

Design Concept

The focus or learning topic of our project is to aid individuals in learning how to type. Typing is essential as technology grows. Schools and work use computers to get tasks done and it is essential that students are taught how to be very efficient at typing. Especially when it comes to things like coding or writing papers, this skill is important. As we researched, we discovered some students struggle with learning different symbols on the keyboard. We want to create a tangible interface that can help people understand the different letters and symbols while aiding them in achieving a way to type faster. We want the target audience to learn the layout of the keyboard with not only just the letter but all the symbols and special characters too. We want to help the target audience to learn symbols on the keyboard and how to type.

When it comes to narrowing our choice of design we are leaning more towards the design to make a full keyboard using the 3D printer and Laser cutter with the keys being separate pieces. We would laser cut or 3D print the keys separately. With the keys that have multiple symbols, we would make those like 2 small keys that would be put together like a puzzle piece to make it where the target audience would have to learn what symbols go with which ones as well as where the combos would need to go on the keyboard. We are still deciding whether or not we want to have the keyboard case look like what keyboards normally look like or if we want to have a simple flat board that doesn't look like a keyboard too much but still allows the users to place the keys down like planned. When the key is placed into the keyboard then on the screen it will light up either red or green to indicate if the user is correct in the placement or not. It could also be used where the keyboard has all of the keys in the board but is randomly mixed up and the user has to go through and fix the location of the keys and which symbols share a key. This design seems to be the most reasonable to make because it helps the students in memorizing the keys. Based on the feedback that we received, we thought about making the keyboard fully functional once the keys were all placed in their respective places. We also thought about how we can implement other layouts of a keyboard using the Dvorak keyboard layout to teach other layouts to students and add variety. With the Dvorak keyboard, it was designed for speed typing and the middle row of keys includes the most common letters. We also got feedback on how we can expand on our idea to go further in teaching different topics that we can use with the help of the keyboard, rather than just teach students how to type.

Design Precedents

ACTIVITIES:

- URL of the source: https://www.abcya.com/games/keyboard_challenge

One design precedent activity is the Keyboard Challenge. This is an interactive game where users have to put together different keys on a keyboard. It is like a puzzle, which is relevant to our idea as our keyboard will need to be created by putting different keys together. It helps make things more interactive and helps users memorize where keys should be placed as they have to physically place it in our design instead of dragging and dropping it like the online activity.

Our design concept will differ from the Keyboard Challenge because our interface includes more tangibility which will then involve more muscle memory as users have to physically move the keys. This is efficient to teach users where the keys should be. Also, the

online interaction like mentioned uses drag and drop which is different than ours. Our model will also indicate to the user if they placed the key in the right spot through the screen as it will turn green for the correct placement or red for the incorrect placement. It also differs because after the user completes and places all of the correct keys, then they will be able to use the keyboard as they please and it would be fully functional.

- URL of source: <https://www.teachhub.com/technology-classroom-make-keyboarding-fun>)

Another example of an activity is students are given quizzes where they are given a page example which they then need to type up. The students are timed during these quizzes so they build up efficiency while typing. Quizzes are also given for key placement. This activity is relevant to our design idea as we want to help people learn key placement as well.

Our design differs from this activity as it is more interactive. We use physical pieces rather than this activity which uses a paper keyboard. The users have to physically move the pieces and place it on the keyboard and then a red or green light indicates if they are right or wrong.

- No URL as it is from our domain expert

One example of a design precedent mentioned by our expert domain is that the students would be given a simplified paper layout of the keyboard that the students would fill in the keys and certain areas would be certain colors to help the kids learn the groups of keys better. This helps them visualize the keys in their head and then they are tested on what they know through the paper layout. This activity is relevant to our design as we are trying to make the users learn through “filling” the keys and we use colors.

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TANGIBLE INTERACTIONS:

- URL of the source: <https://www.instructables.com/id/Keyboard-Puzzle/>

Another design precedent is the Keyboard Puzzle. Learners first design the layout of the keyboard. Then using a laser cutter, they can create the puzzle. The third step is removing keys from an old keyboard which then can help the users learn placements. It is relevant to our design concept because we have a similar idea to create a puzzle-like keyboard.

Our design concept will differ because we will indicate if the user places the keys in the correct spot. Also, the user will already have the key pieces and a keyboard layout, whereas this activity requires the user to go through all steps of even creating a keyboard.

- URL of the source: <https://www.edutyping.com/>

Another precedent is EduType. This is a program that many schools and school systems use to help teach their students how to type as well as help them type proficiently. It not only helps the students learn the keyboard but also helps them learn how to type the correct way and more efficiently.

Initial Exploration of Technologies / System Architecture

- We will be looking more into the technology of the Dvorak keyboard and seeing how we can teach different styles to keyboard

- We will explore more in seeing how we can use the makekey makekey to identify if the correct key place is correct or incorrect as this technology will help us make the interface more interactive
- Another approach to completing the implementation would be for us to get a small magnet to put on the keys and board to attach. This would be beneficial for the puzzle aspect
- Another approach would be for us to use Arduino because that has sensors that would allow us to have the keys and the open space have sensors that could sense when the correct key is placed
- The printed pieces would have to be best made possibly by laser cutting because that way we can just cut the keys into their respective sizes, which limit how much 3D printing would be required
- The keyboard box would best need to be 3D printed because that would allow for the appropriate slots to be made into it and it can be a good enough size where numerous pieces can be placed into it and it can be easily transportable

These are important to our design because it allows us to actually make our design a realistic thing and we can get it done in the time allotted before the semester is over. The best idea so far that we are thinking about doing is using the makekey makekey because that we can press on the best to signify if it is the correct key.