
Task Performance

Human Factors in HCI

Technological Developments

WINDOWS MIXED REALITY HEADSET



Features of Windows Mixed Reality Headset

- **Lightweight** – it is comfortable to wear because it is not heavy.
- **Easy setup** – this headset offers the quickest, easiest set-up available; you're good to go in 10 minutes or less.
- **Greater Interaction** – for greater flexibility and freedom, Windows Mixed Reality Headset gives users the ability to interact directly with their environment.
- **Tools for traveling through your new reality** – effortless journey through virtual worlds as your headset responds to the movement of the motion controllers.

Mixed reality (MR) is the merging of real and virtual worlds to produce new environments and visualizations, where physical and digital objects co-exist and interact in real time. Mixed Reality occurs when you blend the physical and virtual worlds to create something extraordinary, made possible by the combination of several technologies including sensors, advanced optics and next-generation computing power. The connection it has with HCI

principles is that it satisfies the Natural Interaction and Interface. With this technology, the users can perform their cognitive and ergonomics capability.

The reason I chose this particular technology development is because this technology can be really useful for students like me, and also for the teachers. Using mixed reality devices, students and teachers can go back and forward in time, visit difficult to reach places, explore the human body or build an engine, and much more. Mixed Reality can be used to teach any topic, because it is easier to understand concepts when you can interact with them instead of having them explained. This interactive interface of a Mixed Reality Headset maximizes human performance and potentials.

Reference:

<https://www.acer.com/ac/en/US/content/series-features/wmr>

[https://static.acer.com/up/Resource/Acer/Professional/Education/Minisite/Brochure/20190121/Acer for Education 2019.pdf](https://static.acer.com/up/Resource/Acer/Professional/Education/Minisite/Brochure/20190121/Acer%20for%20Education%202019.pdf)

SMART SPEAKER



Features of a Smart Speaker

- **Voice command** – this smart speaker lets you control the device using voice command.
- **Smart home control** – as long as your smart home devices support smart speakers, and many of them do, you can control your home using your voice. Examples include turning on your lightbulbs, your television, and even locking your digital doors.
- **Free calls and ‘Drop Ins’** – you can make free and hands-free phone calls to friends, family and businesses using just your voice.
- **Set a timer** - you can use it as an alarm to set a wake-up time every day and use it as an oven timer to help you in the kitchen.
- **Learn your history** - if you ask your smart speaker what happened today in history, it will tell you a major historical event that happened on today’s date.

The second technology development that I was really amazed with is the smart speaker. In recent years, we’ve begun to require a lot more from the technology in our homes. Not only do we now expect our speakers to play our favorite songs, we also want it to tell us the weather today, keep our calendar up to date and turn off the lights when we’re too lazy to do it ourselves. A smart speaker is a type of speaker and voice command device with an integrated virtual assistant that offers interactive actions and hands-free activation with the help of one "hot word". This type of technology development definitely satisfies the Human-Computer Interaction principles. With this device, the users can freely multitask and maximize their potentials.

As a student who is always busy with school works, I rarely have the time to listen to news reports or even organize my calendar. With the help of a smart speaker, I can freely do my homework while having the device tell me the latest news. This smart device successfully maximized the Natural Interaction and Interface, especially the aural modality.

Reference:

<https://www.att.com/techbuzz/tips-tricks/the-7-best-smart-speaker-features-you-may-not-know/>

<https://www.aarp.org/home-family/personal-technology/info-2019/smart-speaker-uses.html>

ROBOT VACUUM CLEANERS



Features of a Robot Vacuum Cleaner

- **Visual sensor-based mapping system** – this device can intelligently navigate around your home to pick up dusts. Using the mapping system, the vacuum can map your rooms and see potential obstacles such as power cords, rugs, furniture, walls, and stairs.
- **Programmable cleaning schedule** – this vacuum cleaner can be programmed to clean on a regular basis, such as a certain time of day or on a weekly basis. You should be able to simply hit the clean button and sit back and let it do all of the work.
- **Easy app setup and notifications** – you can control this device using your smartphone.

The third recent technology development that I chose is the Robot Vacuum Cleaner. It is not easy to clean our houses especially if we have other things to do. This technology is a must-have device for your homes. A robot vacuum cleaner is really efficient because it enables the home to be cleaned thoroughly with the tiniest amount of effort.

Robot vacuum cleaners satisfy the ergonomics capability of human performance because it is so comfortable, efficient, and convenient to use. Instead of sweeping the dusts in your house the traditional way, you can just click a certain button or control this device from your smartphone and let this vacuum cleaner do all the cleaning for you.

Reference:

<https://www.tomsguide.com/us/best-robot-vacuums.review-2000.html>

<https://www.howtohome.com/robot-vacuum-cleaners/>

<https://robotsinmyhome.com/learn-more/robotic-vacuum-features/>

If I were to conceptualize a feasible technology innovation for an existing technology, I would choose to innovate a Projector. Projector is a must-have technological device in a classroom nowadays. Since modern teaching occurs a lot in schools, especially in colleges and universities, we must think of ways to innovate technology devices for education purposes. A regular projector works in a way that you can connect it to your laptop or computer and then pick a file to project on a screen. If I were to innovate a regular projector, I would make it a smart projector where the user can control it using a voice command, or an aural modality.

Since it takes a lot of time to connect a projector to a computer, which some aren't even compatible with it, it would be more efficient if the projector is connected to a WiFi and can be controlled using voice command so you can just speak what files you want to project on a screen out loud. I think that this technology innovation will satisfy the basic cognitive and ergonomic capabilities of a human because this conforms to the HCI principles and the technology makes it easier for the users to perform their works.