

Activity 2

Is our real world a virtual reality? - Teacher's Guide

As we have seen in the previous activity, the co-existence of a separate twin anti-universe, spawned simultaneously with our own but having an opposite spin, could easily explain the apparent matter/anti-matter imbalance in our own universe.



If we take this to considering the co-existence of a virtual universe, we will be exploring an alternate path to which we are heading and which has not much to do with the physical explanation but it is related to the idea that the universe is a virtual reality created by information processing. However, whether the world is an objective reality or a virtual reality is yet a matter for science to resolve.

1. Is there possible improvement after virtual reality?

We are used to fast change in our societies today. We went from no internet at all in 1989 to amazing inventions like foldable phones, 5G and self-driving cars in not much longer than 30 years. These are advancements that are changing our lives completely. It seems that the pace of change is increasing ever faster, but after VR, won't the pace of change, as in affecting the average people's lives, stagnate? It will already be a Utopia; how could it significantly improve? Everything will already be possible in the VR of not much further than the 2030s. We may wonder, how can we significantly surpass what is already almost unlimited?

- Group students and let them think about this assertion:

By the later part of this decade, virtual reality will be so high-quality that it will be indistinguishable from real reality. Nanomachines could be directly inserted into the brain and could interact with brain cells to totally control incoming and outgoing signals.

Do you think that there is possible improvement after virtual reality?

Listen to their opinions and suggestions. Tell them that all the information and ideas they can gather may help them in the final project.

2. Our world as an objective reality?

We take our world to be an objective reality, but is it? The assumption that the physical world exists in itself has struggled to assimilate the findings of modern physics for some time now (*The Physical World as a Virtual Reality*, Brian Whitworth, 2008). The virtual reality concept is familiar to us from online worlds, through science fiction films and series, video games, inventions and theories.

- Exercise: Match the information on the left with that on the right.

1. Dan Brown		a. Half Life
2. Electron		b. Avatar
3. Startrek		c. Angels and Demons
4. Sheldon Cooper		d. Project Cambria
5. Meta		e. The Big Bang Theory
6. Interstellar Travel		f. Is the world a simulation?
7. The Theory of Everything		g. Positron
8. Alyx		h. Wormhole
9. Metaverse		i. Stephen Hawking
10. Isaac Asimov		j. Enterprise

Key:

1 - c	2 - g	3 - j	4 - e	5 - d	6 - h	7 - i	8 - a	9 - b	10 - f
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3. Our world as a virtual reality

Our world as a virtual reality is usually a subject for science fiction rather than science. The science-fiction movie The Matrix illustrated how a computer based virtual reality could appear real to its inhabitants as long as they remained within it. This was possible because people in the matrix only knew their world from the information they received, which is exactly how we know ours. Yet this movie does not illustrate VR theory, as its matrix was created by machines in a physical world, and matrix inhabitants could escape to this “real” world (the physical world was still presumed to be the “end of the line”. In contrast, VR theory does not assume this, but merely argues that the data of physics suggests that our reality is a local reality, dependent upon processing outside itself. It argues not that the world is “unreal”, but that it is not objectively real. Indeed, if the world were virtual, it need not be obvious to us: “But maybe we are all linked into a giant computer simulation that sends a signal of pain when we send a motor signal to swing an imaginary foot at an imaginary stone. Maybe we are characters in a computer game played by aliens.” [6, p131] However, Hawking’s next sentence was “Joking apart, ...”

Elicit a proverb that may be related to this topic:

The duck principle: *“If it looks like a duck and quacks like a duck, then it probably is a duck.”*

Is it always true?

➤ Get students to discuss in small groups for a limited time. Then write some of the outcomes on the board and let them speak again about their peers’ ideas.

Though logically the physical world could be virtual, for some reason to imagine that it is can only be presented as a joke. Why is the VR option, though logically possible, discarded out of hand?

4. Dualism

The problem for dualism is how can two distinct realities co-exist? If mind and body don't interact, they aren't relevant to each other. What use is a mind that can't affect the body? Or if they do interact, which came first?

➤ Give out copies of the Reading Comprehension exercise called **Cartesian Dualism in XR** on the file: **Is our real world a virtual reality?**

Key:

Cartesian Dualism in XR

In the 17th century, René Descartes theorized the separation of mind and body, a theory now known as Cartesian Dualism. [1] **XR technologies such as virtual reality (VR), augmented reality (AR), and 360-degree video push this Dualism concept to the extreme.** We each have a physical or real-life body and mind as well as multiple virtual bodies. In some ways, we have multiple virtual minds too, or at least different versions of our actual mind. [2] **Especially when we consider the different personalities and shifting perspectives that we adopt in our various online communities and social media profiles.** We can identify with and think of our “self” as any one of these bodies or minds, or even varying combinations of them. We can create or choose avatars that look very much like us or very different from us, and we can switch avatars to “become” someone or something else entirely [3] **sometimes altering or even switching our avatars every time we play a video game or XR experience.**

If we want to go even deeper down the rabbit hole of XR Dualism, consider that we can't really tell who (as in, whose mind) is embodied in another avatar that we see within the experience. It could be someone we know, a stranger, or an NPC (non-player character; often controlled by a set of pre-programmed actions, a set of algorithms, or an AI).

