

West Hartford Public School District

Agenda Item: Review and Recommendation Regarding Keyboarding

Meeting Date: March 18, 2014

From: Dr. Nancy DePalma, Assistant Superintendent for Curriculum, Instruction, and Assessment

Through: Dr. Karen L. List, Superintendent

Background:

During the 2012-2013 school year, a committee of elementary teachers and administrators met to:

- determine the current status of keyboarding instruction and resources
- develop and analyze a survey of all elementary staff regarding keyboarding
- observe Smarter Balanced Assessment Consortium (SBAC) scientific trial and pilot assessments aligned with the Common Core Standards to inform next steps
- make recommendations for keyboarding curriculum, instruction, and assessment

Elementary Keyboarding Ad-Hoc Committee (2012-2013)

Amy Alexander, Special Services
Leah Clayton, Grade 5 Teacher
Ryan Cleary, Curriculum Specialist
Sharon Courneen, Grade 5 Teacher
Jill Dailey, Library-Media/Educational Technology Teacher
Kerry Jones, Director of Elementary Education
Mary Stone, Early Childhood Curriculum Specialist
Noam Sturm, Principal
Jeri Van Leer, Department Supervisor of Library-Media/Educational Technology

This report summarizes the committee’s recommendations for elementary keyboarding based on research and survey findings. Additionally, our observation of Smarter Balanced pilot testing last spring revealed a need to consider technology skills beyond keyboarding.

Effective technology literacy curriculum includes a progression of skills appropriate to students’ physical and conceptual development through the elementary grade and beyond. A district-wide TechConnect committee with representatives from all PreK-12 schools convened this fall. The TechConnect committee is currently reviewing technology standards as well as our current practices/needs to make recommendations for more broad-based technology competencies, including keyboarding.

**Agenda
Item: VI.B.2**

Context: Why should we teach keyboarding at the elementary level?

Keyboarding is a technology literacy skill necessary for students to become productive citizens in an increasingly global and digital world. In addition, keyboarding is one of the technology competencies our students will need to demonstrate mastery of Common Core Standards in English-Language Arts and effectively manage the on-line requirements of the Smarter Balanced Assessment.

Introducing students to keyboarding in the elementary grades ensures that they develop efficient techniques instead of acquiring self-taught, and sometimes hard-to-break, habits. Efficient keyboarding skills allow students to concentrate on the quality of what they are composing or producing.

Technology integration and related keyboarding expectations have shifted due to Connecticut's adoption of the Common Core State Standards (CCSS). To meet the CCSS in English-Language Arts, elementary students will be expected by the end of the year to:

- Grade 3: With guidance and support from adults, use technology to produce and publish writing (using keyboarding skills) as well as to interact and collaborate with others.
- Grade 4: With some guidance and support from adults, use technology, including the Internet, to produce and publish writing as well as to interact and collaborate with others; demonstrate sufficient command of keyboarding to type a minimum of one page in a single sitting.
- Grade 5: With some guidance and support from adults, use technology, including the Internet, to produce and publish writing as well as to interact and collaborate with others; demonstrate sufficient command of keyboarding to type a minimum of two pages in a single sitting.

Grade 3-5 students completing the Smarter Balanced on-line assessments aligned with the Common Core will be required to enter one to two page text responses using a keyboard or other technology device.

Beyond Common Core Standards and Smarter Balanced assessment demands, keyboarding is a component of the National Educational Technology Standards for Students (NETS•S) as recommended by ISTE, the International Society for Technology in Education. To “demonstrate a sound understanding of technology concepts, systems, and operations,” our students need to “select and use applications effectively and productively.” These standards align with our CT *Information and Technology Literacy Framework* (2006) which highlight that students will “use technology tools to enhance learning, increase productivity and promote creativity” (CTSDE, 2006).

