VIRTUAL REALITY TECHNOLOGIES: ANALYSIS OF THEIR APPLICATION IN ELECTRONICS ENGINEERING CAREER PROGRAMS

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English II - UTN FRP

MAP OF THE PRESENTATION

- Introduction
- Current educational context
- Introduction to Virtual Reality (VR)
- Analysis of VR
- Examples
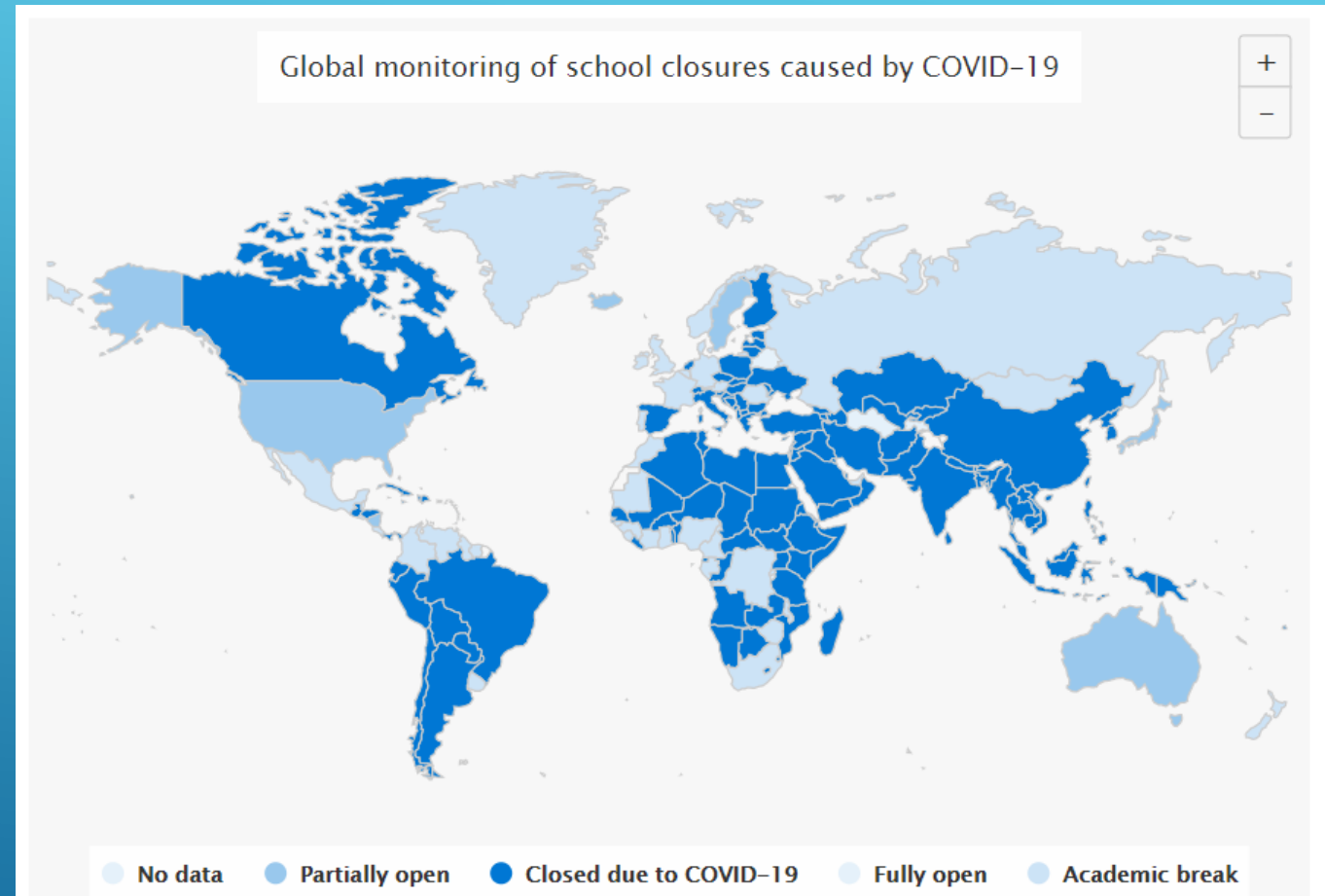- Conclusion

▶Introduction.

