U.S.T.H.B
Computer science Faculty

Master 1(S1)
Unit 2

Innovative Technologies

1 Speaking

1 When you think of the word technology, what comes to mind?
2 What is innovation? Is it similar to creativity?
3 How would you define innovative technologies? Give some examples.

2 listening: Immersive Virtual Reality

Listen to the following audio on "What is Immersive Virtual Reality? And how does it work?" and complete the passage below with the missing words and phrases.

Ever wondered what it would be like to step into a world beyond reality? As technology **1**....., immersive virtual reality stands at its forefront redefining experiences. With immersive virtual reality, you're not just a spectator, you're a participant in a digital world that **2** ..... . You can feel the rush of adrenaline as you battle dragons, **3**..... or walk through ancient civilizations. This isn't just a gadget, it's **4** ..... . By the end of this video you will discover the impact of immersive virtual reality, let's start what exactly is immersive virtual reality?
Immersive virtual reality means stepping into a whole new world that's made by computers, it's designed **5** ..... that you forget it's not real. Imagine wearing special goggles and headphones that show you and make you hear things from this made-up world, this world is created in such a way that it feels like you're **6** ....., you can look around, move and even interact with things just like in the real world. This feeling **7** ..... is what makes it immersive. Immersive VR is used in various ways and for example, video games can make you feel like you're really inside the game, fighting dragons or **8**..... .
In therapy, it can help people **9** ..... in a safe environment, the more you feel like you're truly in that virtual world, the more immersive the experience is. It's **10** .....
.....from just a little bit of feeling inside the virtual world to feeling surrounded by it.
How it works? Immersive virtual reality systems work by using **11** .....to make you feel like you're really inside a computer-made world, these devices include things like head-mounted displays and input tools. The head-mounted display is **12**..... that you wear on your head; it covers what you see with computer -made images, it's as if a whole new world is right **13**....., this helps you focus on what you're seeing just like you would with real things, then there are input devices **14** ..... that let you do things in this virtual world: these can be joysticks, controllers or even **15** ..... with these you can interact with the things in the computer-made world, the devices create pictures, sounds and other things to make you believe you're in this **16** ..... .
The future of immersive virtual reality holds **17** ..... that are set to transform various aspects of our lives. Immersive technology has **18**.....
growth in recent decades and its evolution continues **19**..... . Virtual reality has even been heralded as **20** ..... tool of the 21st century.

3 Reading: "Augmented Reality's Potential to Revolutionize our Everyday Experience"

Read the following article and then complete task A and B.

Augmented reality technology has swiftly emerged as a significant facet of today's society. AR encompasses a simulated environment that meticulously replicates the look and feel of the real world while seamlessly integrating digital content into our physical surroundings. The impact of

both augmented and virtual reality on society has been substantial thus far, with their influence continuing to grow even further in the future. The development of this technology has become especially important during the COVID-19 pandemic. And what do we have now?

The augmented reality growth is projected to surpass $97 billion by 2028. This exponential expansion will usher in a transformative era, revolutionizing how we engage with our surroundings and technological advancements.

The rise of AR gained momentum during the 2010s, catalyzed by the introduction of devices like **Google Glass** and **Microsoft HoloLens**. In 2023, Apple launched **Apple Vision Pro glasses**, which set a new milestone in augmented reality development. These technological advancements enabled users to observe digital content on top of their superimposed upon their physical surroundings, ranging from map overlays to animated characters that engage with people. The realm of business is witnessing the expanding reach of AR. Numerous companies have already leveraged VR to showcase their products and services, while others have harnessed augmented reality technology to create more immersive and captivating shopping experiences. Looking ahead, broader adoption of AR in marketing, advertising, and customer service is expected. The advent of augmented reality technology has significantly impacted our personal lives, revolutionizing our interactions with technology by providing augmented reality experiences within the physical world.

Previously, utilizing digital devices required sitting in front of a computer or grasping a smartphone. However, the introduction of augmented reality headsets like Apple Vision Pro has introduced a new paradigm, allowing digital content to be seamlessly superimposed onto the surrounding real-world environment. Consequently, users can engage with this digital content in a natural and intuitive manner.

