

GUIDING HANDS

Toward an Adaptive Keyboarding Classroom



The Importance of Early Keyboarding Education

In a Washington Post article on elementary school students and early keyboarding education, the discussion pointed out “children as early as kindergarten are learning to use a keyboard.”¹ The article further addressed how most elementary-age students are ‘digital natives,’ and though they may display comfort swiping or tapping via smartphone and tablet use, many students experience more difficulty composing text on a keyboard.

Now, more than ever, the need for students’ early keyboarding skills has proven to be crucial for their success both inside and outside of the classroom.

In January 2017, the Consortium of School Networking (CoSN) released a joint report with the American Association of School Administrators (AASA) and the National School Board Association (NSBA) titled, *Online Assessment: From Readiness to Opportunity*.³ The report offers a number of key recommendations to help schools and districts plan and prepare for online assessments. They identified that the introduction of keyboarding skills as early as kindergarten was one of the crucial steps recommended for student success.



6 out of 10

educators say keyboarding skill gaps negatively impact student performance on online assessments.²

If students begin practicing on a keyboard without proper training, they create their own methods of finding the keys to type. Innocently referred to as ‘hunting and pecking,’ this choppy practice results in poor keyboarding habits that will eventually compromise overall typing abilities.⁴ It’s essential to teach proper keyboarding strategies to students as soon as it is developmentally feasible to establish best practices in keyboarding for them.⁵

Since the importance of teaching keyboarding has been well established in classrooms today, this whitepaper will share some best practices for teaching keyboarding, and it will present the right solution for your students, when there are a number of product choices on the market today.



If students begin practicing on a keyboard without proper training, they create their own methods of finding the keys to type.

So Long, Typing Class!

In his article on teaching elementary school keyboarding, author Matt Renwick addresses how essential the skill is for young learners to have today.

“NCTE (National Council of Teachers of English) and other respected educational organizations view digital skills such as keyboarding as essential for learners to communicate in the 21st century.”

Matt Renwick
Author & Principal

While the importance of this digital skill for students grows more apparent, over half of the keyboarding instructors at the elementary level are classroom teachers.⁷ As growing numbers of educators take on this task, they are realizing that teaching keyboarding is far more than just timing speed drills.

Renwick also suggests the serious need for teaching early keyboarding education because computer-based assessment testing is now the rule, rather than the exception:

*“With the introduction of computer-based standardized assessments, keyboarding has come to the forefront in education once again. These assessments are not the only call to action. For instance, the National Council of Teachers of English (NCTE) recommends that students “develop proficiency with the tools of technology.”*⁸

Acknowledging this significant shift in expectation, due to resources and budgets, means many classroom teachers must now figure out how to teach keyboarding.

Recognizing the need for this significant digital skill, Learning.com’s Adaptive Keyboarding solution has developed a comprehensive curriculum to equip educators with the best possible resources from which to teach.



Over half of the keyboarding instructors at the elementary level are classroom teachers.



Due to resources and budgets many classroom teachers must figure out how to teach keyboarding.

ESTABLISHING BEST PRACTICES

Many school districts and educators can empower their search for the right keyboarding education solution by being more inquisitive about identifying best practices.

Those who are sourcing educational keyboarding options should be asking the important questions listed below to readily identify them.

Does your keyboarding solution:

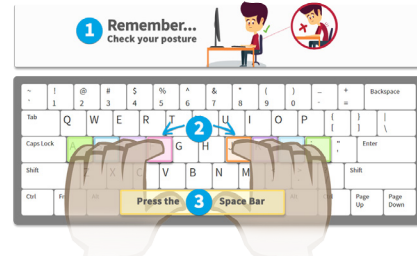
- Focus on developing good technique?
- Present visual cues for proper ergonomics and finger placement?
- Adapt instruction on the basis of evidence, making changes and improvements that yield immediate benefits to student learning?
- Provide keystroke analysis for student strengths and areas of improvement?
- Use evidence of current progress to actively manage and adjust student learning?
- Appeal to the multiple styles of learning?
- Offer a modern, gamified design to make learning fun?
- Promote and maintain disciplined habits for students' logarithmic learning?
- Feature guided practices to watch while students work on their typing?