- In the early 2020s, a virus called SARS-CoV-2 caused most countries in the world to decide to implement strict social containment, such as the closing of educational institutions.

▶ Problems of the lockdown

1. According to UNESCO, in April 2020 92.32% of the schools were completely or partially closed.

2. There has been an increase in stress level, anxiety and depression in university students.

Global monitoring of school closures caused by COVID–19

● No data ● Partially open ● Closed due to COVID–19 ● Fully open ● Academic break

▶ What is Virtual Reality(VR)?

It is an experience in which the user is immersed in a responsive virtual world.

▶ Why Virtual Reality?

- To solve the problems of lack of access to face-to-face interaction in the development of practical or laboratory assignments.

- To develop other skills that are very important to the students and were sidelined.

► Effects of the lockdown in electronics engineering careers programs.

- Around 24.9% of the university students have experienced anxiety due to the pandemic.

- Many of the university students suffer from high levels of stress due to the lockdown.

Other problems that students have:

- Poorer educational performance than before.

- Non-theoretical task carried out on software programs instead of doing real circuits.

- Lack of supervision.

- Simulated practices that differ from real-world jobs.
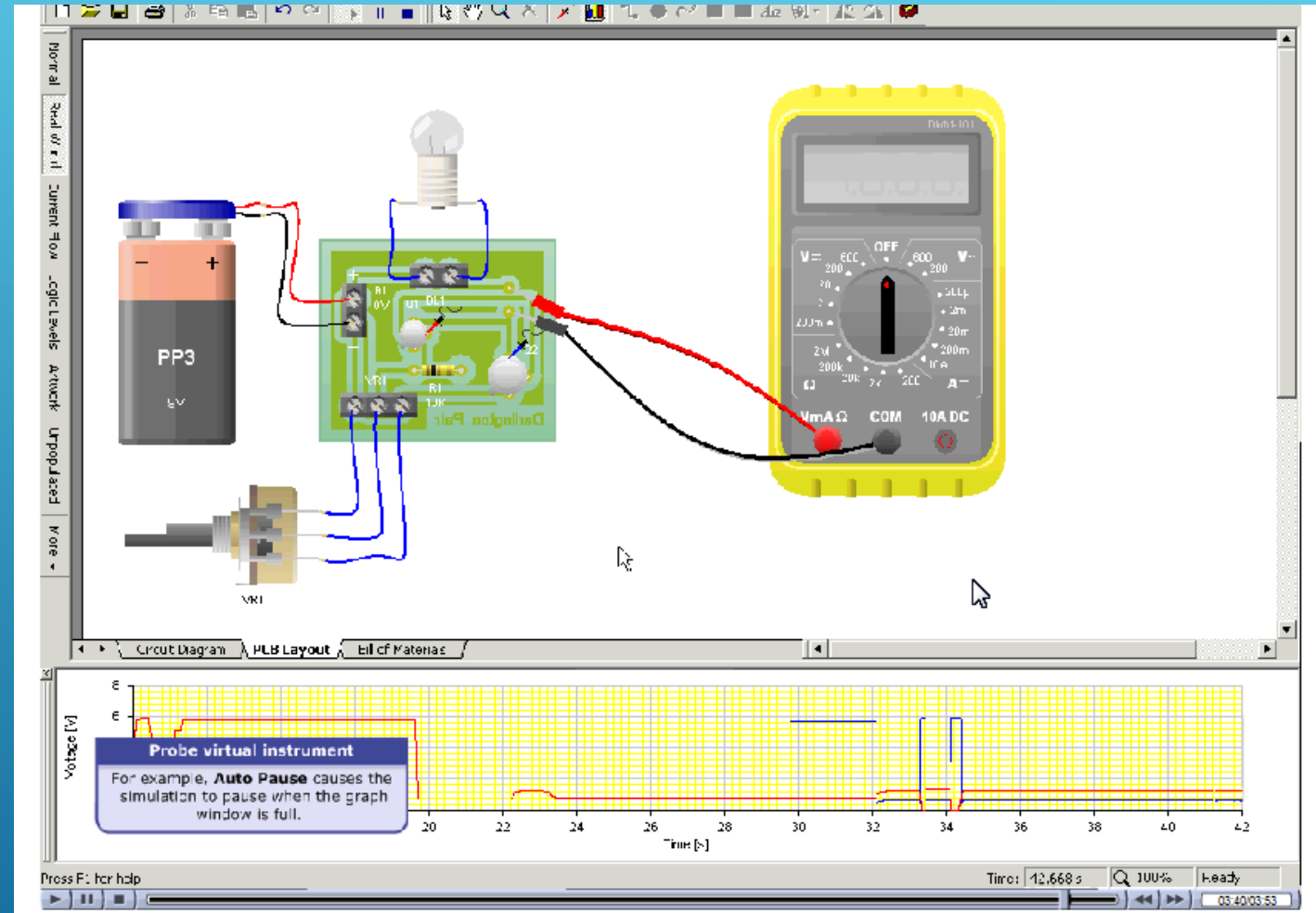
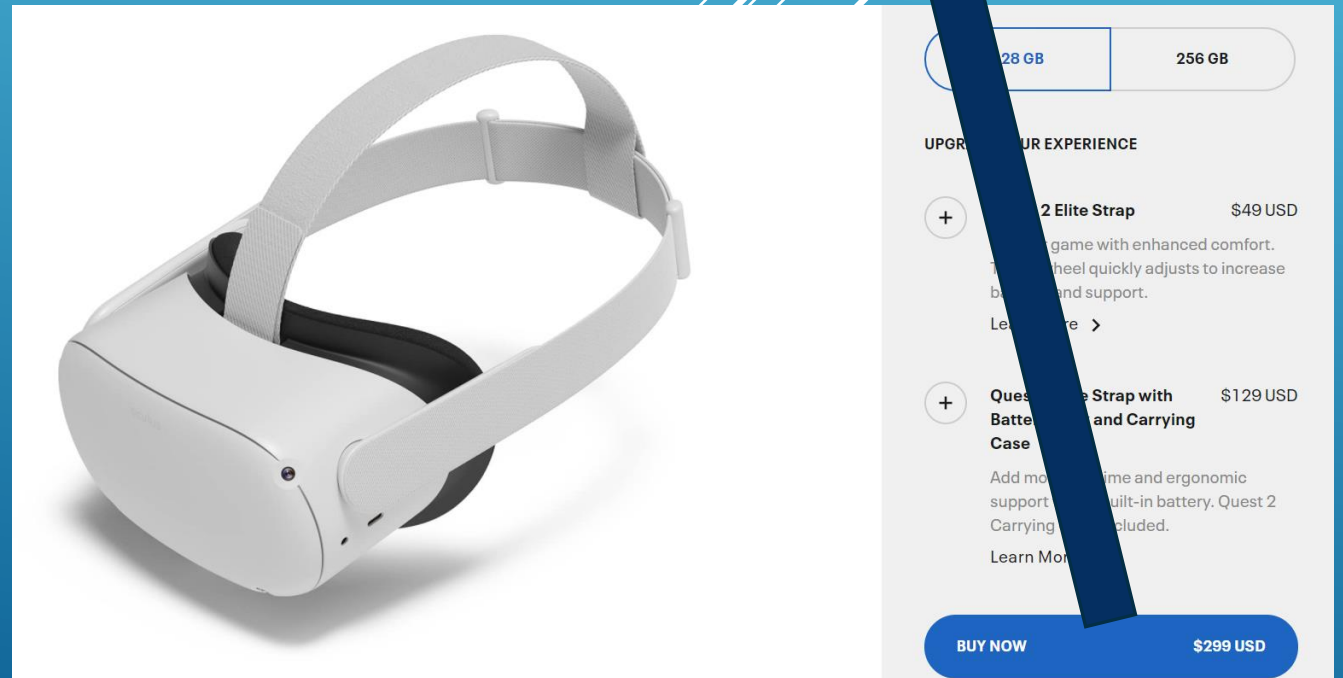# REASONS TO USE VR IN ENGINEERING CAREER PROGRAMS

- To provide more confidence to students.

