



RESEARCH BRIEF

Name	Oscar Vian L. Valles
Student ID number	2018-06491
Project Title	Development of a touch typing trainer with an emphasis on finger and wrist positions
Project No.	9
Name of Supervisor	Dhong Fhel K. Gom-os

Contents

1.1	Background of the Study	1
1.2	Significance of the Research	1
	References	3

1.1 Background of the Study

There are a lot of educational typing tests available that help people learn touch typing, including Monkeytype, TypeRacer, or Keybr. These typing tests list out words that are then typed out. The inputted keys are then compared to check if the user has typed the expected letter. At the end of the test, the time taken is calculated and certain metrics is given. These metrics include words per minute (WPM) and accuracy (Bartnik, 2021).

However, this method of examination leaves out a crucial part of typing — ergonomics. Ergonomic typing prevents a lot health issues in the future like repetitive strain injury or carpal tunnel. One important factor that affects ergonomics is the typing procedure and posture. This means proper placement of the wrist, hands, and hitting the keys using the right finger that is assigned to the key.

Correct finger placement is usually taught at the beginning using a diagram, with each key being associated with a specific finger. For instance, the letter Q in a QWERTY layout should be hit using the fifth digit of the left hand, and this is shown by coloring the fifth digit and the key Q with the same color or by placing the letters directly on the fingers (Dobson, 2009).

Incorrect finger placement may cause these hand and wrist positions: ulnar deviation, forearm pronation, and wrist extension (Serina et al., 1999). These three are hand and wrist positions that are common in all activities, however, prolonged periods in these positions may cause cause injuries such as Capal tunnel syndrome (CTS) (Toosi et al., 2015)

In addition, this type of typing is frequently taught in beginner level (Donica et al., 2018).

There is currently no way to automatically detect which finger is used during typing. No hardware or software solutions currently exist in the market. This research aims to solve this by combine finger tracking, with educational typing tests to determine which finger pressed the key and if that finger is the correct one to use.

1.2 Significance of the Research

This research is beneficial for all users of physical keyboards. These include a vast majority of the population as there are a lot of professions that heavily rely on keyboards. Examples include developers, physicians, educators, accountants.

This research has a direct impact on people that has onset RSI or other hand/wrist injuries [statistics] that are caused by poor typing habits. By correcting these poor habits, pain from these injuries will be lessened, and even be prevented from occurring in the first place.

References

- Bartnik, J. (2021). <https://monkeytype.com/about>
- Dobson, A. (2009). *Touch typing in ten hours*. Hachette UK.
- Donica, D. K., Giroux, P., & Faust, A. (2018). Keyboarding instruction: Comparison of techniques for improved keyboarding skills in elementary students. *Journal of Occupational Therapy, Schools, amp; Early Intervention*, 11(4), 396–410. <https://doi.org/10.1080/19411243.2018.1512067>
- Serina, E. R., Tal, R., & Rempel, D. (1999). Wrist and forearm postures and motions during typing. *Ergonomics*, 42(7), 938–951. <https://doi.org/10.1080/001401399185225>
- Toosi, K. K., Hogaboom, N. S., Oyster, M. L., & Boninger, M. L. (2015). Computer keyboarding biomechanics and acute changes in median nerve indicative of carpal tunnel syndrome. *Clinical Biomechanics*, 30(6), 546–550. <https://doi.org/10.1016/j.clinbiomech.2015.04.008>