By taking a look at the answers you give to these questions, your responses can help you ascertain whether the solutions you're analyzing meet key criteria for optimum classroom execution and student/teacher experience.

Technique, Technique, Technique

Since keyboarding is recognized as a motor skill, training student fingers to respond correctly and quickly to press the right key is being regarded more as athletic conditioning, where muscle training uses repetition until habit forms.⁹

A best practice for teaching keyboarding is to focus first on technique, which includes building muscle memory to develop automaticity. Once that foundation is built, then comes working on accuracy, and finally, steadily increasing the students' words per minute. All this learning arrives for students once a solid basis of good typing technique is developed.



In Learning.com's Adaptive Keyboarding solution, students have visual cues for proper ergonomics and finger placement. Guided practices are a new type of curriculum that focus on developing and conditioning skill areas such as home row and upper row that are intended to be guided by someone who can watch what fingers students are using to press keys. These practices also record an accuracy score, which is helpful for both teacher and student.

Assessment for Learning

Formative assessment has been established as useful and valuable practice for students in the classroom. When teachers assess student learning for formative purposes, there is no final mark on the paper and no summative grade in the grade book.

Called assessment for learning, it supports learning in two ways:

1. Teachers adapt instruction on the basis of evidence, making changes and improvements that yield immediate benefits to student learning.
2. Students can use evidence of current progress to actively manage and adjust their own learning.¹⁰

To that point, when students use feedback from their teachers to learn how to self-assess and set goals, they increase ownership of their own success. Teachers and students collaborate in an ongoing process using assessment information to improve, rather than judge, learning. It all hinges on the assessment's ability to provide timely, understandable, and descriptive feedback to teachers and students.



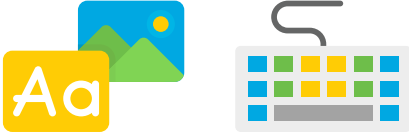






A number of these key components for initiating formative assessment are in Learning.com's Adaptive Keyboarding solution. It offers descriptive information about the student's work, progress, and performance relative to the intended learning goals. It avoids marks or comments that judge the level of achievement or imply that the learning journey is over. This kind of assessment creates a great experience of successful progress tailored to each individual student.

Appealing to Multiple Learning Styles

Educators today understand students possess multiple learning styles. While visual, verbal, and aural learning styles are some traditional methods of classroom learning, the physical, logical, social, and solitary methods are now recognized as important ways students learn, as well.¹¹

Our Adaptive Keyboarding solution appeals to the multiplicity of all seven of the learning styles and to that point, it improves the speed and quality of student learning.¹² Using this solution, students can also personalize their learning experience to best address their individual learning style and as a result, take a more active role.

Learning.com's Adaptive Keyboarding incorporates all seven of the identified learning styles for teaching students how to type:

| | | |
|--|--|--|
|  <p>VISUAL</p> <p>Engaging, age-appropriate backgrounds (tested with students), animated fingers, and color-coded keyboard</p> |  <p>AUDITORY</p> <p>Correct/incorrect cues</p> | |
|  <p>KINETIC</p> <p>Touch typing and animated finger</p> |  <p>SOLITARY</p> <p>Independent practice environment</p> |  <p>SOCIAL</p> <p>Interactive in class application exercises</p> |
|  <p>LOGICAL</p> <p>Use of dashboards</p> |  <p>VERBAL</p> <p>Word banks, with sophisticated algorithms, provide content based on density (finger region or letter)</p> | |

Engaging, Gamified Design

Jacqui Murray has been teaching K-8 technology for 15 years. In her 2015 article on keyboarding success, she notes that 20 percent of a student's typing learning experience should be through gaming, not just drills. According to her findings, "this keeps repetitive drills from getting boring and makes keyboard practice fun."¹³ In line with this innovative thinking, Learning.com added six minutes of game-time earned for every 30 minutes of typing practice in our Adaptive Keyboarding solution.

20%

of a student's typing learning experience should be through gaming, not just drills.

Since the science behind gamification in the classroom demonstrates positive outcomes on student learning, our Adaptive Keyboarding lessons include game-based design elements to improve student engagement, comprehension, and retention, and to help make the content more relevant to them. As they are typing, students move through a series of prescriptive pathways and earn badges as they achieve goals and proficiency levels. Lessons have integrated incentive and reward programs that encourage keyboarding practice and skill improvement through achievement-centric level ups, badges, stars, and earned game-time.