For additional information on NETS•S, please refer to Appendix A or the following link: <http://www.iste.org/docs/pdfs/nets-s-standards.pdf?sfvrsn=2>. Google translator is available on www.iste.org website for this document.

Keyboarding skills, as part of integrated technology skills, are critical to our students' preparation for college and careers.

Research on Keyboarding

What do we mean when we say “keyboarding?”

Keyboarding refers to touch-typing, special key functions, use of the mouse, and numerical operations. Students learn appropriate key-reaching techniques to build speed and accuracy. These keyboarding skills provide the student with knowledge of correct finger placement and efficiency when typing on a keyboard or using other devices.

Does it matter how students type?

This is not an area of widespread agreement among educators and technology professionals. One author asserts in a 2011 *MIT Technology Review* article, “Yes. Touch typing allows us to write without thinking about how we are writing, freeing us to focus on what we are writing, on our ideas. Touch typing is an example of cognitive automaticity, the ability to do things without conscious attention or awareness. Automaticity takes a burden off our working memory, allowing us more space for higher-order thinking” (Retrieved on 6/14/13 from <http://www.technologyreview.com/view/425018/out-of-touch-with-typing/>). Bill Gates noted in a June, 2012 interview with the *Chronicle of Higher Education*, “Just giving people devices has a really horrible track record. You really have to change the curriculum and the teacher. And it’s never going to work on a device where you don’t have a keyboard-type input” (Retrieved on 6/14/13 from <http://chronicle.com/article/A-Conversation-With-Bill-Gates/132591/>). On the other hand, many advocate that instruction on keyboarding skills is neither developmentally appropriate nor necessary given the wide range of technology devices available to students and schools.

While research on typing instruction has yielded inconsistent results, Rogers et al. (2003) note the following benefits for students who are introduced to the touch method of keyboarding:

- Improved achievement in language arts and attitude toward writing
- Efficiency in using devices with keyboards as a writing, editing, and computing tools
- Use of proper keyboarding techniques, eliminating the formation of ineffective keyboarding habits for word processing and other technology applications
- Improved motivation, creative thought, and integration of keyboarding with all subject areas

Recommendations

Our goal is for students to develop benchmark levels of keyboarding skill to increase their productivity and effectiveness in utilizing technology in all academic areas.

We recommend that primary grade students (PreK-2) begin to develop basic technology literacy skills and keyboarding awareness. By third, fourth and fifth grades, students will have more formal exposure to the touch keyboarding technique and be expected to type 10-20 words per minute (see charts below for a summary of grade level expectations). We recommend that elementary report cards for 2014-2015 include a keyboarding competency indicator or comment noting student progress toward benchmarks for Grades 3-5 and “keyboarding awareness” for grades K-2.

Outcomes of WHPS elementary keyboarding instruction

- Proper Posture
- Correct Technique
- Accuracy
- Speed

At what grade(s) should keyboarding instruction occur?

Research indicates that formal keyboarding instruction should begin when student interaction with technology tools requires more than simple one-letter responses or mouse clicking/dragging responses. As a psychomotor skill, keyboarding requires coordination, hand size, and manual dexterity generally observed in children age 8 and older. Therefore, formal keyboard instruction would not occur until Grade 3. Prior to that time, instruction should focus on developing early keyboarding awareness (e.g. posture, home keys, and overall letter placement).

How does keyboarding relate to overall PreK-12 Technology Literacy?

We recommend that keyboarding skills are embedded within a larger scope and sequence of technology literacy knowledge and skills.

This year, our district-wide PreK-12 TechConnect committee will develop a vision for 21st Century student learning in West Hartford Public Schools and set priorities for district professional development. They are currently engaged in review, research and discuss best practices in technology integration. The committee will also be researching and developing a scope and sequence of PreK-12 technology literacy skills and instruction, including keyboarding.

