



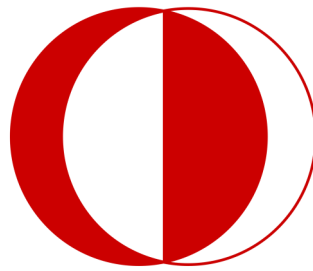
# Augmented, Virtual and Mixed Reality In Education

**Writer: Betül KARAKUŞ**

**FOR LAST GRADE HIGH SCHOOL STUDENTS  
AND  
UNIVERSITY STUDENTS**

**Augmented, Virtual  
and  
Mixed Reality In Education**

**Writer: Betül KARAKUŞ**



**METU PUSBLISHER**

**MIDDLE EAST TECHNICAL UNIVERSITY**

**COMPUTER EDUCATION**

**AND**

**INSTRUCTIONAL**

**TECHNOLOGY**

**Design And Use Of Instructional Material -  
CEIT 207**

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## Augmented, Virtual and Mixed Reality

### ABSTRACT

In this workbook, firstly, you will learn what AR, VR and MR is. This workbook briefly gives information about the usage of Virtual Reality, Augmented Reality and Mixed Reality in education. By reading this workbook you can obtain a basic information of Virtual Reality, Augmented Reality and Mixed Reality, how can you integrate in your education, and how to follow a path to use these technologies in education. Also you will know about the advantages of Virtual Reality, Augmented Reality and Mixed Reality and how to use them in the future.



In addition, in this workbook, you can learn some frequently used apps for usage of AR, VR and MR. You will probably understand at the end of the workbook what is Augmented Reality (AR), Virtual Reality (VR) and Mixed Reality (MR) and the usage to increase efficiency in education. They will integrate VR, AR and MR into their education, so they will need less cognitive load because students will not make an effort to imagine. They will witness the subject they need to learn in 3D thanks to these technologies.

Augmented, Virtual and  
Mixed Reality

**GLOSSARY**

**What is Virtual  
Reality?**

Virtual Reality ( VR) refers to a experience in which a people can utilize electronic tools, like goggles with a screen or gloves fitted with sensors, to interact in an artificial intelligent with three-dimensional world.

**What is Augmented  
Reality?**

Augmented reality means that any technology augments the user's visual sense of their surrounding.

**What is Mixed  
Reality?**

Mixed reality is an admixture of somatic and imaginary environment that covers both true and computer-created matters.

# Augmented, Virtual and Mixed Reality

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## Augmented, Virtual and Mixed Reality

### OBJECTIVES

- **The aim of this homework is to understand the usage area of MR, AR and VR technologies in education.**
- **This workbook is helpful for first year undergraduate university students and last year undergraduate high school students.**
- **Thanks to this workbook, the student will be able to answer questions about AR, VR and MR.**
- **Students will be able to use these technologies in their education.**
- **The student will define correctly what AR, VR, and MR are.**
- **Students will confirm the usage of AR, VR, and MR in their different kind of lessons.**
- **Students will define the difference between AR, VR and MR, and the tools used.**
- **Students will tell the materials required to use these technologies.**
- **Students will give examples about AR, VR and MR.**
- **Students will give the basic information about what VR, AR and MR technologies are.**
- **Students who visually understand the subject will use these technologies to understand the subject better in their next lessons.**
- **Students and future teachers will learn the use of VR, AR and MR to enhance quality of education.**

## Augmented, Virtual and Mixed Reality

Students can get their education more effectively and learn subjects better by using augmented reality, virtual reality and mixed reality. The use of visual and sound improves intelligibility. Firstly, VR is the use of digital technology to construct an environment that is simulated. Users are submerged and able to connect with 3D environments instead of viewing a panel in front of them. Because VR is engaging, it provides a virtual tour with students' imagination. It allows to examine the subjects as if they were real.



Otherwise, AR is a tool that overlays computer-generated images, thereby offering a realistic environment, on a user's viewing screen. MR is a type of wearable technology that improves the virtual world images that tend to look like they are actually placed in that world. Teachers should encourage the use of these technologies by educational institutions because these technologies increase the participation of students in education and make experiments more useful.



## Augmented, Virtual and Mixed Reality

You are fully submerged in a futuristic world while communicating with virtual reality. In augmented reality, the real world is overlaid on digital knowledge, so the environment is not fully immersive. Digital information such as pictures, script and video improve or boost the person's real world. While many persons are for the first time introduced to augmented reality during the the Pokémon GO or Snapchat, there are many examples for augmented reality. Although augmented reality makes it possible to locate virtual information in a physical world, users do not engage with it although they would in everyday world. This capacity is designed for the mixed reality.

Mixed reality app allows actual and virtual components to communicate with each other and the viewer to communicate with virtual components since they would in the real world. It is not called a completely interactive activity, because mixed reality retains a value in the real world. Anywhere you go and look while using MR devices in a mixed reality setting, the 3D material you experience in place will respond to you the best as it does in the real world.