- To reduce cognitive load.

- To teach complex concepts more effectively.
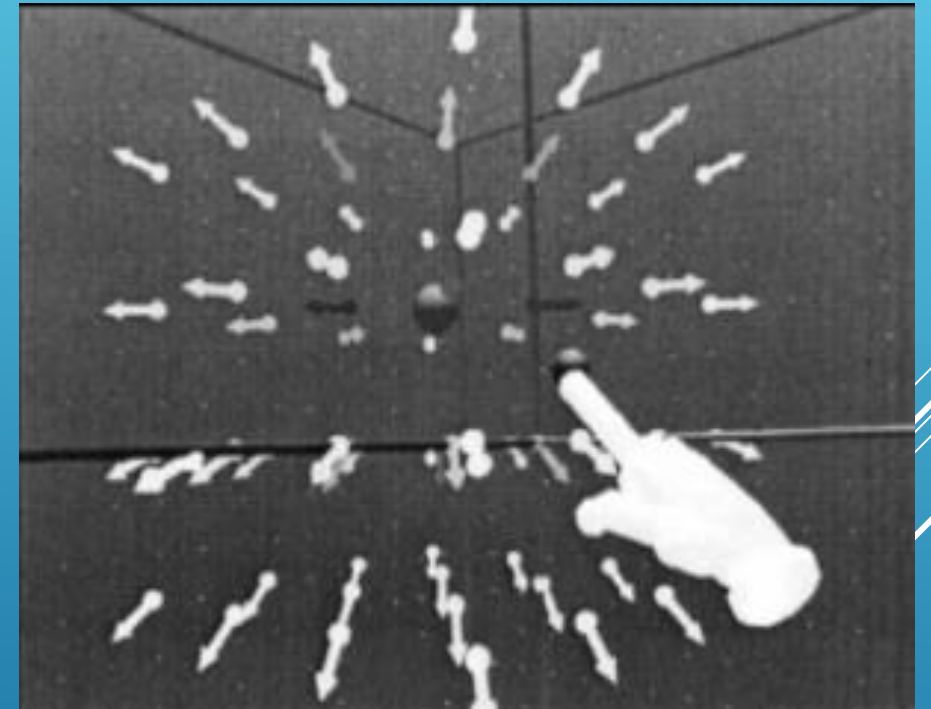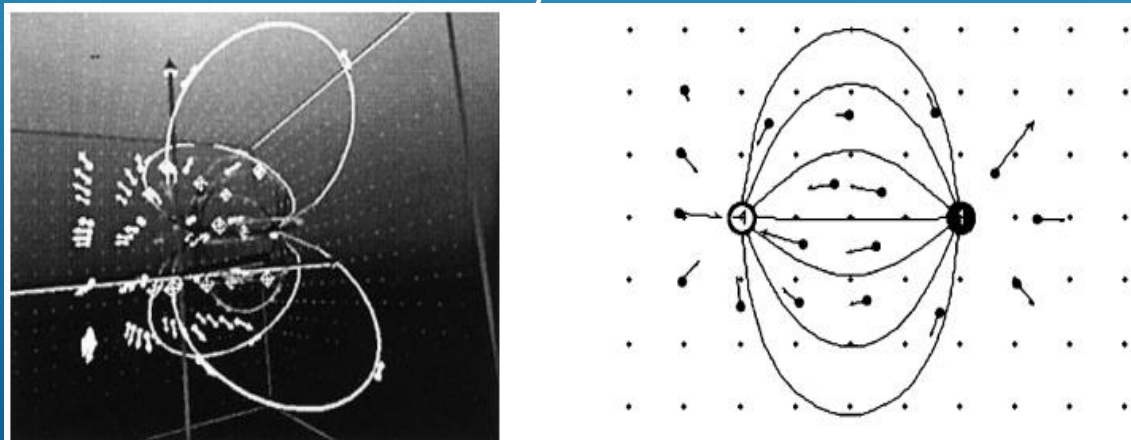
➢ANALYSIS OF VIRTUAL REALITY

One of the substantial obstacles is the cost of implementing VR systems because of their high cost and training costs.

