as much time working with groups of students and providing individual responses to student questions as they do providing direct instruction to the class. There is as much group work as class work and individual work. Students really enjoy the opportunity to offer ideas individually and in groups for how they can deepen their learning or design new ways to present their answers to class work. They call this blended learning where teachers and students share in creating ways to improve and personalize learning through the use of technology and its resources.

This story of Maria in a school undergoing transformation through the effective use of technology may sound a little futuristic but in reality it is becoming more and more commonplace. The examples in fact are extracted from visits to districts such as Plainville in Connecticut. With the Superintendents' Association (CAPSS) NextEd Report call for the importance of utilizing the enormous potential of technology for teaching and learning and the Governor's recent grant initiative supporting district acquisitions of new technologies for teaching, learning and assessment, the school systems in Connecticut are making strides in technology applications.

The purpose of the CAPSS Technology Committee survey was to ask instructional technology specialists throughout the state what they see as the promising practices and exemplary uses of technology which are transforming the instructional environment in schools. Too often, the cost of technology and the financial challenges of the times, limits or directs technology acquisitions. Limited access results in limited professional development which results in limited impact on teaching and learning. However, to the contrary, where a district has a vision and a plan to capitalize on the power of technology, the entire system of teaching, learning and assessing can be transformed. Districts are moving from using technology to simply provide more opportunity for more students to achieve the current curriculum. Innovative districts are not only changing instructional practices to incorporate technology, but they are also re-defining curriculum and learner expectations based on 21st Century skills. Student 1:1 access to technologies using cloud storage has prompted changes in what is taught, how it is taught and how students can represent their learning. Some technologies augment learning styles while other technologies can remove the barriers that limit inclusive, non-restrictive classrooms. And then there is the simple matter of time and place. With access to learning and information technologies 24 hours a day, schools are but one, all be it one of the most important, places where learning happens. The instructional day has been extended by the hours in the day and the days in the year.

These images are provided for the reader to set a context and a receptivity to ten (10) innovations in technology reported by experts in the field in our State of Connecticut as projected expectations within the next five years. The changes relate to emerging technologies but more so to the changes in practice and results which are supported by evidence of promising practices in the field.

CAPSS Technology Futures Survey Findings – Executive Summary

During the 2015/2016 school year the Connecticut Association of Public School Superintendents' (CAPSS) Technology Committee performed a technology futures projection survey asking district instructional technology leaders to identify emerging trends in the use of technology which they believe will direct or transform education over the next five years. The open-ended survey produced a number of projections which were subsequently rated using a 5-point Likert scale for a confidence rating. The raw results are listed below in the rank order of confidence. The top ten projections, taken in isolation provide advice and direction to school districts seeking to focus their efforts and resources on the best practices supporting quality teaching and learning. These projections were then correlated to national research on future and emerging trends in instructional applications of technology. When viewed in context, the future projections in a time frame as short as the next five years, projects not only changes to new uses of technology but also to the changes in instructional practice and student learning expectations optimized by new and emerging technologies.