For instance, once you stay close to it, an item will stay close to you and you can communicate with it, e.g. Using movements, transform an entity. Several firms, including Microsoft's HoloLens, Lenovo Explorer, Samsung Odyssey and Acer Windows Mixed Reality, are working on mixed reality applications and also have MR devices.



## Augmented, Virtual and Mixed Reality

### Virtual Reality In Education

Virtual reality should be used in education in order to enhance student understanding and engagement. VR education will transform the way instructional content is delivered; it works on the idea of creating a simulated world, real or imaginary, which encourages people to not only see it but also interact with it. Being immersed in what you learn allows you to truly understand it.

With virtual reality, we can enable students to better grasp the topics in the classroom. Let's examine some examples;

Firstly, Group work is an important activity for students to understand the topics. Group work helps students to exchange information, develop a common understanding, and discover new ideas with their peers. There are many virtual reality group study tools available to assist these efforts. For example, with the VRChat application, students can examine in a virtual classroom with the study group. for example, they can closely examine the growth of plants and technology.



## Augmented, Virtual and Mixed Reality

### Virtual Reality In Education

Secondly, one of the most common applications of VR technology for learning has been virtual field trips. Many schools have started to transport students to remote and inaccessible areas of the world using the Discovery Education app. Thanks to this application, students can examine unreachable visuals with VR technology and reinforce their learning.



Finally, VR can also be used to simulate historical events in the past. We can only follow the events of the past from history books, but witnessing visually increases the recall of events, so history lessons can be more efficient with VR technology. For example, The app that allows you to view historical events is Timelooper. The app takes users through 360 ° augmented reality images to iconic moments in history, which are compatible with real-world locations and landmarks. The stories featured in the app, through visual restorations of the buildings of the period, reconstruct historical moments and cultures. If World War I is being taught by a teacher, s/he wants to give students an idea of what it was like to live in that period. This information becomes more permanent with VR technology.

## Augmented, Virtual and Mixed Reality

### Virtual Reality In Education

So how will VR technology be in education in the future? And what the research says for VR technology?

- ⇒ Education is expected to be the fourth biggest field for VR spending.
- ⇒ VR in education is projected to be a \$200 million industry by 2020, and a \$700 million industry by 2025.
- ⇒ 97 percent of students would like a VR program to join.
- ⇒ 49 percent of teachers in high school would like to use VR to encourage students to tour college campuses.
- ⇒ About 90% of educators acknowledged that the use of technology is an important way to provide students with differentiated and/or personalized learning experiences tailored to their needs.

((The Future of VR & AR in Education | Getting Smart, 2020) )



## Augmented, Virtual and Mixed Reality

### Activity– Reading Text About VR

#### *How to use Virtual Reality in lessons*

- ***The benefits of using VR in the classroom***

***From taking a walk through the worlds galleries and museums to launching students into space, or even a class trip to see the dinosaurs, its both educational and fun to teach with VR. It also has the ability to capture the attention of the digital generation across all disciplines.***

- ***Make learning an active experience***

***Studies show that students don't learn best from reading a book or looking at a chalkboard. Instead, the ideal way to teach and learn is through interaction and application. School trips are one way to give pupils more hands-on experiences, and with VR, teachers can provide exposure to this type of active learning each and every day. Right from the comfort of the classroom.***

- ***Remove the distractions***

***With VR, pupils are fully immersed in a synthetic environment. It frees them from school noises and, as all teachers know, with no distractions, a pupils capability to learn is increased.***

***"32% of educators are using technology to bring experts or experiences into the classroom virtually." The State of Technology in Education: 2016***

## Augmented, Virtual and Mixed Reality

### Activity– Reading Text About VR

- **Boost engagement**

*In today's world of limited attention spans, VR offers immediate engagement. Instead of listening to boring lectures, VR excites students; and being excited about the technology used, leads to deeper levels of engagement with the lessons themselves. Whats more, with VR, pupils have access to almost limitless environments full of new things to learn. Of course, it's not just about peeking into these imaginative worlds – content and supporting materials are also used to help teachers bring relevancy to VR learning.*

- **Help students to learn complex subjects**

*According to scientific research, VR improves spatial understanding and memorisation. By allowing students to experience learning from a first person perspective – seeing everything that is happening around them – visual learning can help to increase a students overall comprehension of more complex subjects, theories, and languages.*

- **Prepare pupils for employment**

*Neo-millennials are far more interested in technology than any other generation. But, rather than being something to get frustrated about, with predictions that many traditional jobs will be lost due to the rise of the robots it's vital that teachers do everything they can to nurture this passion and prepare pupils for the world of work.*

- **Boost learning and retention**

*VR doesn't just help keep students engaged; it also ensures that they retain information with greater ease. With evidence showing that people remember and learn better from what they do, rather than what they read, virtual spaces feel like real locations, so it makes sense that pupils will make real memories.*

