USE CASE 16

Smart Home

Age & Level

Kim, Finland
Student
14 years old

Kim is 14 years old boy from Helsinki. He is good with computers and knows some basic programming. However, the school he goes to does not have much for him do with computers.

Primary Actor and Main Goal

He has learned how to use graphical programming, but he feels limited by it and has a hard applying it in real-life situations. He wants to do more practical fun things, like hacking household appliances or building robots.

Topic and Content

The teacher wants the students to gain some insights into new technologies and has asked the students to pick a technology of their choice and make something with it. For example something that uses or inspired by any of the following technologies: IoT, Speech Recognition, Artificial Intelligence etc.

The teacher has access to many electronic components, but has not mastered programming well. Therefore, it will be up to his students to learn more advanced programming on their own.

Description of Environment and Possible Pre-conditions

The students are working alone, building their projects and are told to document their progress weekly. Kims father has a device that can control the lights in their home using voice commands. Kim likes this and would like to build something similar.

Preparatory Work

The student has access to the eCraft2learn platform, which has good tools for documentation, examples on how to use graphical programming, and tools to combine graphical programming with Arduino Boards. One of the last mentioned tools is a AI block for Snap that can recognize words.

Description of Activity

Kim tests his father's speech recognition device and wants to make something like that. He starts with adding servos on top of some light switches, making code that will switch them on and off. He tries to figure out how a speech recognition device works. It is too difficult, but the AI block in the eCraft2learn platform is manageable for Kim.

Kim has problems getting the AI block to recognize whole phrases and ends up compromising and uses one-word commands.

Other Stakeholders and Their Possible Interests

The end of the term is approaching and Kim seems to have spent a lot of much time investigating his father's speech recognition device and not enough time working on his project. The teacher is worried that Kim will not finish his project in time for the presentation and asks if he needs support.

Success and Conditions

Kim spends most of his time testing and trying to understand how the speech recognition device works, this results in his project coming out as a rough but functioning draft. It functions thanks to the AI block and manages turn on different lights using the servos. Kim has shown that he understands the technology well for his age and that he would be capable to advance his project further if he had more time.

Failure and Conditions

Kim managed to investigate and find out more about that technology he picked, but he had clear problems with finding his work-method. If Kim would have had access to a good source of info about speech recognition devices, where he would be able to build a speech recognition device himself would have been really helpful for Kim.

Barriers/Facilitators

This is what both, Kim and his teacher figured out when discussion about Kim's work.

The teacher understood that the students need some guidance (some more than others) and that asking for help once a student is stuck is for some students tricky. While others managed well to find solutions to their identified problems, Kim was too much observed by identifying the problem and finding a suitable solution for it. Thus, the importance of guiding and coaching is essential.

He also realizes that the topic was too broad set. Although it would have limited the creation of the students, a limitation would have allowed the teacher to prepare some more material that would have been supportive for the children.