[4] Even if the avatar represents and is being controlled by someone we know, they may behave differently based on the avatar they're currently using. For example, they may use a different name and voice, making it difficult to recognize them, or they may act more assertively or take bigger risks than in real life. This is equally as true for us as it is for the other players we encounter.

In short, Cartesian Duality permeates XR in dizzyingly complex ways. **[5] Our personal identity fluidly shifts between the myriad representations and embodiments of our real and virtual selves.** Given that our personal identities (including beliefs, behaviours, and attitudes, to name a few characteristics of our identities) are closely tied to if and how we learn, avatars play a crucial role in the design of any XR eLearning experience.

[6] The process of temporarily embodying and identifying with each avatar and virtual self is a big part of how we learn. This is precisely why eLearning professionals need to pay careful attention to the use of avatars in XR learning experiences.

<https://learningsolutionsmag.com/articles/metafocus-avatars-cartesian-dualism-and-xr>

A – 4 B - Not used C - 6 D – 1 E – 5 F – 2 G – 3

5 What is artificial intelligence (AI)?

Exercise 1

➤ Project or write on the board these words and ask students what to predict what it is all about.

ingesting • simulation • correlations • applications • lifelike • processing •
recognition • predictions

Then show them the gapped definition and get students to complete it using words from the box.

Artificial Intelligence is the **[1]** of human intelligence processes by machines, especially computer systems. Specific **[2]** of AI include expert systems, natural language **[3]** , speech recognition and machine vision.

In general, AI systems work by **[4]** large amounts of labelled training data, analysing the data for **[5]** and patterns, and using these patterns to make **[6]** about future states. In this way, a chatbot that is fed examples of text chats can learn to produce **[7]** exchanges with people, or an image **[8]** tool can learn to identify and describe objects in images by reviewing millions of examples.

Key:

- | | |
|------------------|------------------|
| [1] simulation | [5] correlations |
| [2] applications | [6] predictions |
| [3] processing | [7] lifelike |
| [4] ingesting | [8] recognition |

AI programming focuses on three cognitive skills: learning, reasoning and self-correction.

Learning processes. This aspect of AI programming focuses on acquiring data and creating rules for how to turn the data into actionable information. The rules, which are called algorithms, provide computing devices with step-by-step instructions for how to complete a specific task.

Reasoning processes. This aspect of AI programming focuses on choosing the right algorithm to reach a desired outcome.

Self-correction processes. This aspect of AI programming is designed to continually fine-tune algorithms and ensure they provide the most accurate results possible.

<https://www.techtarget.com/searchenterpriseai/definition/AI-Artificial-Intelligence>

Exercise 2

➤ Can AI replace humans?

- Play the video once and ask students to pay attention to the following aspects:

<https://www.youtube.com/watch?v=0oRVLf16CMU>

- What is the main difference between *Weak* and *Strong* forms of AI?

Whether they can work or not without human intervention.

- Mention examples of both:

Weak

- voice assistants
Siri, Cortana, Alexa, Google Assistant

Strong

- a self-driving car

- Play the video again and get them to be more specific:

- Define both systems:

Weak: system designed and trained for a particular task. It can answer your questions and obey a programmed command.

Strong: system with generalized human cognitive abilities, meaning it can solve tasks and find solutions without human intervention.

- Industries that use AI: health care, education, finance, law and manufacturing.
- Technologies that incorporate AI: automation, machine learning, machine vision, language processing and robotics.
- Risks: liability in autonomous vehicle accidents and hackers.
- Regulations for the use of AI tools: few. The risks raise legal, ethical and security concerns.

- In pairs, they exchange and complete the information they got. Correct it in the big group.

6. Vocabulary

This exercise presents a list of expressions which, although familiar to them, they don't usually incorporate to their speech. It will be found in the file called: **Ways of explaining or clarifying**. Give out handouts for them to do individually.

Key:

1. A: Why didn't we visit?
B: Well, **for one thing**, it was too far away. And **for another** she never invited us
2. A: Why did you decide on it?
B: This made my task easier, **inasmuch as** it was not necessary for me to make further inquiries.
3. A: What is Lady Snowblood about?
B: Murder as vengeance, **pure and simple**, This is a revenge story.
4. A: Fair trials help establish the truth and are a cornerstone of democracy,
B: Yes, it is vital that we reform the system **in the interests of** fairness to everyone.
5. A: Why do you think she doesn't like you?
B: She hates all businessmen and, **by extension**, me.
6. A: We had a big argument last night about moving together. He doesn't seem to consider it as an option for the moment being.
B: Most of those arguments are, **at bottom**, motivated by a fear of change.
7. A: The core mission of *the police* is to control crime.
B: They are having a difficult time, **what with** all the drugs and violence on our streets

7. Project

What do you like about your real life? What don't you like and would transform through virtual reality?

➤ PROJECT: Describe a world in which people would like to live (an ideal world). What kind of social system would you follow? Economy. Population. Entertainment.