

Problems of Computer Keyboarding in an EFL Context

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Computer skills have become a necessary prerequisite for functioning in a modern, computerized society. Not only have computers become a ubiquitous tool in academia and the workplace, but computer use is also an important part of the portfolio of skills that the future workforce should possess in technology-rich environments (OECD, 2013). Individuals who fail to develop these skills may face significant disadvantages such as an inability to effectively access and use computer technology in today's increasingly interconnected world. As educators, we wish to prepare our students for the modern workplace and provide them with the tools they need to succeed in their ongoing educational and career aspirations, such as an ability to do computer-based work in English. However, using a computer keyboard has its own set of inherent difficulties that students must grapple with in order to complete their work successfully.

Japan routinely ranks high in international measures of technological literacy (OECD, 2013), but Japanese university students nonetheless enter their studies with low keyboarding abilities (Johnson & Brine, 2000; McDonald & Foss, 2007). Although most Japanese grow up in a technologically rich environment and are adept at using portable phone-based applications for purposes ranging from social networking to email, these skills may not necessarily be transferrable to keyboard use in an academic context (Lockley & Promnitz-Hayashi, 2012). This may be due to the fact that portable devices frequently employ numeric pads or thumb-operated virtual keyboards rather than full-sized keyboards for

two-handed typing.

The literature on the topic of second language (L2) computer keyboarding is limited. Although there is a significant body of work done on the use of computer keyboards in the context of first language (L1) instruction, issues surrounding the issue of keyboard use in L2 contexts are often anecdotal, with little in-depth study (McDonald & Foss, 2007). While Lee (2002) and Wolfe and Manalo (2004) have noted that typing can be described as a source of problems in L2 writing output, such statements are accompanied by limited elaboration. Other authors credit improvement in L2 typing performance by exposing students to practice but lack evidence to support the claim (Johnson & Brine, 2000). Additionally, the problems in L2 keyboarding have been noted but remarked upon incidentally (Shin, 2006) because the topic is beyond the focus of the paper. A few studies treat keyboarding as a form of input and measure its effects upon L2 learner memory instead of focusing on keyboarding as a form of output (Gascoigne, 2006; Sturm, 2006). As a result, much of the existing studies on the topic are not conducive to answering the question of how L2 learners can become better typists.

The only two studies the author could find which explicitly address the impact of typing instruction on student output in a university-level L2 context were conducted by McDonald and Foss (2007, 2009). McDonald and Foss (2007) noted that exposure to regular typing instruction, such as dedicating class time to the use of online typing activities and games, did result in a slight improvement of student typing speed and “considerable” improvements in typing accuracy over the course of a semester. However, the authors were unable to draw conclusions about the most effective ways of improving typing skills or whether the investment in class time was worthwhile. In a follow-up study, the authors (McDonald & Foss, 2009) examined L2 student typing speed and accuracy to gauge the effectiveness of typing instruction. They found that although improvements in typing were notable in all observed groups, the differences between highly-practiced groups and control groups without typing practice were statistically insignificant. This suggests that students’ typing speed and accuracy improve even without paying direct attention to typing instruction

in class. The authors concluded that more research is needed to enhance understanding of the most effective ways of improving L2 learners' typing skills.

Background

My students are enrolled in a skills-based, study abroad preparatory program at a small private university. These first- and second-year undergraduate students take English for Academic Purposes (EAP) for three semesters with the intent of attending universities in the United States or Canada. This program places a heavy emphasis on essay writing and TOEFL iBT preparation because these are necessary prerequisites for entering and meeting course expectations in American and Canadian universities. Writing homework is given on a regular, frequent basis, and assignments range from short paragraphs to essays; all homework is to be typed. As a result, the use of computers is mandated for students to successfully complete much of the course material that they encounter and necessitates the development of basic keyboarding skills. Basic keyboarding skills are defined in this paper as the ability to type at a relatively high speed (above 35 words per minute) and with high accuracy in concert with correcting, deleting and navigating through a text.

From observations made over the last few years, it has become evident to me that keyboarding skills, especially in terms of speed and accuracy, were lacking among many of my students, and this had a negative impact on their production of written work. For example, some students stated that typing their homework was difficult and time-consuming. Additionally, some students complained that they were unable to finish their essays in the allotted time during iBT practices. Indeed, using a keyboard on the iBT is significant enough of an issue that Educational Testing Service (2014), the company that produces the iBT, recommends that test-takers practice typing prior to taking the test in order to familiarize themselves with the keys and keyboard layout.

As an English teacher who wishes to successfully integrate technology into the classroom, questions emerged concerning university students and their computer use. What are the problems inherent in keyboarding for EFL learners? How do these problems complicate students' completion of assignments and

their acquisition of skills in written English? What are the best ways to help students develop a well-formed typing ability?

Problems

In addition to the many problems and difficulties involved in learning to write in a foreign language, my students' challenges were complicated by the requirement of using a keyboard, a computer input device which is both non-intuitive and uncomfortable. In their previous educational experiences from elementary school to high school, computer use was not emphasized in the curriculum despite being a stated policy of the Ministry of Education, Culture, Sports, Science and Technology (McDonald & Foss, 2007). Although many Japanese students are familiar with the layout of a standard QWERTY keyboard for Japanese-language applications, they may be less familiar with typing in English because the input processes are different (Houser & Thornton, 2004). Many students therefore arrive ill-prepared for keyboard use at the university level.