Logarithmic Learning

In his article, *Two Types of Growth*, writer and philosopher Scott Young discusses the theory that learning is not always linear.¹⁴

He examines the idea that logarithmic activities, such as the skill development found in learning to type, require shifting perspective on how we view learning. Young explains how, during the early high-growth phase, when everything comes easily, you must make sure you maintain disciplined habits, or else you will fall backward. Then later, during the slow-growth phase of learning, you must break some of your initial habits, to go from good to great.

In Learning.com's keyboarding curriculum, this logarithmic growth model was utilized in developing our innovative Adaptive Keyboarding solution to set realistic targets in accuracy and speed modeled using logarithmic growth algorithms and based on recommendations for keyboarding evaluated through a variety of district and state expectations.

“During the early high-growth phase, when everything comes easily, you must make sure you maintain disciplined habits, or else you will fall backward.”

Scott Young
Writer

Introducing Adaptive Keyboarding

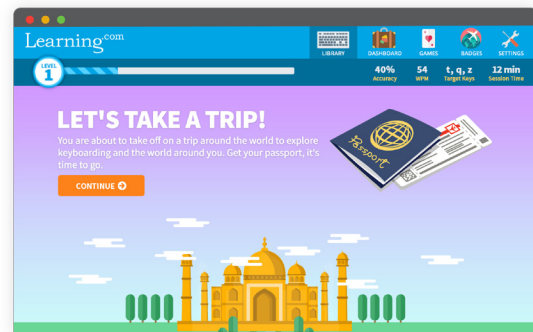
For nearly two decades, Learning.com has provided K-12 solutions to help students, teachers, and schools excel in a digital world. By partnering with districts, Learning.com helps equip students with the technology and 21st century skills, such as keyboarding, needed for success in online assessments, college, and future careers.

While it has been established that students today may be savvy at tapping and swiping, many lack proficiencies in the important skill of keyboarding.

With the most sophisticated adaptive learning engine of any keyboarding product currently available, Learning.com's Adaptive Keyboarding solution addresses this critical issue. It is one of the finest education technology solutions on the market today, and recently won "Tech & Learning" magazine's *ISTE 2017 Best of Show award*. Winners of this distinguished honor were selected by judges evaluating new technology products in areas such as: quality and effectiveness, ease of use, and creative use of solutions to select the technologies that they believe will have the most impact in the classroom and deserve to be named, Best of Show.



Learning.com's Adaptive Keyboarding solution features a modern, gamified user-interface and provides keystroke analysis that generates individualized instruction and identifies keys that pose problems for students. It offers an infinite practice environment that caters to an individual student's needs. It also allows teachers to set target accuracy and word-per-minute (WPM) goals for the entire class or individual students. Beyond games or rote practice drills, Adaptive Keyboarding provides direct instruction on proper keyboarding technique, giving students a solid foundation in this fundamental pillar of digital literacy.



In keeping with the ever-growing importance of students' early keyboarding education, this whitepaper endeavors to guide readers toward understanding the pedagogy and educational models behind the Adaptive Keyboarding program found in our keyboarding curriculum solution. For best preparing districts, schools, and educators as all work toward teaching students how to successfully touch type, Learning.com's Adaptive Keyboarding solution is an invaluable tool and premier educational resource.

Rule of Three

Adaptive Keyboarding's 'Rule of Three' overlap methodology illustrates how a complete keyboarding solution is made in the following combination.

1

Interactive Direct Instruction lessons that cover key recognition for early grades and finger placement and word processing for later grades.

2

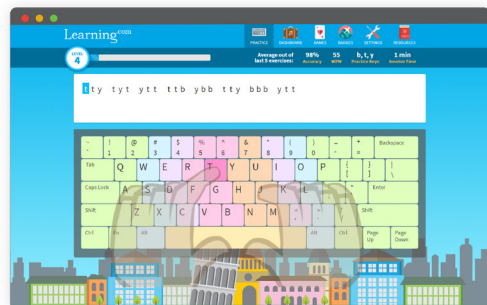
Providing Meaningful Activities to students. Our solution uses grade-appropriate content in the word exercises. We also will support user generated guided practices which allow students to practice activities on the keyboard that may have more relevance to what they are currently learning and/or is more relevant to their specific context.