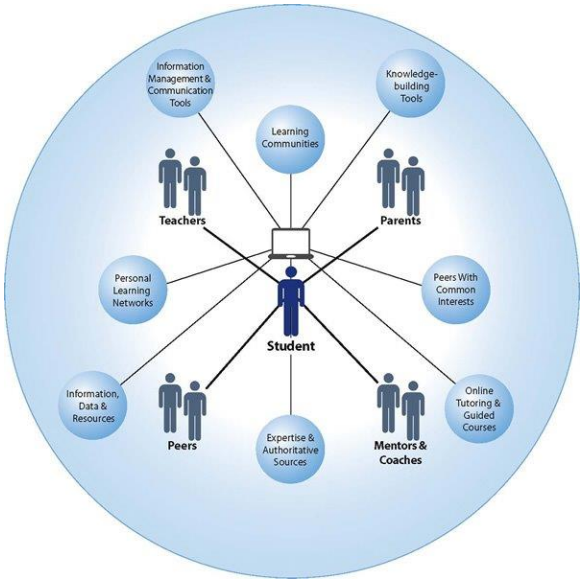
Projections of Technology in Schools in Connecticut by Instructional Technology Specialists	Confidence Rating
1. **Access to improved instructional resources will improve teaching and learning** as evidenced by: Cloud-based resources will enrich instruction and increase learner expectations (4.63) Instructional resources such as Kahn Academy will create alternate instructional response systems (4.57)	92%
2. **Improved communications capacity will strengthen engagement in learning** as evidenced by: Instructional collaboration within and across districts will expand beyond the walls and time of the school day (4.48) Improved SIS systems will inform teachers and parents of progress in student learning (4.42) Personalized learning will increase feedback to allow students to monitor their own progress (4.40)	89%
3. **Technology will re-define opportunities and responsibilities for teaching and learning** as evidenced by: Instruction will incorporate more real time/real life opportunities for learning (4.37) Blended learning systems will improve student and teacher responsibility in the teaching & learning process (4.32) Curriculum will be re-designed to incorporate real-time access through technology (4.26) Adaptive devices will improve inclusive practices to engage more diverse students (4.25)	86%
4. **Technology will be a catalyst to change curriculum, teaching practice and professional learning** as evidenced by: Schools will strengthen efforts in digital literacy, safety and ethics (4.23) Professional learning will incorporate the power of technology to improve personalization (4.18)	84%
5. **Instruction will incorporate technological resources specific to student performance** such as: Digital textbooks will provide ubiquitous access to informational learning resources (4.11) 3-D Printers and other technology-enriched tools will increase and improve student production (4.03)	82%
6. **Technology will allow for more flexibility in student demonstration of learning** as evidenced by: Technology will increase student ownership and direction for learning (4.08) Students will be allowed more flexible assessment models to demonstrate mastery of learning (4.08)	82%
7. **The dominant access to technology for instruction will be 1:1 devices using mixed platforms** (4.06)	81%
8. **Access to a digital repository of assessment data will strengthen instructional practice and decisions** (4.03)	81%
9. **Learning analytics will strengthen the capacity to improve instructional design and instructional response** (3.92)	78%
10. **The learning environment will change** - Re-designed classrooms will optimize technology use for learning (3.85)	77%

The Projections getting a lower rating support (3.31 to 3.78) are as follows:

(3.78) Schools will increase efforts to promote paperless classrooms
(3.61) Districts will use collaborative procurement practices to address technology costs
(3.52) Flipped classroom will become more common in instructional use
(3.48) Game-based, virtual reality, simulations will be used to engage students
(3.48) Schools will strengthen the use of social media to support instruction and learning
(3.31) Instruction will incorporate persona/ wearable technology

When you take the broader ideas for projections of the impact of technology on teaching and learning and in the order of priority of confidence ratings, there is a story being told here:

The highest expectation is that educators will embrace new opportunities for teaching and learning to improve resources and communications.



The results of the increased power, flexibility and access to technology will change WHAT and HOW we teach. As schools increase resources more diverse students will succeed if curriculum and professional development change to ensure that instruction is more personal, real-life and remains a safe environment for learning.