## Augmented, Virtual and Mixed Reality

### Activity– Reading Text About VR

- *Move learning beyond the classroom*

*Virtual reality removes the barriers of the traditional classroom. Instead, learning can be accessed from anywhere. Likewise, VR can be used to bring external specialists into schools; adding extra value and relevance to lessons.*

#### *How teachers are already using Virtual Reality in the classroom*

*Here are just some examples of how you can use VR in your lessons:*

- *Go on a virtual field trip. With the Google Expeditions app and a cardboard viewer, pupils can get to anywhere in the world in a matter of minutes. History teachers can explore Ancient Greece with their class, Science teachers can take students to Mars, and English teachers can show pupils Roald Dahl's writing hut.*
- *Bring science to life. Use the VR Roller Coaster app to illustrate potential and kinetic energy, as well as the forces involved in roller coasters. Or, take students on a microscopic mission inside the human brain using the InCell or InMind apps. You could also use Expeditions to take a journey into the human heart to learn more about the system that keeps us alive.*

*"We feel certain that this technology has a distinct and unique part to play for learners of the future. Sometimes a little bit of awe and wonder is what we need to make lessons memorable." Graeme Lawrie is Director of Innovation and Outreach at Sevenoaks School.*



## Augmented, Virtual and Mixed Reality

### Activity– Reading Text About VR

- **Recreate real-life structures.** Take a real or virtual trip to a historic site (e.g. local ruins) and then use tech such as Oculus Rift headsets or the Sketchfab app to get pupils to create a virtual model/3D rendering of what they have just seen.
- **Create fictional spaces.** Let students recreate settings of a novel they are reading, or design a fictional city with tools such as CoSpaces and then explore it in VR.
- **Solve mysteries.** Immerse students in unsolved puzzles, such as the death of King Richard III and inspire them to address some of the greatest mysteries of our time.

**Become the story.** Use the Google Cardboard medium to create role-playing games where students put themselves in the middle of a 3D tale. There are a range of apps available to help you to do this.

**Creating enriched experiences, there is no doubt that VR has a positive educational value. But, as with most tech, when it comes to bringing VR into the classroom, the trick is to get the balance right. VR cannot replace real-life educators, but when teachers merge VR systems with traditional teaching methods, this hybrid approach has the potential to transform the world of education as we know it.**

*(How to use Virtual Reality in lessons | Promethean Blog, 2020)*





## Augmented, Virtual and Mixed Reality

### Augmented Reality In Education



AR is used to develop the academic abilities of students. With the assistance of the AR app, students will scan book pages, and a 3D hologram will appear displaying more information about the piece. In comparison, new media advancement makes it even more immersive, authorize students to visualize stuff and better understand the term. To show the university to new university students, virtual reality will be used, thereby promoting the campus in depth.

Training has been interrupted globally due to the corona virus, which has lately infected all of us. In this coronavirus era, AR may be an effective tool in the field of education. The corona virus forced all public institutions to turn to online education.

With AR technology, the efficiency of learners from practice can be increased. With the help of 3D holograms, learners can reach the quality of training they receive in face-to-face education.



Augmented, Virtual and  
Mixed Reality

## Augmented Reality In Education

What is the advantage  
of AR for students?



- ⇒ This offers a more delicate and interactive atmosphere that attracts interest from students.
- ⇒ It encourages the understanding and transmission of ideas thanks to this enjoyable and interactive activity.
- ⇒ It improves the students' motivation and interest, making the classes more exciting and enjoyable.
- ⇒ Thanks to interactivity, foster creativity.
- ⇒ It removes the traditional monotony of classes due to the use of AR technologies and offers motivation to understand.
- ⇒ It helps students from another viewpoint to manipulate the subjects and their closest truth.
- ⇒ This prepares learners for the digital age.

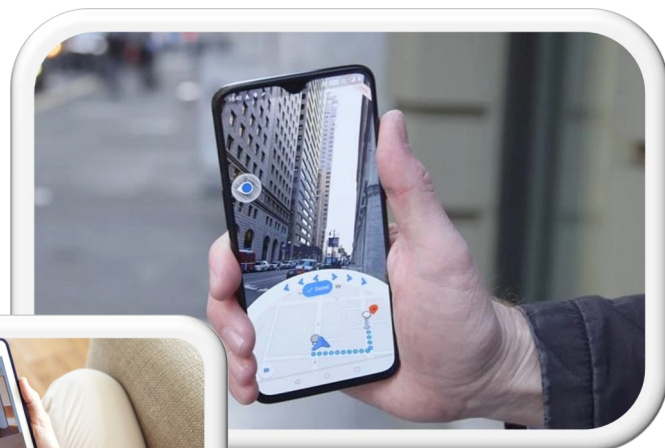
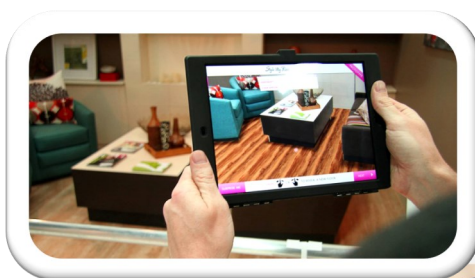
## Augmented, Virtual and Mixed Reality

### Examples of Augmented Reality In Education

In the real field of computer devices, the qualitative versatility of AR encourages accessibility and engagement. This increases students' ability to spend their spare time researching instructional topics while reducing the time consumed studying when and where to use the new expert.

