

GRADE 9-12:

Engineering & Science Career Core Body of Knowledge

1.1: Explore careers in engineering and science.

PROCEDURE:

In discussion before viewing *Virtual Reality: Careers*, the teacher may consider engaging students in discussion on any of the following topics:

- Virtual reality is a 3D computer-based simulation.
- Virtual reality can be used to train medical professionals.
- Virtual reality is a cutting edge tool used in many professions.
- Virtual reality developers come from a variety of backgrounds.
- Virtual reality environments can allow learners to have experiences that might be costly or dangerous to have in real life.
- Virtual worlds and virtual environments may pose the same safety risks as other uses of networks and the Internet.

In discussion after viewing *Virtual Reality: Careers*, the teacher may have a follow-up discussion on the same topics discussed before viewing the video.

BEFORE VIEWING:

Have each student complete the “Before Viewing” column on the Agree-Disagree Chart.

WHILE VIEWING:

Students make notes about their impressions of what skills in science, technology, engineering, mathematics and the arts they will need to go into careers that use virtual reality.

AFTER VIEWING:

Have students complete the “After Viewing” column on the Agree-Disagree Chart. Discuss the changes in their answers.

DIRECTIONS:

Mark whether you agree or disagree with each statement in the left column before viewing the video. After viewing the video, identify whether you agree or disagree with each statement in the right column. Discuss each statement as a group.

<i>Before Viewing</i>	<i>Statement</i>	<i>After Viewing</i>
Agree Disagree	Virtual reality environments are different from other online experiences because a learner feels they are immersed in that environment and can interact with it.	Agree Disagree
Agree Disagree	Virtual reality as a career field is only for professional scientists.	Agree Disagree
Agree Disagree	Virtual reality projects require teams of people with many different skills in order to create the environments.	Agree Disagree

PROCEDURE:

Distribute the pre and post-viewing guide on the following page to provide focused viewing for students while watching the STEM Career Lab video, *Virtual Reality: Careers*.

Before viewing the video, instruct students to read and respond to the “What I Already Know” column of the *Virtual Reality: Careers Viewing Guide*. Let students know it’s okay if they do not know all of the answers. Play the *Virtual Reality: Careers* video and instruct students to now fill out the “What I Learned” column. After playing the video, use the guide to facilitate a post-viewing discussion with students.

1. Virtual reality refers to using computers to create simulated environments and then interacting with them.
2. What makes virtual reality experiences different from most online computer use is the user's sense of being immersed in and interacting with the environment—of “being there.”
3. Virtual reality users can use 3D glasses, head-mounted displays, 3D monitors and 3D projectors to view the environments. Some systems use handheld controls such as gloves and joysticks if force or touch feedback is involved.
4. Medicine, architecture, construction, product design and manufacturing use virtual reality technologies today. 3D moviemakers and designers of 3D virtual worlds for games also use the technology.
5. Virtual reality designers need math skills, computer programming skills, computer engineering skills (hardware) and graphics arts skills, among many others.
6. Medical professionals use the technology to train and practice surgeries, as well as for patient rehabilitation.
7. Architects use the technology to create building models to help clients visualize new designs and understand construction processes.
8. Game designers use the technology to create immersive worlds that can be used for learning as well as for social interaction with other players.
9. Virtual reality designers like to create artificial places and then have the experience of walking through them.

	<i>What I Already Know</i>	<i>What I Learned</i>
1. What does the term "virtual reality" mean?		
2. What makes virtual reality experiences different from most online computer use?		
3. What equipment can you use to experience a virtual reality environment?		
4. What career fields use virtual reality technology today?		
5. What kinds of skills do virtual reality designers need?		
6. How do medical professionals use the technology?		
7. How do architects use the technology?		
8. How do game designers use the technology?		
9. What do virtual reality designers like about their jobs?		