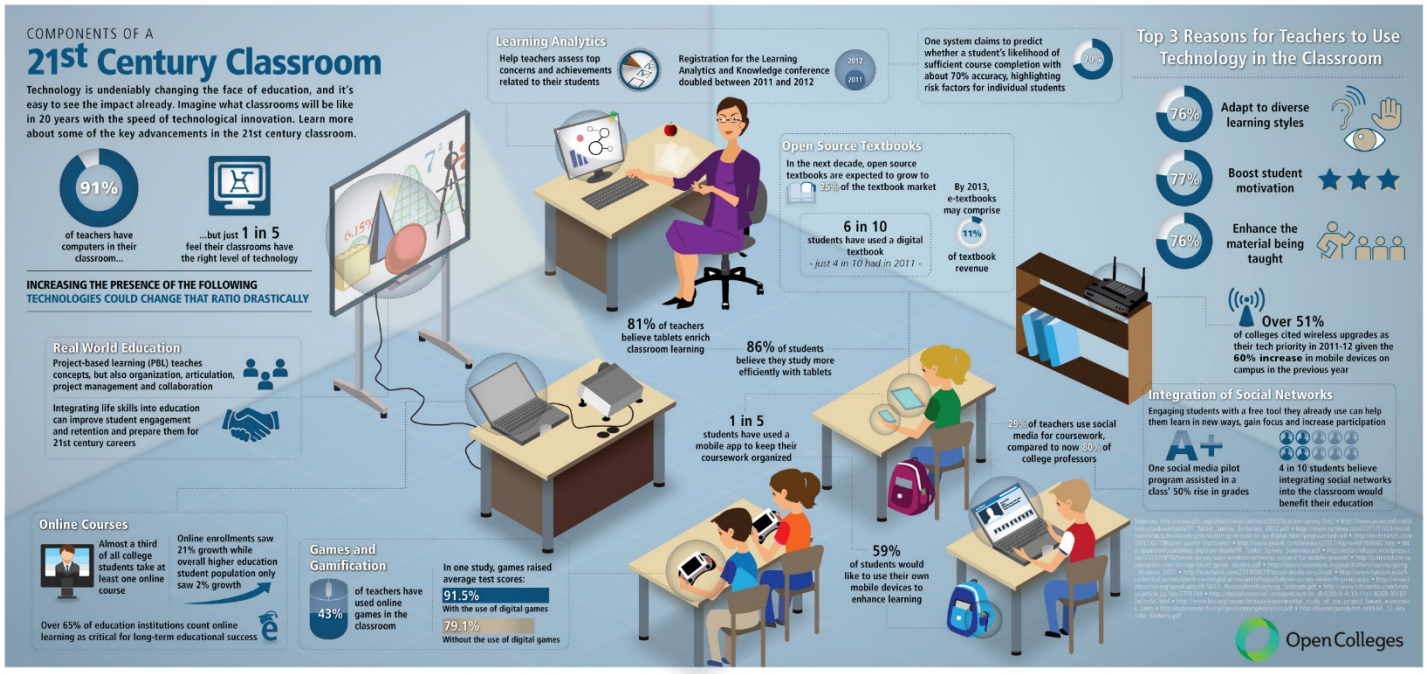
New learning will take new technologies including digital textbooks and emerging technologies such as 3-D printers.

A dominant change which can be achieved is the strengthening of student ownership of learning through ubiquitous access (1:1) to learning technologies, instructional models such as blended learning and more flexible models for student demonstrations of learning.

Access to information about learning can and will strengthen instructional practices through more accessible repositories of data and improved analytics. With improved access to information, more informed decisions can be made to improve instruction.

The teaching, the learning expectations, the measures of achievement and the environment need to change to capitalize on the use of technology.

The survey data suggests that emerging technologies will transform the expectations for student learning. Districts currently using technology to improve student performance within present expectations of student learning may need to reconsider how technology will change the expectations for both instructional practice and student learning.



The following report of the CAPSS Technology Committee Futures Projection Survey provides both detail and context of the voices of Instructional Technology Specialists in Connecticut sharing their expert view of the impact of technology on teaching and learning over the next five years based on emerging technologies and evidence of exemplary and promising practices throughout Connecticut.

From Next Ed – CAPSS

Educational Technology. Technology opens up new avenues for student-centered learning. Whether students take courses online or use technology to enhance learning in the traditional classroom setting or to support learning in out of school activities, technology is a powerful tool for student-centered learning. Technology systems must be deployed in ways that make systems interoperable so data, content, and tools can be shared seamlessly.