As this technology continues to advance rapidly, it is poised to revolutionize various aspects of our lives. With each iteration, we can anticipate the emergence of novel ways in which augmented reality will reshape and enhance our every day experiences.
Gaming enterprises can now captivate their audiences by integrating the virtual realm of their games with tangible reality. This unique experience holds the augmented reality potential to enhance the overall gaming experience for users, enabling them to interact with the game's immersive scenes, graphics, and fellow players.

Using cutting-edge headgear or cameras developed by gaming companies, designers can project the game's digital virtual landscape onto physical surfaces in the real world. This innovative gaming equipment is typically equipped with sophisticated software capable of analyzing the natural environment, ensuring precise projections seamlessly blend with the surroundings.
Some industries have effectively integrated augmented reality into their operations, resulting in significant efficiency gains, time savings, and cost reduction.

The automotive industry, for instance, has embraced AR and VR technologies across various aspects, ranging from manufacturing to sales strategies. During the manufacturing phase, AR enables the visualization of potential automotive key features of augmented reality, providing a seamless way to assess design concepts. Automotive manufacturers and repair personnel have also adopted AR headsets and glasses to understand vehicle components better and refine their strategies. Moreover, stakeholders can leverage augmented reality technology and VR to inspect a car's different features and aesthetics without the need for physical presence.

The furniture industry has found value in AR applications as well. Given that customers often make purchase decisions based on how products would look in their homes or offices, the combination of AR and VR comes in handy. These technologies allow customers to visualize furniture in their desired spaces, providing a realistic representation of how the product will fit within their environment.

E-commerce has also benefited greatly from augmented reality applications. The beauty industry, particularly impacted by the pandemic, has leveraged AR and VR technologies to overcome obstacles previously encountered. Customers can now virtually try on beauty products and make informed decisions. Augmented reality assists in product customization, allowing customers to modify parameters while visually assessing its appearance. Similarly, in the clothing industry, customers often rely on successful virtual trials to ensure proper fit, size and overall satisfaction before purchasing garments.

Education has experienced a significant transformation through the integration of AR. With the shift towards remote learning during the pandemic, augmented reality has revolutionized the educational landscape. Students can now utilize the technology to visualize complex concepts directly on their screens, ranging from the solar system to scientific procedures. Furthermore, AR enhances anatomical experiments by providing immersive visualizations that were previously limited to physical engagement. The technology also can create immersive environments, facilitating the learning of historical events and enhancing student engagement.
Overall, these industries have harnessed the augmented reality potential to streamline operations, enhance customer experiences, and revolutionize the way tasks are performed. By integrating AR technologies, they have embraced innovation and achieved significant advancements in their respective fields.

Forecasts predict that soon more and more active devices, comprising smartphone applications and other similar tools, will utilize AR technology. The ubiquity of smartphones plays a central role in driving the immediate future of augmented reality. However, to facilitate extensive consumer adoption, the development of lightweight, cost-effective, and inconspicuous headsets is crucial. As AR technology continues to advance and become more accessible, we can expect to see a significant shift in how we interact with the world around us. It has the power to enhance our augmented reality experiences, whether it's through immersive gaming, interactive learning, or streamlined productivity tools.

Moreover, augmented reality has the potential to reshape various industries, such as healthcare, retail, architecture, and entertainment. From aiding medical professionals with visualizing complex procedures to revolutionizing the way we shop by virtually trying on clothes, AR can significantly improve efficiency, convenience, and overall user experience.

A Choose the appropriate option from the subsequent statements.

1 Which of the following best summarizes the significant advancements in augmented reality (AR) technology as presented in the passage?
a) The introduction of AR technology has been static, with limited applications in real-world scenarios.
b) Recent developments in AR technology, including notable devices such as Apple Vision Pro, have facilitated the integration of digital elements into our physical surroundings, marking a pivotal shift in user engagement with technology.
c) The growth of augmented reality has primarily occurred in the realm of gaming, resulting in minimal impact on other sectors such as healthcare and education.
d) Augmented reality technology is expected to decline in relevance, with consumers likely returning to traditional forms of digital interaction.