AR also gives students opportunities to expand the expertise through areas, such as:

- Writing Over
- Having to contend for sums
- Computational Notions
- Playing games
- Creation of Material
- Scenery & conditions in actual life



## Augmented, Virtual and Mixed Reality

### Benefits of Augmented Reality In Education

Benefits specific to any of these types of implementations vary:

- Enable students to obtain materials in a much safer setting than would potentially enable the handling of materials in the real world.
- Training of crops and their atmospheric relationship through cycles of simulated growth in range, season, semester.
- Saving the investment that would otherwise limit the school's children's opportunity to produce such results and inquiries.
- Improving the understanding of dynamic geometric spatial concepts by exploiting 3D optical systems and poly-angle tracking.



## Augmented, Virtual and Mixed Reality

### Activity– Reading Text About AR

#### *Augmented Reality in Education*

- *Education is one of the industries that is very actively being disrupted by technology and digitalization.*
- *Today, school and university students no longer want to learn only by reading books and copying texts. No, they want the power of technology in their classrooms.*
- *On the other hand, bringing technology to schools and universities raises the quality of education to much higher levels. New learning formats lead to greater student engagement, which, in turn, makes the knowledge, and skills stay longer.*
- *Thus, adapting technological solutions to education is becoming increasingly popular. Education can be rather flexible when it concerns the methods of increasing student engagement and interest in learning.*
- *Online courses, chatbots, gamification, and, of course, virtual and augmented reality – today you can find all of them in the curricula of both primary schools and universities. No matter how old we are, we always love to be amazed.*
- *We have already written about the opportunities that virtual reality brings to education.*
- *Today, we will see how augmented reality can help teachers make their students look forward to the upcoming lessons.*

## Augmented, Virtual and Mixed Reality

### Activity– Reading Text About AR

- *AR apps in schools and universities*

***Today, you can hardly ever see a schoolkid with no smartphone. With university students, the numbers of mobile gadget users are even higher, as young people use smartphones for almost anything.***

***Many schools are trying to ban smartphones for the distraction they create. Such bans are mostly futile, as too much of a modern child's life is connected to a smartphone.***

***As it often happens, the “if you can't win it – join it” strategy works in this case, too.***

***Instead of trying to part students from their phones, teachers can use the devices in their lessons. By asking the students to download an augmented reality app that can enhance the learning process, the teacher gets an additional tool for boosting the students' interest in the lesson.***

***The same approach works well in universities, and, maybe, even more, as university students are generally higher motivated to learn than schoolchildren.***

***Making the educational content richer and more engaging by introducing hi-end technology as AR can ultimately help to train better professionals.***

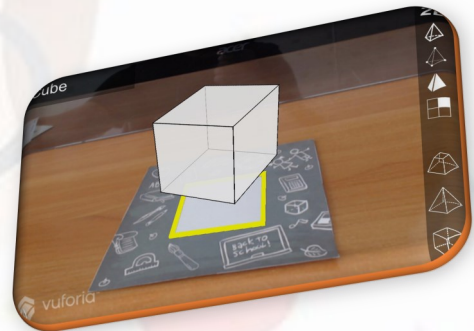


## Augmented, Virtual and Mixed Reality

### Activity– Reading Text About AR

- **Bringing AR to classrooms**

**Augmented reality is an emerging trend. At the same time, the market for educational tools is ripe for innovations, and it eagerly adopts the new technologies.**



**Learning apps based on virtual reality and augmented reality are finding ways into the programs of various subjects in schools and universities.**

**Augmented reality app development for education is a challenging task. If your target audience is children, your challenge is double, as children see any errors or bugs immediately and are not as forgiving as older students. Besides, the information presented in the AR app must always be verified.**

**Augmented reality apps should be interactive, intuitive, and user-friendly. The quality of the visual components must be excellent, and if the animation is used, it should be smooth and natural.**

**Thus, if you decide to build an augmented reality app to be used in a classroom, you need a reliable development partner. A professional augmented reality development company can consult you on how to create an AR app that will have the educational value and attract the students at the same time.**

**The development experts will advise on the components and features that should be included. By partnering up with experienced augmented reality developers, you are ensuring the high quality of your educational AR app.**

## Augmented, Virtual and Mixed Reality

### Mixed Reality In Education

Students' capabilities are enhanced by the integration of both AR and VR technologies known as mixed reality(MR). The modern technology is Hybrid Reality. The educational universe wants to know the odds and losses of funding-based use of its technology to finance educational institutions. Mixed reality technologies can be used in education using the glasses.