3

Guided Practice and Application Exercises allow students to focus on correct technique in skill areas like home row, upper row, etc. and apply the learning. And our User Generated Guided Practice allows teachers to reinforce learning by incorporating texts that are relevant and meaningful to the class or individual student in context.

Designed to help students develop accuracy and speed on the keyboard through independent practice, Learning.com's Adaptive Keyboarding component further deepens the learning. Students learn keyboarding through direct instruction; followed by guided practice and application exercises that allow for application of the learning; and then they move into the adaptive, independent practice environment to deepen their personal learning experience.

By combining expert instructional design based on the principles of good pedagogy and Learning.com's own *Science of Learning*; engaging user interfaces; and expertise in leveraging the right technology to implement the appropriate user experience design and instructional design – ensures a successful solution.



Meeting Needs from Administrators to Students

Learning.com identifies with the growing district, teacher, and student needs for classroom keyboarding support and success. The below section outlines the benefits that our Adaptive Keyboarding solution provides to administrators, as well as teachers and students:

Districts & School Administrators *“My district needs to meet achievement goals. We need a keyboarding solution that fits into our learning environment, while still offering individualized instruction. And, I want to be sure I am making a lasting impact on education for students’ future success.”*

- District- and School-level dashboards provide easy to understand snapshots and relevant data reports for detailed analysis.
 - Adaptive capabilities to prescribe instruction based on individual performance and needs.
 - Target goals can be customized to adapt to a district, school, or teacher’s requirements.
 - Lessons can be assigned and taken, and grades can be viewed in the district’s native Learning Management System.
-

Teachers *“My students all learn at different paces. I need a keyboarding solution that can help me evaluate their achievements both as a class and individually. It should fit their unique learning style, pace, and needs.”*

- Teacher dashboards and customization settings allow for teachers to set and evaluate class-level and student-level targets in an easy to implement modern solution that will engage learners of all grades. Dashboard provide quick visuals of proficiencies.
 - Adaptive elements and pathways allow for individualized instruction based on student needs, progress and skill gaps.
 - Fully integrated formative assessments allow teachers to respond to individual needs through appropriate intervention including grades that focus on accuracy instead of WPM
 - Proper ergonomics and finger placement reinforcement cues encourage appropriate keyboarding technique.
-

Students *“I know how to use my iPhone, so why do I need to learn how to type? ”*

- Modern, engaging gamified user interface with versions specifically geared towards early and middle grade learners.
- Adaptive, personalized independent practices appropriately challenge students to help solidify their skills in keyboarding.
- Customizable settings for a variety of learners.
- Student statistics and dashboards allow students to gauge performance against expected targets.
- Integrated incentive and reward programs that foster keyboarding practice, skill, and improvement.

Modern Tools for Modern Learners

While students of all abilities and income levels have access to games, phones, and electronic devices that require them to point and click or to swipe at a screen; educators can take advantage of this pre-emptive knowledge and build upon it with keyboarding.¹⁵ However, the need for modern tools, adaptive learning resources, and individualized teaching materials, coupled with muscle memory training, is integral to guiding new keyboard users' development and growth to its fullest potential.

Adaptive Keyboarding is a modern solution, with a gamified design that is pedagogically appropriate, focusing on accuracy, not speed. Achievement badges are awarded based on practice time, and the application does not allow students to waste precious instructional time on things like customizing personal avatars. Our solution also includes teacher controls, which allows the teacher to set educational goals and time limits to the embedded games.

Educators know first-hand, not all keyboarding students are alike. Taking into consideration that student keyboarders represent diverse ages and developmental skills; myriad hand and finger sizes; and varying styles of learning, the need for an adaptive learning approach to keyboarding has become an intuitive and successful way to implement the individualized instruction of the subject. Moreover, individualized instruction, delivered through new technological media, can be adjusted to individual abilities¹⁶ and move away from age-based achievement and grade level mastery—which can limit over-achieving keyboardists and cause slower learning users to fall behind.

An adaptive learning approach to keyboarding has become an intuitive and successful way to implement the individualized instruction of the subject.

