

All Children Must Be Ready for a Different World

National Educational Technology Standards (NETS)

To live, learn, and work successfully in an increasingly complex and information-rich society, students must be able to use technology effectively. Within an effective educational setting, technology can enable students to become:

- Capable information technology users
- Information seekers, analyzers, and evaluators
- Problem solvers and decision makers
- Creative and effective users of productivity tools
- Communicators, collaborators, publishers, and producers
- Informed, responsible, and contributing citizens.

The text above is from the introduction to the National Educational Technology Standards (NETS) Project. Most major educational organizations across the country are partners in the project with the goal of developing standards to guide educational leaders in recognizing and addressing the essential conditions for effective use of technology to support Pre K-12 education.

The Partnership for 21st Century Skills

Another organization, The Partnership for 21st Century Skills, contends that *all children must be ready for a different world*. This group has established six key elements of 21st century learning:

- An emphasis on core subjects (with a deeper focus)
- An emphasis on learning 21st century skills (e.g., thinking critically, collaborating, applying knowledge to new situations)
- The use of 21st century tools (information and communication technologies) to develop learning skills
- Employing strategies for teaching and learning in a 21st century context (authentic relevant experiences)
- Employing strategies for teaching and learning 21st century content (global awareness, economic and civic literacy)
- Use 21st century assessments (valid and/or technology based) that measure 21st century skills.

There is also a strong message from the partnership that schools should not see teaching as a choice between *basic skills* and *21st century skills* but rather both are essential.

With the work of these two organizations as a foundation, Henrico County Public Schools Technology Instructors began developing indicators of what teaching and learning in the 21st century may look like. What emerged is a picture of exemplary use of technology to support learning.

In order for students to be prepared to be citizens in a different world as described by the Partnership for 21st Century Skills, educators will need to:

- Make appropriate use of the available technology to differentiate instruction to meet the needs of diverse learners
- Understand that the learning environment needs to be a space that facilitates ever-changing learning experiences

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- Plan instruction to ensure seamless transitions between learning experiences
- Use the available technology to provide authentic, interactive learning experiences.
- collaboration

In order to build and nurture this type of teaching and learning environment, educators will need to:

- Be confident and successful integrators of technology resources to support teaching and learning.
- Be competent problem solvers
- Be leaders in helping others develop instructional technology skills.
- Be facilitators of structures that foster collaboration among learners.

These skills and dispositions will develop as educators work to examine their current practice in relation to the ideal/target indicator on the following technology integration table. The indicators on the table are grouped under two categories: *Integrating Technology to Support Instruction* and *Integrating Instruction to Support Student Centered Learning*. The teaching and learning described through the indicators in the ideal/target category on all standards provide strong support for the acquisition of 21st century skills. These students will be very well equipped to be productive *in a different world*.

The Technology Integration Progression Chart: The Broad Overview

Entry	Developing	Approaching	Ideal/Target
Integrating Technology to Support Instruction: Overview of the Teaching and Learning Process			
<ul style="list-style-type: none"> • Instruction is teacher directed. Teacher does not seek out technology resources to enhance learning. 	<ul style="list-style-type: none"> • Teacher begins to seek out technology resources to enhance learning. 	<ul style="list-style-type: none"> • Teacher begins to experiment with student centered learning activities that incorporate advanced technologies. • Teachers use technology to differentiate instruction 	<ul style="list-style-type: none"> • Teacher facilitates technology enriched, student-centered learning.
<ul style="list-style-type: none"> • No technology lessons observed. 	<ul style="list-style-type: none"> • Technology lessons are independent of content. • When technology resources are used, focus is on application only, not integration. 	<ul style="list-style-type: none"> • Technology-enhanced lessons are aligned to learning standards. 	<ul style="list-style-type: none"> • Lessons and activities are clearly aligned to content learning goals. Strategies aligned to Virginia SOLs and incorporate national technology standards (NETS-S) as described below.

Overall, where do your school and individual classrooms stand on this progression? To look deeper, use the attached detailed progression chart from a Teacher's perspective, and then from the student's perspective.

The Technology Integration Progression Chart: Teacher View

Entry	Developing	Approaching	Ideal/Target
Integrating Technology to Support Instruction: Organization of the Learning Space			
<ul style="list-style-type: none"> No apparent consideration in organizing/arranging the classroom for use of student laptops. 	<ul style="list-style-type: none"> Teacher is aware of the importance of classroom organization/arrangement to manage student use of technology (unobstructed movement, monitoring student screens, and location of battery charging station.) 	<ul style="list-style-type: none"> Teacher stages room arrangement to best fit instruction. 	<ul style="list-style-type: none"> Teacher dynamically configures room for instruction and transitions are seamless.
<ul style="list-style-type: none"> Teacher does not use (available) projection equipment. 	<ul style="list-style-type: none"> Teacher occasionally uses available television monitor, LCD and/or smart board to project teacher computer. 	<ul style="list-style-type: none"> Teacher uses available television monitor, LCD and/or smart board for interactive instruction. 	<ul style="list-style-type: none"> Teacher and students use available projection device for interactive instruction when appropriate.
Integrating Technology to Support Instruction: Digital Organization			
<ul style="list-style-type: none"> Lack of digital organization. Any organization evident is hard copy 	<ul style="list-style-type: none"> Limited digital organization. 	<ul style="list-style-type: none"> Teacher directed digital organization. 	<ul style="list-style-type: none"> Teacher encourages student created and maintained digital organization systems including electronic calendars, and folders.
<ul style="list-style-type: none"> Paper and pencil notes Hardcopies handouts No obvious use of digital distribution or collection of documents. 	<ul style="list-style-type: none"> Teacher directed note taking using word processing. Teacher may create multimedia presentations as student notes or for lecture. Teacher uses some simple digital worksheets. Teacher uses available electronic resources to distribute documents to students. 	<ul style="list-style-type: none"> Teacher directed note taking using a variety of skills and resources (including word processing, graphic organizers, databases, spreadsheets, presentation and outlining software Teacher uses other forms of digital delivery such as CD, portable hard drive, flash drive and/or email. 	<ul style="list-style-type: none"> Teachers encourage students to select from a variety of technology to organize and summarize material (word processing, databases, spreadsheets, Wikipages) Electronic Resources such as virtualshare, email, discussion boards are used to distribute, collect, and return a variety of digital content. Teacher provides feedback digitally through virtualshare, webpages, blogs, wiki pages, podcasts and vodcasts.

