Introducing Virtual Reality

1. Give definitions of VR to students.
    - What is Virtual Reality?
        - VR is computer-simulated, real-time interactive graphics that allow the user to be immersed in the simulated world and to directly interact with the world.
        - AR and VR are part of Consumer-Facing Technology
        - Introduce the VR with related video in PowerPoint slide - https://www.youtube.com/watch?v=dOnPAPJNM-0
    - What is Augmented Reality?
        - A real-time direct or indirect view of a physical real-world environment that has been enhanced / augmented by adding virtual computer-generated information to it.
        - AR is both interactive and registered in 3D as well as combines real and virtual objects.
        - AR aims at simplifying the user's life by bringing virtual information not only to his immediate surroundings, but also to any indirect view of the real-world environment.
        - AR enhances the user's perception of and interaction with the real world.
    - VR vs AR
        - While VR technology completely immerses users in a synthetic world without seeing the real world, AR technology augments the sense of reality by superimposing virtual objects and cues upon the real world in real time.
    - Explain types of VR
        - Types of VR
            - Immersive Virtual Reality - Immersion into virtual reality is a perception of being physically present in a non-physical world.
            - Elements of virtual environments that increase the immersiveness of the experience:
              1. Continuity of surroundings - The user must be able to look around in all directions and have continuity of the environment.
              2. Conformance to human vision - Visual content must conform to elements that allow humans to understand their environments, so that, for example, objects in the distance are sized appropriately to our understanding of their size and distance from us. Motion parallax ensures that our view of objects changes appropriately as our perspective changes.

3. Freedom of movement - It's important that the user can move about normally within the confines of the environment. That capacity can be achieved in room-scale VR and dedicated VR rooms but requires complicated hardware for stationary VR and is impossible for seated VR.
4. Physical interaction - A user should be able to interact with objects in the virtual environment similarly to the way they do with real life ones. Data gloves, for example, can allow the user to make motions like pushing or turning to interact with objects in a natural way – turning a doorknob or picking up a book.
5. Physical feedback - The user should receive haptic feedback to replicate the feel of real-world interaction. So, for example, when a user turns a doorknob, they not only replicate the movement but also experience the feeling of having that object in their hand.
6. Narrative engagement - The user should have the ability to decide the flow of the narrative. The environment should include cues that lead the user to create interesting developments.
7. 3D audio: For immersiveness, VR environments should be able to replicate natural positioning of sounds relative to people and objects in the environment and the position of the user's head.

- Non-Immersive Virtual Reality - Large display but doesn't surround the user.

- Q) Which picture shows non-immersive VR? (*Ask students to choose the non-immersive VR picture*).
- Key experiences in VR environment
  - Telepresence (Immersion) - user's subjective experience of being in an environment created by a medium.
  - Perceived Realism - the subjective realism that users feel.
  - Emotions - VR environments elicit emotions such as pleasure and arousal when users feel a high level of telepresence.
  - Simulator Sickness - a visually induced motion sickness (nausea, headache, and general discomfort)

- Introduce several examples of VR usage in fashion and retail industry with related video and articles in PowerPoint slide.
    - https://www.youtube.com/watch?v=IulJN9zFEWs
    - https://www.fibre2fashion.com/industry-article/8777/is-there-any-future-for-vr-in-fashion-checking-the-latest-vr-apps-virtual-shopping-and-more
    - https://www.xcubelabs.com/blog/10-applications-of-ar-vr-that-can-transform-your-retail-sales-completely-find-out-how/
    - https://overlyapp.com/blog/10-augmented-reality-retail-examples-for-customer-experiences/

2. Distribute two journal articles to students. Let them think about the VR.
- Park, M., Im, H., & Kim, D. Y. (2018). Feasibility and user experience of virtual reality fashion stores. Fashion and Textiles, 5(1), 1-17.
- Boardman, R., Henninger, C. E., & Zhu, A. (2020). Augmented reality and virtual reality: New drivers for fashion retail?. In Technology-driven sustainability (pp. 155-172). Palgrave Macmillan, Cham.

3. After reading those articles, students will have a group discussion (Group Discussion #1).

4. During the discussion, the instructor will divide the class into several groups. Each group will share their VR experiences.
- Q1. Share your VR experiences with others using key experiences in VR (Telepresence, Perceived Realism, Emotions, and Simulator Sickness).
  Q2. Explain the difference between VR and AR in your words.

Group discussion is suggested for the instructor but if you do not have enough students for group discussion or if you are teaching in an online class environment, please use the method below.

1. Utilize the discussion board in BlackBoard.
2. Give students the same article before they start the discussion.
3. Ask them the same questions.
4. Here is the BlackBoard Discussion instructions:
   Students must respond to at least 2 other students after they write their initial post.

- Initial Post: Based on the discussion questions, make One post on Blackboard answering both questions.
- Responds to other students: Read the postings submitted by other classmates and respond to TWO posts from classmates. Student's responses to classmates must be substantive and add value to the conversation.

Competencies: Critical decision-making, creative problem solving