2. As stated in the text, which of the following best reflects the importance of AR during the COVID-19 pandemic?
a) The COVID-19 pandemic has resulted in a decline of interest in AR technologies, with most consumers reverting to offline interactions.
b) The pandemic only marginally affected the development of AR technology, as its growth was ongoing independent of global events.
c) Businesses avoided adopting AR during the pandemic due to the complexity of implementing new technologies in a crisis environment.
d) Augmented reality facilitated innovative solutions for social distancing and remote engagement, allowing businesses and individuals to continue interactions in a safe and effective manner.

3 Based on the implications discussed in the text, which of the following statements correctly identifies a potential future application of augmented reality in marketing and customer service?
a) Brands are expected to leverage AR as a tool to create interactive and immersive shopping experiences that engage customers by superimposing digital information onto physical products.
b) Companies are likely to solely rely on traditional print advertisements, as digital advancements are becoming too complex for the average consumer.
c) The rise of augmented reality will not influence marketing strategies, as consumers prefer conventional sales methods.
d) AR technology will primarily enhance the technical aspects of product delivery, with little effect on customer interface and interaction.

4 Considering the projected growth of augmented reality technologies, what challenges do you predict businesses may face in the integration of such technologies into their operational practices?
a) Companies will likely view AR as a replacement for all traditional marketing methods and may struggle with how to balance both approaches effectively.
b) The rapid advancement of AR technology will lead to universal acceptance among consumers, eliminating any resistance to change.
c) The high cost of developing and maintaining AR technologies may limit access for small businesses, potentially widening the gap between larger and smaller enterprises.
d) Businesses will face no significant challenges as the integration of AR is expected to be a straightforward process easily managed by existing staff.

5 Which of the following statements best summarizes the impact of augmented reality on the automotive industry as described in the text?
a) Augmented reality is primarily used for marketing purposes in the automotive sector.
b) The automotive industry has largely resisted the integration of AR technologies due to high costs.
c) AR applications in the automotive industry are limited to virtual showrooms.
d) AR technologies have streamlined manufacturing processes and enhanced the understanding of vehicle components.

6 Compare the use of augmented reality in the furniture industry with its application in the beauty industry. Which of the following comparisons is most accurate?
a) The furniture industry focuses on spatial visualization, while the beauty industry emphasizes product customization and virtual trials.
b) Both industries utilize AR primarily for marketing purposes rather than customer experience enhancement.
c) AR is more effective in the furniture industry than in the beauty industry due to the physical nature of the products.
d) Both industries have seen minimal impact from AR technologies in customer decision-making processes.

7 Based on the text, what is a significant factor that could influence the widespread adoption of augmented reality technologies in the near future?
a) The development of more complex AR applications that require advanced technical skills.
b) The availability of lightweight, economically feasible, and unobtrusive AR headsets.
c) The increasing cost of smartphones and other devices that support AR.
d) A decline in consumer interest in immersive technologies.

8 Which of the following statements best reflects the overall implications of augmented reality across various industries as discussed in the text?
a) AR is expected to have a negligible impact on industries such as healthcare and retail.
b) The integration of AR technologies has led to significant improvements in effectiveness, ease of use, and over all user satisfaction across multiple sectors.
c) AR technologies are primarily beneficial for entertainment purposes and have little relevance in professional settings.
d) The future of AR is uncertain and largely dependent on consumer trends rather than technological advancements.

B Find in the article words that are similar in meaning to the following definitions.

1 adopted and controlled effectively to achieve specific objectives .....

2 ready for imminent advancement or change .....

3 the most advanced or innovative tech currently available .....

4 take advantage of something to achieve a desired outcome .....

4 LANGUAGE WORK THE –ING forms

A Underline all the –ing forms in the text on Augmented reality, and then say what part of speech they are.