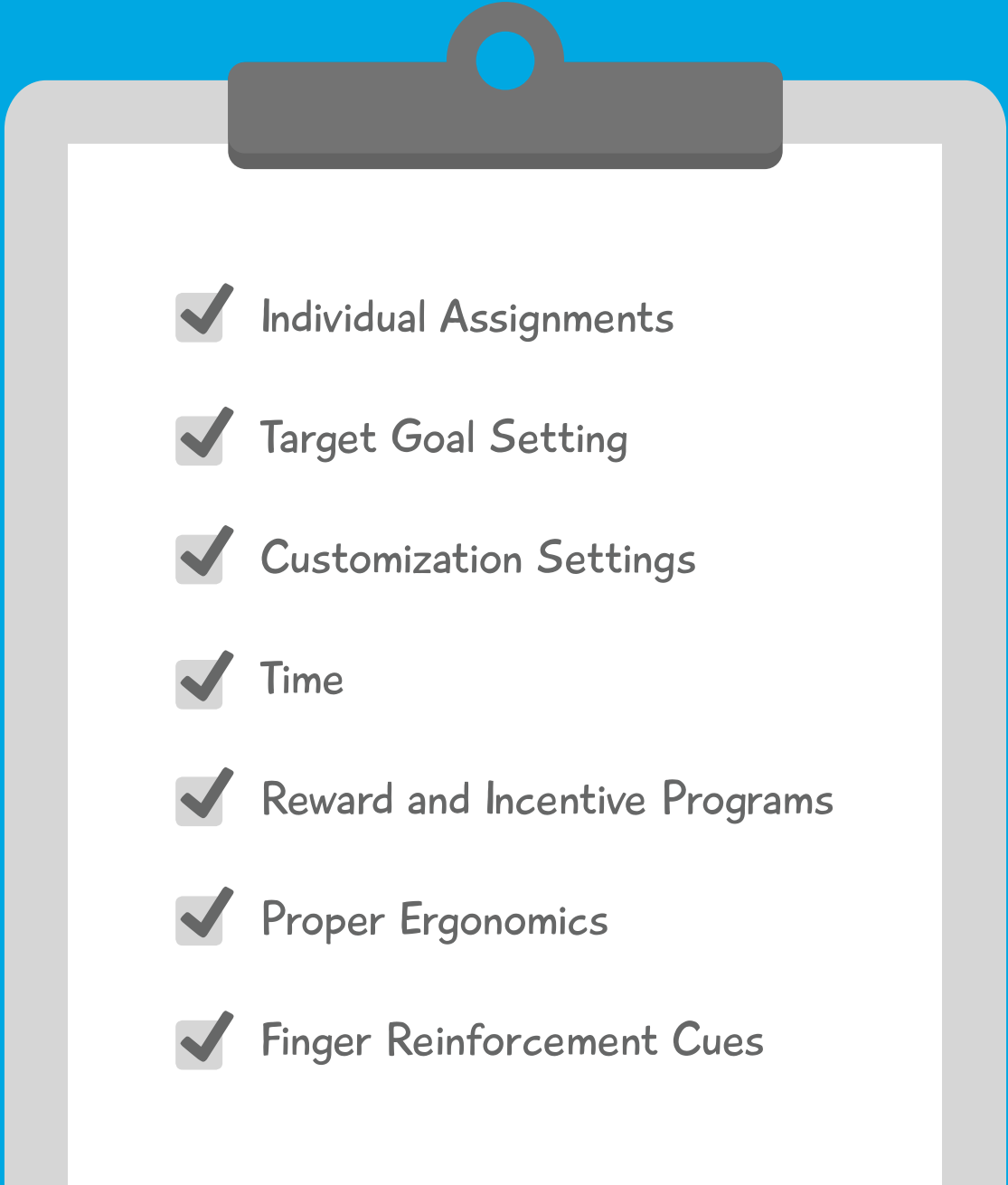
Student Success Beyond the Classroom

The long-term negative effects of not learning to touch type are summed up with concern in an EmergingTech article. Lee writes: “Students need to know how to use the keyboard to write their essays, reports, and papers, whether they’re submitted through the teacher’s home page or printed out to hand in for their grade. Over the course of one school year alone, students can save hours of typing time by learning to touch type. Without these essential keyboarding skills, many students risk falling behind in their classwork, something that will impact their performance throughout their school years and even affect their employability as adults.”¹⁷

“Over the course of one school year alone, students can save hours of typing time by learning to touch type. Without these essential keyboarding skills, many students risk falling behind in their classwork.”