For example, in a March 2019 article, EdTech cited studies indicating that in a mixed reality biological lab, students received better ratings than most other students.

Education would be more enjoyable and fascinating for learners with HoloLens , which is produced by Microsoft. Experience - oriented curriculum is among the most essential aspects of the teaching and learning activities. With exception of before, students can attach with what they're learning by MR. It is not only visual, auditory, or traditional learning approaches that will enable student to develop, but actual experiences that encourage greater, immersive teaching.





## Augmented, Virtual and Mixed Reality

### Mixed Reality In Education

To build the impression, there should be an MR tool, either a headphone or goggles. Utilizing even more computing power than either augmented reality and virtual reality, using either eyes / handshake / speech identification technology via a headset or a set of touch controls, mixed reality software combines the digital and physical environments.



"Important elements of VR and AR enable people to browse over an area by rotating their heads, a combination of hand buttons or movements offer technology to communicate with the virtual goods," Nguyen noted.

A goggle, that users can place on their eyes looking at their environment, is the most common form of using MR. The goggles would then insert virtual individuals or objects in the individual's real situation.

## Augmented, Virtual and Mixed Reality

### Mixed Reality In Education

- William Griggs said that mixed reality is the newest iteration of all emerging technology in the VR and AR market, so we can expect that these innovations will have a huge effect on almost any industry.
- Guessing, MR, as previously stated with Pokémon Go, affects famous mobile app gaming. Yet it is also open for question how this can impact companies.
- In order to create common and profitability trends such as digital marketing filters and famous apps, we have now seen our actual and digital environments coming close, but this is only the starting of what is happening with MR.
- It would expand labs of MR in institutions. Robotic Visual Interface Lab of Stanford University has recently begun to quickly broaden experience for learners. The lab provides learners the opportunity to explore completely absorbing universes in MR from a view of literally goggles to know more about powers that influence our everyday lives.
- As more money moves in this technologies' sector, staying mostly on base of disruption seems to be more significant than ever before classrooms of all types to enable talented people to explore the training experiences that mixed reality will offer.



## Augmented, Virtual and Mixed Reality

### Activity— Reading Text About MR

#### Mixed Reality in the Classroom

- *When you think of the classroom of the future, what do you see?*

*How about students learning biology by seeing the inner workings of the human body in a digital realm? Or a math class where students solve equations by using their hands to move numbers around right in front of them? Or an English class where a student is presenting on Macbeth with holographic images of Shakespearean characters displaying alongside them?*

*These scenarios may sound far-fetched, but they aren't that far off. In fact, they can be achieved with a technology called mixed reality -- a rapidly growing segment of the edtech industry. Companies like Microsoft are making big investments in mixed reality for classrooms with a goal of re-shaping the way students learn.*

- *Benefits of Mixed Reality*

*Mixed reality is still a relatively new technology, and the education community is still learning the pros and cons of leveraging its capabilities in a cost-effective way for budget-minded schools and districts. However, there has been mainstream use of virtual reality for several years, and this eLearning Industry article points out the many benefits, especially for young learners. From eliminating language barriers to increasing student engagement and interest, it's clear that virtual reality can be an effective and productive educational tool. It stands to reason that that engagement will only improve with mixed reality.*

*Where virtual reality is often a fantasy, students working with mixed reality are using it to enhance what they're already learning.*



## Augmented, Virtual and Mixed Reality

### Activity— Reading Text About MR

- **Microsoft's Big Play**

***For several years, Microsoft has been working on a technology called the HoloLens, mixed reality smartglasses designed for anyone working, studying or gaming in the virtual, augmented or mixed reality worlds. Microsoft's goal with the HoloLens extends to the education environment with big ideas on how mixed reality can create a more visually engaging learning experience.***

***"What we're doing is giving people the opportunity to see real items and bring them to life in a classroom. That is a very impactful way for people to figure out how they can really get a feel for an item and or to understand more about a real life item like the anatomy of the body," said Microsoft HoloLens senior director and commercial lead, Roger Walkden.***

***Of course, even if the HoloLens becomes a hit, most school districts likely can't afford to buy hundreds of sets of the smartglasses for their students. Microsoft recognizes this, and recently announced a new feature to Windows 10 coming later this year, called View Mixed Reality. This program will show students 3D mixed reality on their tablet screen using a webcam:***

***They recently showed off its capability at an event in early May, when they demonstrated through mixed reality how they could bring a life-sized, 3D version of the Mars Rover into classrooms.***