References:

-  International Society for Technology in Education (2012). *National Educational Technology Standards for Students (NETS*S)*. Retrieved from <http://www.iste.org/standards/nets-for-students>
-  Appendix D: Connecticut State Department of Education (2006). *Information and Technology Literacy Framework*. Retrieved from <http://www.sde.ct.gov/sde/lib/sde/pdf/Curriculum/itf.pdf>

Recommended Progression of Elementary Keyboarding Instruction PreK-Grade 5

Early Keyboarding Awareness (PreK-1)	Prior to formal keyboarding instruction, students should develop early keyboarding awareness. This includes learning correct computer posture, left/right hand placement, and home row location as well as the correct operation of enter/return, space bar, and backspace/delete keys. Additionally, students should become familiar with the overall letter placement on the keyboard.
Formal Introduction to Keyboarding (Grade 2-3)	Formal introduction to keyboarding should precede frequent computer use. In these beginning stages of learning, technique is more important than speed or accuracy. Good technique should also be reinforced when students use the computer or technology tools for other tasks.
Continued Instruction and Practice with Keyboarding (Grades 4-5)	As keyboarding instruction continues, technique as well as appropriate speed and accuracy should be emphasized. Research indicates that students handwrite at about 10-15 words per minute (wpm) in upper elementary grades. Therefore, students should be able to keyboard at the same speed, or faster, than they handwrite. As part of these recommendations, we have established benchmark speed and accuracy levels for students in grades 3-5. Instruction must include practice and repetition that focuses on proper keyboarding technique, accuracy and speed.

End-of-Year Keyboarding Benchmark Goals (PreK-5)

Grade	Focus	Speed and Accuracy	 Technique
Pre/K Kindergarten	Explore keyboard; left and right hand key	N/A	1, 2
Grade 1	Explore keyboard; locate alphabetic keys, Space bar, Enter, Backspace keys	N/A	1, 2, 3
Grade 2	Locate alphabetic keys, Space bar, Enter, Backspace keys; Explore home row	5 wpm @ 90% accuracy *	1, 2, 3, 4
Grade 3	Learn home row and standard fingering	10 wpm @ 90% accuracy**	1, 2, 3, 4, 5
Grade 4	Use home row and standard fingering	15 wpm @ 90% accuracy**	1, 2, 3, 4, 5
Grade 5	Improve accuracy & technique	20 wpm @ 90% accuracy**	1, 2, 3, 4, 5

Keyboarding Technique

1. Sit straight, lean a bit forward from the waist; keep feet on the floor (if possible).
2. Keep fingers somewhat curved as if around a tennis ball.
3. Keep wrists above the computer so they do not touch it.
4. Strike the keys with the correct fingers.
5. Keep eyes on the screen during keyboarding practice and on paper/book as you work to type notes, drafts, etc.

* Formative assessment only to determine instructional needs for fall of Grade 3

** Grade 3-5 students are “progressing” if they have not met the end of year grade level wpm benchmark but have improved their speed by 3 WPM and maintained accuracy level over the course of the school year

Recommended approach to keyboarding assessment, instruction, and practice

We recommend a fall and spring benchmark approach to assessing student keyboarding proficiency. Beginning in 2014-2015, students in grades 3-5 will be assessed by October 30 and by May 30 using a brief on-line typing test to determine Words per Minute (wpm) and Accuracy. Each school has an identified member of the district-wide TechConnect committee. This teacher-leader would support the building curriculum specialist, classroom teachers, and library-media specialist with coordination of keyboarding assessment and intervention scheduling.

