

Summary: notes on keyboard mockups

On keyboard in general:

- xLANDSCAPE and noxLANDSCAPE, one user thought that the compact keyboards did not make much sense because they only partially obscure the screen.
- xLONG and noxLONG, one user thought that these were better in comparison to compact keyboards (e.g. xLANDSCAPE)
- Because of the square-like shape of numpads, one participant suggested that we keep the numpad for landscape view but switch to a regular-like (xPORTRAIT or noxPORTRAIT) version of the keyboard for portrait view
- In landscape view, while using the compact (noxLANDSCAPE), a participant stated that he thought the 'x variable' button looked like a multiplication 'x' operator. NOTE: To my knowledge, the tutors do not use 'x' as a multiplication operator. There are only parentheses. - The 'x' variable on first glance by the same participant looked like a division symbol. NOTE: We should keep the specific font of the keyboard in mind as to be sure symbols/operators are distinct.

On the x variable:

- At first glance, the 'x' variable button could be confused for a traditional division symbol '÷'.

On Enter check:

- Some participants thought that the explicit 'Enter' button that corresponds to the enter symbol on a regular keyboard could be redundant. Some thought that tapping out of the area of the keyboard would be sufficient to zoom out so that they would be able to move to the next problem. One participant was not interested in the 'Enter' button at all but preferred simply to tap the next available field when she was done.

On exit of the keyboard:

- Most participants remarked that if a keyboard comes into view, then there must be an obvious way to close it -- usually their natural reaction was to touch outside of the keyboard. - One participant noted that the explicit exit on the keyboard made sense because it was not obvious otherwise how to exit the keyboard without trial and error tapping.
- xPORTRAIT, participants thought the top left exit symbol was not very necessary. It was remarked that the exit symbol was not extraneous or hindered.
- ZoomBrow, one participant said that he might hit the x to get out but that it was more natural to exit by tapping out
- Numpads, one participant did not even consider the fact that the numpad had the exit feature

Zooming:

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- ZoomBrow, participants overwhelmingly thought the mockup zoom was too close. They need to at least to see both sides of the equation as well as both sides of the previous step for context.
- Participants said they were OK with having to zoom completely out of textfields to view a hint and coming back
- xPORTRAIT and noxPORTRAIT - NOTE: The current HTML5 tutor interface does not zoom when the Android keyboard is activated. Participants suggested that text fields in portrait view should have zoom just like in landscape view.

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Drag & Drop/ Sliding Keyboard:

Though participants thought that a sliding or drag and drop compact keyboard or numpad made sense, it still was not very usable if it obscured any of the input field. The entire input field would need to be visible at any time the user was inputting data.

- Numpads, it feels like the focus is on input not solving the problem when you have to worry about shifting the numpad around to see

- It is possible that with much less powerful zoom to textfields, drag and drop/sliding would be OK or helpful

Size/position of the buttons:

- NUMTOP, one participant remarked that 'Enter' should be where the 'backspace' is because that is similar to a regular number pad. He also remarked has some positive features: less screen space, and its shape is closer to a square - perhaps more ergonomic. Participants are generally faster with numpads in comparison to compact keyboards (xLANDSCAPE and noxLANDSCAPE)

- NUMBOT, had contradicting reactions- one participant strongly received the placement and organization of the keys, he remarked that operators were clearly compartmentalized and that the layout of the keys was similar to an actual number pad. Another participant thought that it did not matter that the numbers on NUMBOT were at the bottom versus the top. She thought that the division of the operators was unclear or **cumbersome...**

- PORTRAITS, 'Enter' was remarked as awkwardly placed, hints that it may not be necessary

- Some participants noted that the backspace was too large on all keyboards

- LONGS, they spacing of the keys is generally positively received but some participants did not the gaps between characters due to its length. They had to be more willful in their search of keys. One participant thought that the explicit exit symbol on the long keyboards were not necessary as such a symbol is not conventional with full width keyboards.

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Function of arrow keys

- Contradicting views, one participant thought that the arrow keys corresponded to moving between the previous text input field and next. If we decide to keep the arrow keys, perhaps change the graphic to include a stem like on a real keyboard.
- Another participant thought that the arrow keys were more obvious and that she would use them for their intended purpose, which is to shift the blinking cursor between inputted characters. Yet, another user thought that the arrows were unnecessary.