Keyboarding Curriculum Checklist

No matter what solution you choose, here are some key features that should be identified upfront:

- 
- Individual Assignments
 - Target Goal Setting
 - Customization Settings
 - Time
 - Reward and Incentive Programs
 - Proper Ergonomics
 - Finger Reinforcement Cues



About Learning.com

Learning.com is a national leader in providing digital literacy solutions that help prepare students for online assessments, school, college, and their future careers. The company offers a complete digital literacy curriculum for grades K-8 that engages students as they develop critical skills such as keyboarding, business applications, online safety, computational thinking, and coding. Founded in 1999, Learning.com currently partners with one in six U.S. school districts and serves more than four million students each year. Learning.com has received more than 30 industry awards, including ISTE 2017 Best of Show, 2017 Award of Excellence from “Tech & Learning Magazine,” and “The Oregonian’s Top Workplace” for 2017 and 2016.

Works Cited

- ¹ “Elementary students learn keyboard typing ahead of new Common Core tests,” October 2013,
https://www.washingtonpost.com/local/education/elementary-students-learn-keyboard-typing-ahead-of-new-common-core-tests/2013/10/13/d329ba66-3289-11e3-9c68-1cf643210300_story.html?utm_term=.bb6dc7606128
- ² “ISTE Survey Shows Concerns Remain About Student Readiness for Online Testing,” August 2015,
<http://www.learning.com/news/iste-survey-shows-concerns-remain-student-readiness-online-testing>
- ³ “Online Assessment: From Readiness to Opportunity”
<http://cosn.org/sites/default/files/CoSN-online-assessment-optimised.pdf>
- ⁴ “Technology and Young Children -- Ages 3 through 8”
<http://oldweb.naeyc.org/about/positions/PSTECH98.asp>
- ⁵ Zeitz, L. E. (2005).
Keyboarding made simple: Learn the best techniques for keyboarding like a pro. New York, NY: Broadway Books.
- ⁶ “How Should Keyboarding Be Taught in Elementary School?” June 2018,
<https://edtechmagazine.com/k12/article/2014/06/how-should-keyboarding-be-taught-elementary-school>
- ⁷ Rogers, H. (1997).
A longitudinal study of elementary keyboarding computer skills. *Academy of Educational Leadership Journal*, 1(2), 55-57.
- ⁸ “How Should Keyboarding Be Taught in Elementary School?” June 2018,
<https://edtechmagazine.com/k12/article/2014/06/how-should-keyboarding-be-taught-elementary-school>
- ⁹ “Teaching Keyboarding: More Than Just Typing,” November 2017
http://www.educationworld.com/a_tech/tech/tech072.shtml
- ¹⁰ “The Best Value in Formative Assessment,” January 2008,
<http://www.ascd.org/publications/educational-leadership/dec07/vol65/num04/The-Best-Value-in-Formative-Assessment.aspx>
- ¹¹ “The 7 Different Types of Learning Styles”
<http://www.educationdegree.com/articles/different-types-of-learning-styles>
- ¹² “Overview of Learning Styles,”
<https://www.learning-styles-online.com/overview/>
- ¹³ “Technology in the Classroom: Keyboarding 101,”
<http://www.teachhub.com/technology-classroom-keyboarding-101>
- ¹⁴ “Two Types of Growth,” February 2013,
<https://www.scotthyoung.com/blog/2013/02/05/two-types-of-growth/>
- ¹⁵ “Technology and Young Children -- Ages 3 through 8”
<http://oldweb.naeyc.org/about/positions/PSTECH98.asp>
- ¹⁶ Jukes, I., McCain, T., & Crockett, L. (2010).
Education and the role of the educator in the future. *Phi Delta Kappan*, 92(4), 15-21.
- ¹⁷ “The Importance of Teaching ‘Traditional’ Typing Skills in 2015,” February 2015,
<http://www.emergingedtech.com/2015/02/teaching-traditional-typing-skills/>