## Augmented, Virtual and Mixed Reality

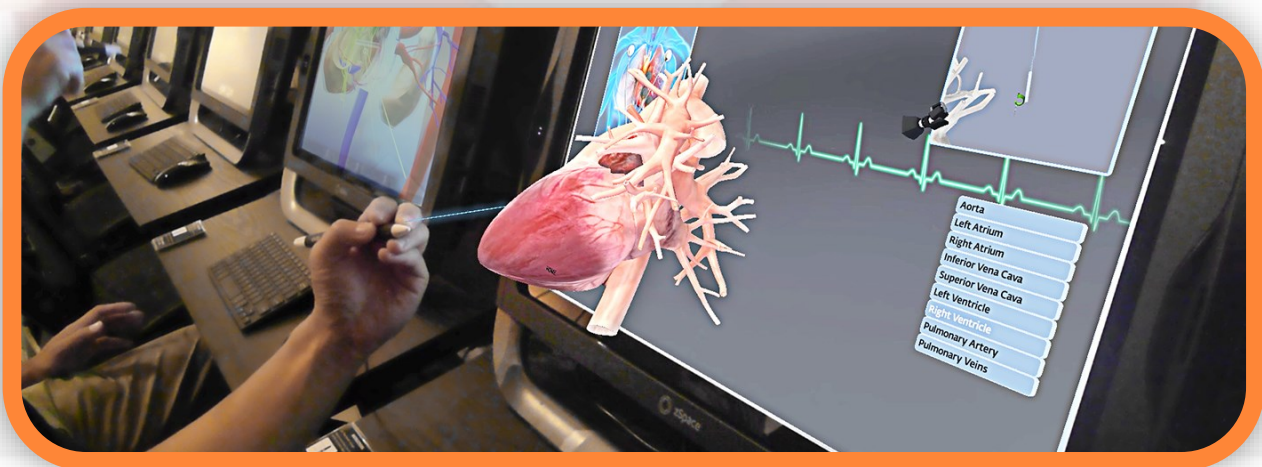
### Activity– Reading Text About MR

- **The Future of Mixed Reality**

*Analysts are bullish on the future of mixed reality with industry revenue estimates surging to \$5.3B by 2022. However, while the use of virtual, augmented and mixed reality are all expected to grow, it will likely do so as the technology and price points become more accessible in the education environment.*

*At Cyber Acoustics, we have an eye to the future of education, and we design our products to be compatible with the latest Chromebooks, iPads, laptops and more. If mixed reality is a technology your school district is considering, contact us to find out how our products can help students learn in this exciting new format.*

*(Mixed Reality in the Classroom, 2020)*



## Augmented, Virtual and Mixed Reality

What should be done for VR, AR and Mixed Reality?

The school management should create an environment where students can have VR, AR and MR experiences in the classroom.

Give students the opportunity to observe things that they cannot observe without AR, VR and MR.



School administration can include computers compliant with VR, AR and MR for students.

School direction should purchase apps which is necessary for the use of these technologies for learners and share free for them.

## Augmented, Virtual and Mixed Reality

### What Do We Need To Explore VR, AR and MR?

Providing hardware and software requirements.

Increasing capabilities for VR, AR and MR.

Research for Headphones and other device.



Determine whether the load can be managed by your current computer database.

Make sure the system, the headphones, and the gameplay will all fit it together.

Choose a pc or laptop that fits the necessary specifications and has a high-performance Processor, if it can't.







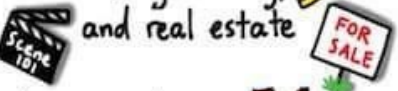


## Augmented, Virtual and Mixed Reality

### The Advantages of VR, AR and MR

- ◇ Enhances training by game-based learning and interactive content for learners
- ◇ Keep people interested when studying hard to understand topics
- ◇ Improves inventive thinking
- ◇ Less Obstacles
- ◇ Enhanced working together by hampers

### Top 10 Reasons to Use Virtual Reality in the Classroom

By @MariaGalanis & @Andrea\_Trudeau

- 1 Travel to and explore places all over the world without leaving the classroom 
- 2 Develop empathy for communities in crisis by stepping into their shoes 
- 3 Experience different careers first-hand 
- 4 Explore the depths of the ocean and the vastness of space 
- 5 Time travel to key events and places from the past 
- 6 Explore within the human body 
- 7 Allow students to share their world with others by creating their own VR content 
- 8 Discover how VR can be used in other industries like medicine, engineering, entertainment and real estate 
- 9 Explore how VR can be integrated into every subject area and curriculum 
- 10 Promote curiosity and wonder!   
@sylvia\_duckworth



# Augmented, Virtual and Mixed Reality

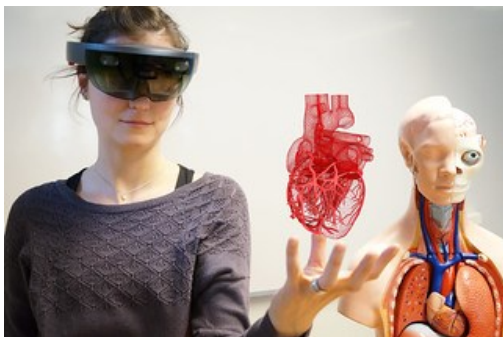
## Activity– Pairing

Match which reality technology the images below are used for.