- **Grades K-2:** Students need to be familiar with overall letter placement on the keyboard. This awareness would be developed through activities embedded into current classroom practice. Appropriate posture and keyboarding technique would be reinforced as students use technology in the Library-Media Center and classroom. Early keyboarding awareness should be assessed periodically throughout the year. An observation checklist of skills will be developed to help identify teaching and learning needs.
- **Grade 2 – Spring:** Students will be assessed on their posture/technique, familiarity with the keyboard itself, and ability to type at a benchmark of five words per minute. This assessment will provide information to teachers and families about student needs for keyboarding learning and practice. Formal keyboarding instruction will occur in Grade 3.
- **Grades 3:** Research indicates a need for formal keyboarding instruction and practice beginning in Grade 3 with awareness and skill development in earlier grades. Grade 3 students will have 4-6 weeks of keyboarding instruction before the December break with ongoing opportunities for practice throughout the year. This instruction will occur in classrooms as well as the Library-Media Center and coordinated by principals, curriculum specialists, library-media specialists, and teachers. The recommended time to learn and practice keyboarding skills is 15-20 minutes per day for a 4-6 week period. Formal keyboarding instruction on technique should occur regularly during that time period, modeled and reinforced by the teacher through whole group mini-lessons and/or small group instruction. Practice with proper techniques over a short period of time will support learning of this lifelong skill. Grade 3 students who already demonstrate proficiency with keyboarding will continue to refine their skill through technology-integrated classroom activities.
- **Grades 4 & 5:** Instructional needs will be determined based on fall benchmark assessment results and teacher observation.
 - **For students not meeting the keyboarding benchmark in grades 4 & 5, we recommend an intervention model approach to keyboarding.** The level of intervention will vary from reminders of appropriate posture and technique when completing classroom tasks requiring typing to intensive daily practice with keyboarding finger placement or speed.

Students performing significantly below grade level benchmarks should have a daily 10-15 opportunity for keyboarding instruction and/or practice for a 4-5 week period. This might be done with grades 4 & 5 students on a rotation basis in the classroom, Library-Media Center, or other setting depending on school technology and staffing structures.

Type to Learn or on-line typing assessment tools will be used to monitor progress of students identified for keyboarding intervention.

- **Grade 4 & 5 students who have already met or exceeded grade level benchmark goals (at the start or during the school year) will not require formal instruction or practice time.** However, teachers monitor and reinforce keyboarding technique. Students will continue to refine their skill through technology-integrated classroom activities.

Who will teach the students keyboarding skills?

Research suggests that a “knowledgeable” teacher is needed to help students develop appropriate techniques as well as provide motivation and reinforcement (Erthal, 1998; Nieman, 1996). In some states, keyboarding in elementary grades must be taught by a business education teacher, classroom teacher instructing their own students, or a team of both. We have no such requirement in CT.

The committee recommends a student needs-based approach to keyboarding instruction and intervention. Neither library media specialists nor classroom teachers will be solely responsible for providing keyboarding instruction and intervention support. Staffing and location for keyboarding “intervention” will be determined at each school. This approach allows schools to respond to varying student needs, technology infrastructure, and demands on instructional time for both classroom teachers and library media specialists. For example, at some schools, keyboarding instruction and practice might occur primarily within the classroom literacy block using laptops. Keyboarding intervention might happen in the Library-Media Center supervised by building staff.

It is essential that staff providing keyboarding instruction have clear, consistent direction and resources regarding the methodology for students to develop this psychomotor skill. We plan to embed teacher learning regarding keyboarding techniques into 2014-2015 professional learning sessions for elementary staff.

What instructional materials will be used for keyboarding?

- Our current keyboarding software package *Type to Learn 4* (grades 3-5) supports the development of keyboarding technique and adheres to the National Educational Technology Standards. Students and teachers can track student progress on the computer and set individual speed and accuracy goals in meeting district benchmarks.
- Web-based programs for student practice and progress-monitoring. The TechConnect committee is currently investigating on-line resources for instruction and practice.
- Posters and on-line tutorials (individual computers and/or projected to whole class) will support teaching and reinforcement of correct keyboarding posture and techniques. These materials will either be provided to classroom teachers (e.g., posters) or in links posted to our district curriculum website.
- Posters and individual student placemat-type templates to support home-key identification (preK-2).
- Multisensory keyboarding strategies (e.g., “thinking gloves” for keyboard memorization, playground keyboard to work on memorization skills, practice on keyboarding websites with verbal and visual practice cues).