The QWERTY keyboard is the default standard keyboard device for computers. Despite being the most widespread keyboard format, there are a number of problems inherent in the QWERTY keyboard that can create difficulty and discomfort for users. For example, when using it, a user's left hand types more frequently than the right hand despite the fact that over 70% of users are right-handed (Cassingham, 1986). Thousands of common key combinations can be typed by the left hand while only several hundred can be typed with the right hand. Right-handed keyboard users therefore have greater demands placed upon their left hands.

Many of the most common letter keys on the QWERTY keyboard are inconveniently located for fast and easy typing. About 16% of typing is done in the lower row while 52% is done in the top row. This means that only 32% of typing is done in the center row, or "home" row, which is the row of keys best-situated for users' fingers to reach the most easily (Cassingham, 1986). These design issues mean that the QWERTY keyboard is not optimized for comfortable or fast typing.

Using a keyboard may also place additional cognitive demands upon learners

of English because it requires them to engage in multiple, near-simultaneous tasks. For example, Cohen and Wickland (as cited in Sturm, 2006) found that typing involves several component abilities which must work in concert: the parsing of words into letters, the conversion of letters into finger movement specifications, and the integrated execution of specified movements. Wolfe and Manalo (2004) have hypothesized that typing on a computer requires L2 students to form their writing cognitively in their first language while using keyboard strokes to access the computer. As a result, students must translate their thoughts into English and translate the English into keystrokes. This “double translation” effect increases the cognitive load that the writer must bear. This could interfere with the writing output and generate errors; however, more research needs to be conducted to test this hypothesis.

A lack of keyboarding skills impedes students in their work because it can turn even a relatively small writing assignment into an arduous and time-consuming ordeal. For example, extra time and energy are needed to hunt for the right keys. Fumbling with keys can generate spelling and punctuation errors. Extra time and energy are needed to find and correct typing mistakes. Poor keyboarding skills therefore affects students’ ability to complete course-related tasks, projects and assignments (Johnson & Brine, 2000; McDonald & Foss, 2007) and may further limit the ability of students to participate in computer-mediated communications (CMC) activities, such as live online chats (Shin, 2006).

Developing keyboard proficiency takes time and practice, though exactly what kinds of practice are most efficacious is not clear (McDonald & Foss, 2009). Requiring lengthy writing homework to be typed by students who do not have the benefit of sufficient practice is to demand work which may be difficult beyond the curricular requirements of the assignment itself. Such homework is asking students to use an input device that can be inherently difficult and frustrating to relative newcomers. English teachers, who have acquired good typing skills over many years of practice, should become more conscious of the ability of their students to complete their written homework assignments on a computer.

There is little doubt that students should be exposed to frequent opportunities for keyboard use (McDonald & Foss, 2009). Grabowski (2008) observes that there may be multiple ways of developing keyboard proficiency which may or may not include explicit typing instruction since users may intuit keyboarding strategies on their own. In my own writing classes, free online typing exercises and online typing games are introduced early in each semester (Table 1); students are strongly advised to use these software-based keyboarding exercises on a regular, independent basis for practice. Furthermore, throughout the semester, students are required to type all of their English homework assignments because this provides them with consistent opportunities to use the keyboard. Finally, regular iBT writing practices are conducted in the computer lab throughout the semester. These practices are timed and organized to simulate actual iBT test-taking conditions. By teaching with these kinds of activities over three semesters of writing classes, students can receive multiple avenues to practice keyboarding and develop improved keyboarding abilities for different computer-based tasks.

Table 1
Online Keyboarding Resources

PowerTyping http://www.powertyping.com	Free typing lessons focusing on key-combinations for QWERTY and Dvorak keyboards. Includes several keyboarding games.
TypingWeb http://www.typingweb.com	Free typing lessons and tutorials with different levels of difficulty ranging from beginner to advanced. Includes a teacher portal, keyboarding games and keyboarding tests.
Gamequarium http://www.gamequarium.com/keyboarding.htm	Free keyboarding games and keyboarding courses to increase typing speed.
FreeTypingGame.Net http://www.freetypinggame.net	Free keyboarding games, lessons and tests. The keyboarding lessons focus on two keys at a time to reach customizable words-per-minute goals.

Keyboarding is an important skill for English language learners to develop. Nonetheless, the difficulties of using the QWERTY keyboard have multiple sources, and the demands of typing may generate frustration among many learners of English. These problems can compound the normal difficulties that arise when learning to write in a foreign language; they may also affect students' abilities and attitudes towards their work. Just as I did not initially realize the kinds of problems that my students were experiencing in the course of their computer use, other teachers may be similarly unaware. Because keyboarding skills take time and practice to develop, teachers should take this into consideration when designing student assignments which require keyboard proficiency. Teachers need to be aware that the act of typing in English may be more challenging for some students. Further research is needed in determining which methods are most effective towards developing well-formed typing abilities among English language learners.

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Author's bio

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