African Languages: Assessing the text input difficulty

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Text input

Basically I mean typing!

• Is not orthography

• Is complex

• Happens in a variety of environments - various combinations of devices and sociolinguistic and socio-technological settings.
Typing happens in different places

With different tools.

Multi Finger Keyboard

Single Character Key
Single Finger Keyboard  Multi Character Keyboard
Text input

- And then we want the text to look like different things...
Sample Ezaa Text

Ẹkwo-ozhi-a bẹ shi l'ẹka mbẹdua, bẹ Jémusu bẹ onye ozhi Chileke, bẹru onye ozhi Onye-Nwe-Ọha bẹ Jisọsu Kuráyisutu. Ndu mu l'ede iya anụ bụ ikfu iri l'ọbo ono, bụ ndu nke Kuráyisutu, dzuru mboko. Ekele mu unu-o. Ọnwunna mu, nteke iwhe adata byakfutaru unu; g'ọ dụlee, unu wojeru iya l'ọo iwhe ọsọa byarụ unu. Unu makwarụ-a l'ọo nteke l'aadata unu nke ekwekwe, unu kweru bẹ unu l'e-shi nwụta ọtaru iwhe nshi. 4 Unu talékwaawho nshi tafụ iya l'ishi ngge unu dụkota ree, dzukwaawho oke; t'ọ bọ dụ iwhe l'a-whọdu l'ẹhu unu.

[Ẹkwo-Ozhi, JÉMUSU Deru 1: 1-4]
Sample Bekwarra Text

Ami Ijems ng'm sha okulo ka Atabuchi ahe n'Ukaani iten Ijisos Kraist, m k'ung n'amin woo b'e yi eni Atabuchi b'e ka paa ye mia iye angin woo. Ebwiya, k'guyang ng'iyem atitye-atitye a shi n'amin ng'i kan achi-anaani inen na ngin, amin è chi r'irinen k'irityem, k'uchcheche dee amin e nyie dee, k'guyang ng'iyem abin a tyung dee achi-anaani inen i yi ang'áchíchī nga, i sha irityem inen k'i bya ha. Amin è ye k'úchú bi irityem he, k'amin è chi r'iyem woo ab'e sha uni k'i giri, k'amin è waa abo chaa iyem achaani fo re.

[Ileta Ang'ijems a Fuol:2-4]
So our fingers dance different dances

Ezaa
Sample Text
So our fingers dance different dances

Ezaa
Sample Text

Full Text
But dancing is work... right?
But dancing is work... right?

Bekwarra
Sample Text

Hit load, hand balancing, and finger balancing

Full Text

Saturday, March 28, 2015
And we hope to do different things by using text...

Filling various social communicative functions
Assumptions about success

- allow the digital text input of an orthography
- allow typing a text without fatigue
- maximize typing speed
- reduce the number of typing errors
- allow rapid mastery of the touch typing method
What to compare

Six criteria

• tapping load distribution
• number of keystrokes
• hand alternation
• finger alternation
• finger posture
• hit direction (little finger to thumb)

Keyboarding Typology

• Single Character Key example - QWERTY
• Single finger keyboard
• Multiple Character Keyboard - T9 phone
• Multiple finger Keyboard
What else is helpful to compare?

- Perceptual distance
- Measuring dissonance
# Finger load

<table>
<thead>
<tr>
<th>Finger</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10 Total Keystrokes</th>
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<tbody>
<tr>
<td>ENG finger</td>
<td>1,18</td>
<td>1,017</td>
<td>1,895</td>
<td>2,316</td>
<td>2,530</td>
<td>0</td>
<td>2,351</td>
<td>845</td>
<td>1,619</td>
<td>292</td>
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<tr>
<td>ENG finger load</td>
<td>8.42</td>
<td>7.24%</td>
<td>13.49%</td>
<td>16.49%</td>
<td>18.01%</td>
<td>0%</td>
<td>16.74%</td>
<td>6.02%</td>
<td>11.52%</td>
<td>2.08%</td>
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<tr>
<td>EZA finger</td>
<td>1,31</td>
<td>1,268</td>
<td>2,124</td>
<td>1,442</td>
<td>3,011</td>
<td>0</td>
<td>3,710</td>
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<tr>
<td>EZA finger load</td>
<td>6.58</td>
<td>6.34%</td>
<td>10.63%</td>
<td>7.21%</td>
<td>15.06%</td>
<td>0%</td>
<td>18.56%</td>
<td>8.15%</td>
<td>9.66%</td>
<td>17.80%</td>
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<td>BKV finger</td>
<td>2222</td>
<td>300</td>
<td>1822</td>
<td>1968</td>
<td>3641</td>
<td>0</td>
<td>4280</td>
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<td>BKV finger load</td>
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<td>1.50%</td>
<td>9.13%</td>
<td>9.86%</td>
<td>18.24%</td>
<td>0%</td>
<td>21.44%</td>
<td>14.45%</td>
<td>2.52%</td>
<td>11.73%</td>
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</tbody>
</table>
Conceptualizing the problem space

• Distance - Time equation
  - The shortest distance between two points is a straight line.
Some socio-technical implications

- Our devices help us to make choices about language use.
- These choices have long reaching impacts for language vitality.