1. Hardware cost (US$299).

2. Training cost.

➤CURRENT POPULAR VIRTUAL REALITY TOOLS.

- Virtual Reality Headsets (VRH)

- Augmented Reality (AR)

- Cave Automatic Virtual Environment (CAVE)

The best option depends on the learning situation.

VIRTUAL REALITY HEADSETS (VRH)

AUGMENTED REALITY (AR)

CAVE AUTOMATIC VIRTUAL ENVIRONMENT (CAVE)

➢ EXAMPLES OF VIRTUAL REALITY IMPLEMENTATION IN ENGINEERING CAREER PROGRAMS

- Teaching Robotics Programming Using Low Cost VRH.

- Enhancing Electronics Engineering Laboratory Experiences.
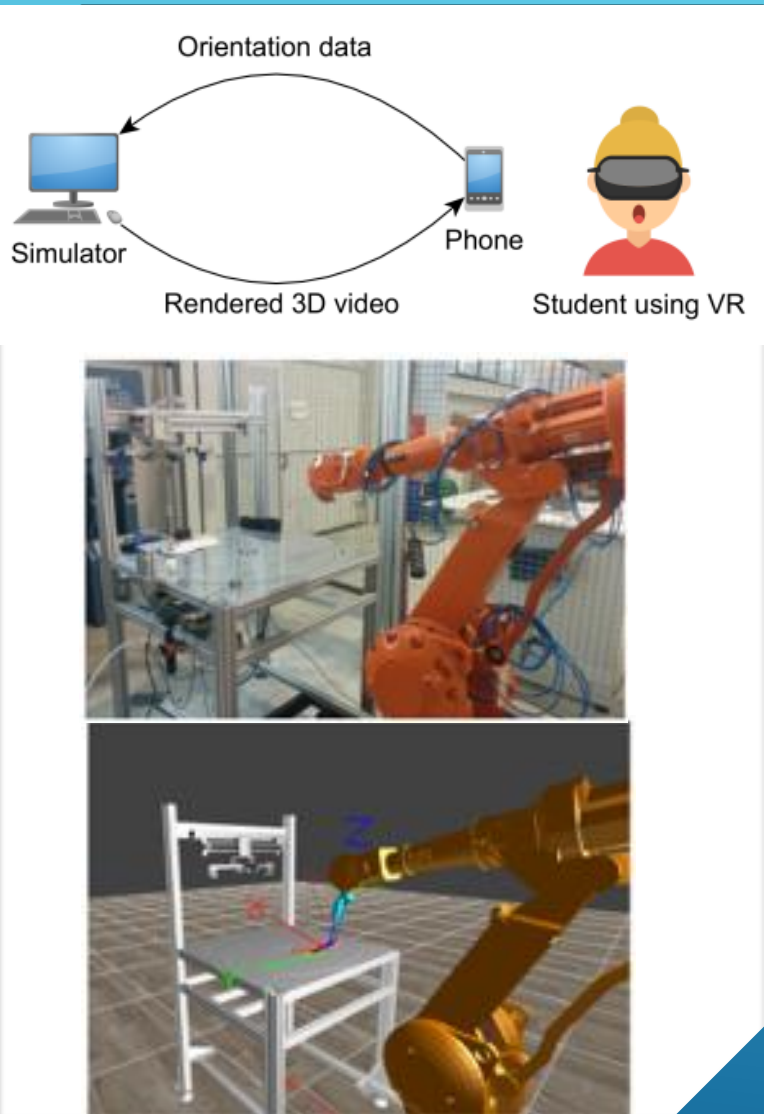
TEACHING ROBOTICS PROGRAMMING USING LOW COST VRH

A few issues to consider from an educational standpoint:

- Cost of robotic arms.