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Integrating Technology to Support Instruction: Use of Electronic Resources for Instruction

<ul style="list-style-type: none"> • Print resources used exclusively. 	<ul style="list-style-type: none"> • Teacher uses pre-made technology lessons/materials/templates. • Teacher supplements textbook with online content. • Teacher uses webpage to post homework and communicate. • Teacher uses technology and electronic resources to differentiate instruction. 	<ul style="list-style-type: none"> • Textbooks supplement frequent use of technology resources and online content. • Teacher incorporates project-based learning. • Teacher evaluates electronic resources for appropriateness and effectiveness. • Teacher webpage is used for an instructional tool. • Teachers begin to develop their own project-based lessons. 	<ul style="list-style-type: none"> • Teacher incorporates open-ended questioning and higher order thinking skills in real-world technology-rich learning experiences. • Teacher facilitates student collaboration (peer editing, multimedia, literature circles, etc.) through technology such as blogs, wikis, discussion boards. • Teacher instructs students on evaluation of electronic resources and encourages use of all appropriate resources to solve authentic problems. • Teachers develop their own electronic resources and lessons for students (i.e.: webquests.)
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Integrating Technology to Support Instruction: Use of Electronic Resources for Assessment

<ul style="list-style-type: none"> • Assessment is via hard copy. 	<ul style="list-style-type: none"> • Teacher uses some pre-made assessment tools that are available with electronic resources like Larson's or Brain Pop. • Teacher may create and print tests using test generation software (such as Edutest, Exam View Pro or Acces.) 	<ul style="list-style-type: none"> • Teacher uses technology to create, align and administer online assessments formatted in the style of the state tests. • Teacher uses electronically delivered products and projects as assessments. • Teacher creates and uses rubrics for grading electronic assessments. 	<ul style="list-style-type: none"> • Teacher creates, aligns and administers a <i>wide variety</i> of online assessments. • Teacher allows students to select their own method to communicate understanding, including through electronic means. • Teacher facilitates student development of an electronic portfolio of assignments and projects to assess learning. • Teacher uses data from all portfolio assessments to inform instruction.
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Entry	Developing	Approaching	Ideal/Target
Integrating Technology to Support Student Centered Learning			
<ul style="list-style-type: none"> • Student use of technology is optional. • Students rely on teacher for dissemination of information. • Students engage in face-to-face communication. • Students communicate learning through standard written and oral means. 	<ul style="list-style-type: none"> • Students use electronic resources that have been selected by the teacher. • Students use technology to solve fictitious scenarios. • Teacher introduces technology- based cooperative learning strategies (group work). • Students work independently to solve problems that involve the use of technology. • Students engage in electronic communication that is one-way and synchronous. • Students observe teacher demonstrating the use of electronic devices to manipulate static data. • Students document learning through word-processed documents, presentations and graphic organizers. • Students are provided information regarding the ethical use of technology. 	<ul style="list-style-type: none"> • Students use web resources that have been selected and evaluated by the teacher. • Students begin to engage in technology-enhanced learning experiences that are open-ended and require higher order thinking skills. • Students engage in asynchronous and synchronous electronic communication to gain knowledge and understanding. • Students use technology to solve authentic problems. • Students communicate ideas through use of video, pictures, images, and/or graphics. • Students reference and respond to spreadsheets, databases, digital video, images, blogs, wiki pages, podcasts, interactive PDF's, web pages, video conferences, real-time data, to gather and analyze information. • Students use teacher-selected electronic devices to collect, organize, analyze and display real-time data. • Students create databases and spreadsheets. • Students are aware of the ethical, cultural and societal issues relating to the use of technology. 	<ul style="list-style-type: none"> • Students engage in technology-dependent learning that is project-based, using open-ended questions and higher order thinking skills. • Students use electronic resources to plan, design and execute solutions to real-world problems. • Students effectively evaluate web resources for validity. • Students collaborate while using technology to solve authentic problems. • Students contribute to and develop electronic products (email, interactive documents, web pages, digital video, real-time data analysis, images, video conferences, blogs, wiki pages, and podcasts) to gain knowledge and demonstrate content mastery. • Students communicate ideas through a variety of media including video, images, and graphics. • Students use advanced knowledge of software applications to communicate. • Students select appropriate electronic devices (probes, projection beams, cameras) to gather, organize, analyze and display real time data. • Student work demonstrates understanding of ethical, cultural and societal issues regarding technology.