Where and what equipment will be used for instruction?

Depending on the technology infrastructure at each elementary school, student laptops, classroom or Library Media Center desktops, or other portable technology with keypads will be used for instruction and practice. We anticipate given the daily practice required to gain proficiency in grade 3 that classroom desktops, laptops or other keyboarding devices would be the primary equipment used for instruction and practice. Keyboarding instruction and practice might also be embedded within Library-Media Center instructional time. Intervention support for grades 4 & 5 would be coordinated with curriculum specialists, classroom teachers, and library media specialists. Keyboarding intervention will be provided in the classroom, Library-Media Center, or other setting based on schedule, staffing, and technology infrastructure.

Summary

We need to prepare our students for the keyboarding demands of on-line state assessments and the overall technology competencies needed in the 21st century. In doing so, we need consider developmental appropriateness and realistic goals given the demands of Connecticut Core implementation as well as use of new technology tools. At the district and school level, we will provide ongoing support for staff and students and seek feedback to address these keyboarding recommendations.

We welcome families to support student practice of keyboarding skills at home. The following sites are some of the many free resources available on-line:

Grades K-2

Keyboarding Zoo

http://www.abcya.com/keyboarding_practice.htm

Key Seeker: Keyboarding for Kindergarten

<http://annrymer.com/keyseeker/>

Grades 3-5+

Keyboarding Practice

<http://keybr.com/>

Power Typing

<http://www.powertyping.com/trees.shtml>

Typing Web

<http://www.typingweb.com/>

Type to Learn4

The West Hartford Public Schools subscribe to this web-based typing program that is available for students to access and use at home. This web-based keyboarding program saves all files, so students can continue to make progress learning keyboarding from both home and school.

Parents/guardians can obtain more information about how to download the program to your computer, including the district access code, from their child's classroom teacher, curriculum specialist, or library-media specialist.

Dr. Nancy DePalma, Kerry Jones, and Jeri VanLeer are available to answer questions.

ISTE Standards

Students

1. Creativity and innovation

Students demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology.

- a. Apply existing knowledge to generate new ideas, products, or processes
- b. Create original works as a means of personal or group expression
- c. Use models and simulations to explore complex systems and issues
- d. Identify trends and forecast possibilities

2. Communication and collaboration

Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others.

- a. Interact, collaborate, and publish with peers, experts, or others employing a variety of digital environments and media
- b. Communicate information and ideas effectively to multiple audiences using a variety of media and formats
- c. Develop cultural understanding and global awareness by engaging with learners of other cultures
- d. Contribute to project teams to produce original works or solve problems

3. Research and information fluency

Students apply digital tools to gather, evaluate, and use information.

- a. Plan strategies to guide inquiry
- b. Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media
- c. Evaluate and select information sources and digital tools based on the appropriateness to specific tasks
- d. Process data and report results

4. Critical thinking, problem solving, and decision making

Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources.

- a. Identify and define authentic problems and significant questions for investigation
- b. Plan and manage activities to develop a solution or complete a project
- c. Collect and analyze data to identify solutions and/or make informed decisions
- d. Use multiple processes and diverse perspectives to explore alternative solutions

5. Digital citizenship

Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior.

- a. Advocate and practice safe, legal, and responsible use of information and technology
- b. Exhibit a positive attitude toward using technology that supports collaboration, learning, and productivity
- c. Demonstrate personal responsibility for lifelong learning
- d. Exhibit leadership for digital citizenship

6. Technology operations and concepts

Students demonstrate a sound understanding of technology concepts, systems, and operations.

- a. Understand and use technology systems
- b. Select and use applications effectively and productively
- c. Troubleshoot systems and applications
- d. Transfer current knowledge to learning of new technologies

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