- Space required by robots.

- Safety problems due to inexperienced students.

➢ ENHANCING ELECTRONICS ENGINEERING LABORATORY EXPERIENCES.

In this case, VR helps students learn how they must operate the oscilloscope and the function generator.

The virtual reality-based learning environment (VLE) allows the student to engage with 3D models rather than real ones.
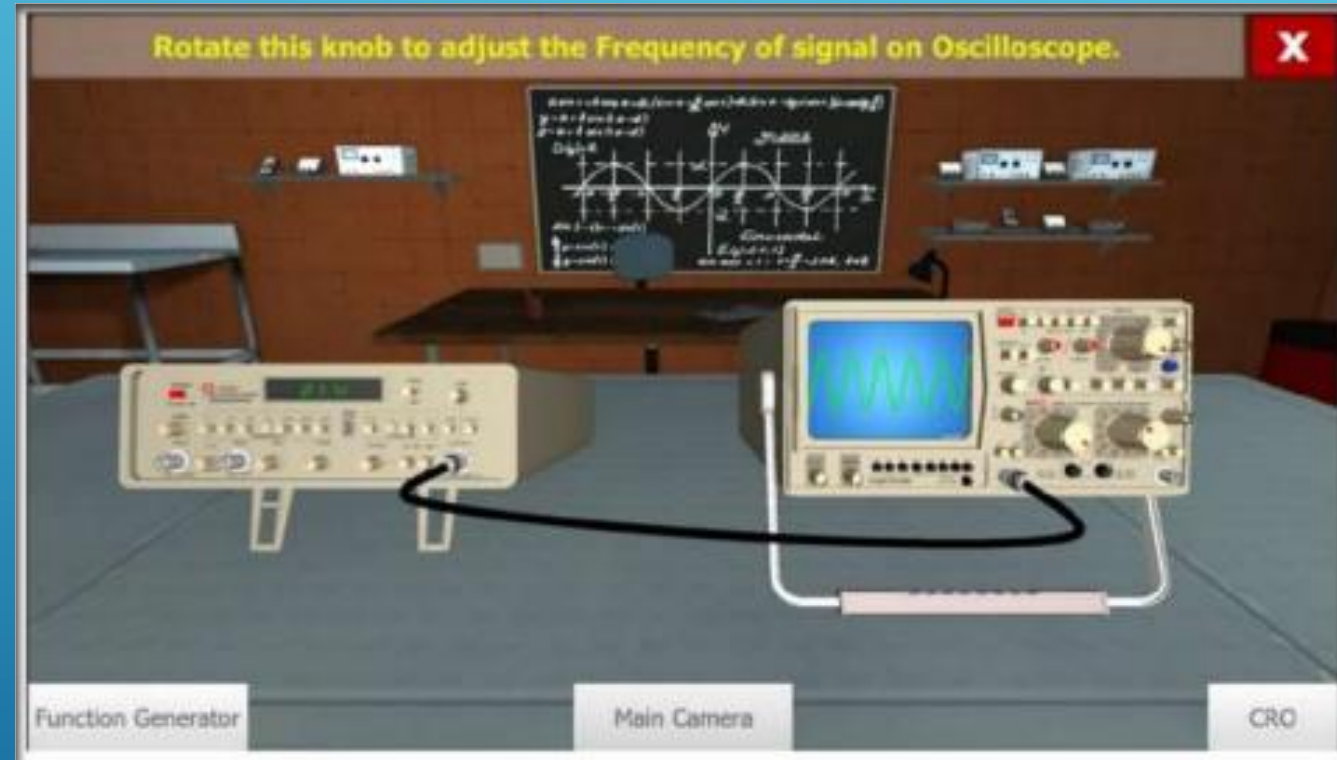
CONCLUSION

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For more information

Virtual RealityTechnologies:
Analysis of their Application in
Electronic Engineering Career
Programs.

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