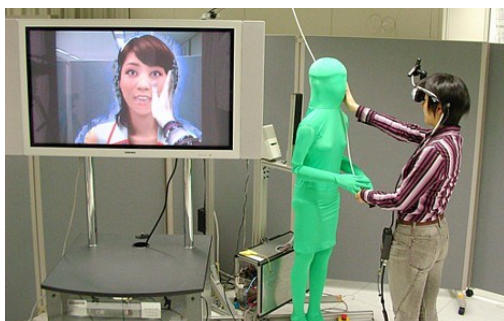
1.)



2.)



3.)



A.) Augmented Reality

B.) Mixed Reality

C.) Virtual Reality

ANSWER KEY:

1.) c

2.) a

3.) b

## Augmented, Virtual and Mixed Reality

### Time To Game



### **Pokemon Go is the best example for Augmented Reality. Let's play a game!**

If you have a mobile phone compatible with this app, you can start playing, if not, notify your lecturer. The lecturer will assist you. The lecturer will form groups of approximately 3-4 people. Each group will come side by side and start playing this game together. This game is integrated into real life, it is waiting for you to go out and collect the pokemon character that was there. You will have 30 minutes in total, you can go anywhere on the campus, the only requirement is not to go outside the campus. After half an hour is over, each group will reunite and the team that has collected more characters will win the game.

**Award to the group that won the game: CHOCOLATE**

Augmented, Virtual and  
Mixed Reality

**ASSESSMENT QUESTIONS**

1-) Which of the following is for increasing the efficiency of the students from education?

- A.) AR
- B.) VR
- C.) Mixed Reality
- D.) All of them

2-) What is the differences between AR and VR?

-----

3-) What is the differences between AR and Mixed reality?

-----

4-) What is the differences between Mixed reality and VR?

-----

5-) Have you ever designed anything in an AR, VR and Mixed Reality apps? If your answer is yes, what did you design?

-----

6-) If your answer is yes in previous question, did you encounter any difficulty when you designed anything, if your answer is yes, What difficulties did you encounter?

-----

Augmented, Virtual and  
Mixed Reality

**ASSESSMENT QUESTIONS**

**7-) Are your current skills at the level to be able to apply AR, VR and mixed reality with programs?**

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**8-) Did you face any challenges in working the area of AR?**

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**9-) Did you face any challenges in working the area of VR?**

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**10-) Did you face any challenges in working the area of Mixed Reality?**

---

**11-) Have you ever researched about AR, VR nad Mixed Reality?**

---

**12-) After reading this workbook, do you think to do research on this subject?**

---

**13-) What are your opinions regarding AR?**

---

Augmented, Virtual and  
Mixed Reality

ASSESSMENT QUESTIONS

14-) What are your opinions regarding VR?

---

15-) What are your opinions regarding Mixed Reality?

---

16-) Would you like your teachers to use these technologies?

---

17-) How would you like your teachers to use this technology?

---

18-) After reading this workbook, would you consider integrating these technologies in other areas of your life, if yes, in which areas in your life will you integrate these technologies and how?

---

19-) Do you have a tool available to use mixed reality?

---

20-) Do you have a tool available to use AR?

---

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**ASSESSMENT QUESTIONS**

**21-) Do you have a tool available to use VR?**

-----

**22-) Why we use these technologies in education and should we use it?( write 2 options.)**

-----

**23.) Why are these technologies needed to be used? ( write 2 options.)**

-----

**24.) If you had all the possibilities, for which lesson topic would you use AR, VR and Mixed Reality and why?**

-----

**25.)Do you agree that these technologies should be used in lessons? Explain in a few sentences.**

-----

**26.) Can goggles for virtual reality and augmented reality be used in education, if your answer is yes, how?**

-----

**27.) What was the most striking part of this workbook for you and why?**

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Augmented, Virtual and  
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ASSESSMENT QUESTIONS

28.) What should be done for VR, AR And Mixed Reality?

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29.) What do we need to explore VR, AR and MR?

-----

30.) fill in the blanks.

A.) \_\_\_\_\_ refers to a experience in which a people can utilize electronic tools, like goggles with a screen or gloves fitted with sensors, to interact in an artificial intelligent with three-dimensional world.

B.) \_\_\_\_\_ means that any technology augments the user's visual sense of their surrounding.

C.) \_\_\_\_\_ is an admixture of somatic and imaginary environment that covers both true and computer-created matters.

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PUZZLE

B E P G W V O T N X N J N Z I  
A D F V N O Z J V O J T T T P  
F U C T O W X H I H U Z S K N  
W C G E Z D J T Z U P O Y S P  
N A J M M F A A Z Q F X B R V  
J T V T E C H N O L O G Y I E  
O I C R I N V E K K N L R L X  
K O S L E L T C L B W T K H L  
G N P Y S H N E X G U X X D K  
G P Y V U U N T D A G H Y E J  
A J F A S U W N L D Z O X X T  
U P C T K U E N I V F G G I V  
Y T I L A E R H X C R Z L M Y  
C Y F T M S I Q I T U W D I J  
K V M M J H J L E F O U I H C

Find the following words hidden in the puzzle.

APPLICATION

AUGMENTED

EDUCATION

GOGGLE

MIXED

REALITY

TECHNOLOGY

VIRTUAL



## Augmented, Virtual and Mixed Reality

### ANSWER KEY

1-) D

2-) *Basicly, Virtual Reality ( VR) refers to a experience in which a people can utilize electronic tools, like goggles with a screen or gloves fitted with sensors, to interact in an artificial intelligent with three-dimensional world. On the ot-her hand, Augmented reality means that any technology augments the user's visual sense of their surrounding.*

3-) *Basicly, Mixed reality is an admixture of somatic and imaginary environ-ment that covers both true and computer-created matters. On the other hand, Augmented reality means that any technology augments the user's visual sen-se of their surrounding.*

4-) *Basicly, Virtual Reality ( VR) refers to a experience in which a people can utilize electronic tools, like goggles with a screen or gloves fitted with sensors, to interact in an artificial intelligent with three-dimensional world. On the ot-her hand, Mixed reality is an admixture of somatic and imaginary environ-ment that covers both true and computer-created matters.*

*From Q5 to Q21-) The answer is based on your experience.*

22-) *WRITE TWO OF THEM; Because they enhance training by game - based learning and interactive content among students, they keep people interested when studying challenging topics, they improve inventive thinking, they help to remove obstacles and they enhance collaboration by hampers.*

23-) *WRITE TWO OF THEM; Because they enhance training by game - based learning and interactive content among students, they keep people interested when studying challenging topics, they improve inventive thinking, they help to remove obstacles and they enhance collaboration by hampers.*

Augmented, Virtual and  
Mixed Reality

ANSWER KEY

24-) *The answer is based on your ideas.*

25-) *The answer is based on your ideas.*

26-) *Yes, as mentioned in the reading texts and definitions, glasses can be used for VR and AR in education. Students can use glasses to interact with 3D World in an artificial intelligence. The usage of glasses is helpful to increase efficiency in education. With the help of these glasses, students can integrate VR, AR and MR into their education, so they will need less cognitive load because students will not make an effort to imagine. They will witness the subject they need to learn in 3D thanks to these technologies.*

27-) *The answer is based on your ideas.*

28-) *The school management should create an environment where students can have VR, AR and MR experiences in the classroom. Give students the opportunity to observe things that they cannot observe without these Technologies. School management should provide students with devices compatible with VR, AR and mixed reality Technologies. School management must purchase apps which is necessary for the use of these technologies for students and share free for them.*

29-) *Research for Headphones and other device; capabilities for VR, AR and MR; and hardware and software requirements. Determine whether the load can be managed by your current computer database. Choose a pc or laptop that fits the necessary specifications and has a high-performance Processor, if it can't. Make sure the system, the headphones, and the gameplay will all fit it together.*

30-)

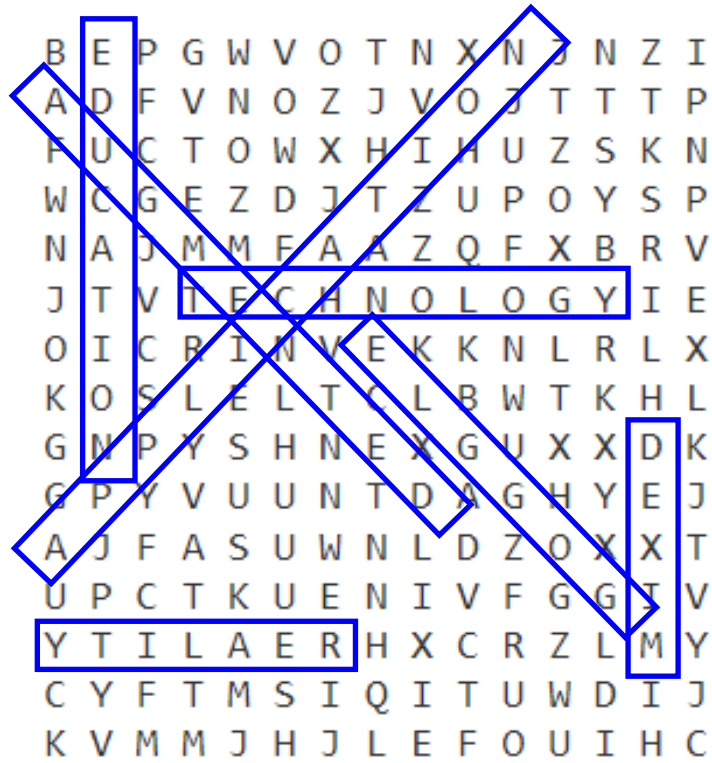
A.) VR

B.) AR

C.) MR

Augmented, Virtual and  
Mixed Reality

ANSWER KEY



APPLICATION

AUGMENTED

EDUCATION

GOGGLE

MIXED

REALITY

TECHNOLOGY

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