

Practical integration of machine components with MetaQuest2 – V1:

Technology tools (version):	Hardware: Meta Quest 2
Requirements: What do you need? (Think hardware, skills, knowledge.)	<p>One laptop per group of 3 students and one for the teacher</p> <p>Meta Quest 2</p> <p>Skills of mechanical education</p> <p>App “Campfire” - meta quest store - https://shorturl.at/klOT4</p> <p>The lesson is for students who have some years of experience on mechanical (design) skills and knowledge.</p>
Optional technologies:	
Date:	17/01/2024
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Topics of the lesson(s):	Practical integration of machine components and assembly
Estimated time:	+ 100 min

Lesson title/subject: Practical integration of machine components

Intention: What do you wish for or hope to happen? (Intentions are often not measurable or tangible, but help you in developing the design process.)

1. Students are introduced to a technical problem/situation: a handle in their next project Gumball machine is turned but does not yet have a connection to the part below it through which the gumballs should fall.
2. Students discuss in group what could be possible solutions for the problem.
3. Students learn the different ways to realize transmissions between two parts.
4. Students learn to (dis)assemble their future project and get to know their difficulties and design-possibilities.
5. The students learn to visualise a breakout of an assembly and parts individually
6. The students will learn the basic meeting skills with the application Campfire on the META QUEST 2

Desired Outcomes: One or more measurable and tangible goals the teacher aims for with this lesson/these lessons.

1. The students choose their own assembly method to make their own version of the project with all the features the original assembly has.
2. They learn to communicate with each other about a hard to visualise topic.

Agenda: HOW are you going to reach the goals? Description of the lesson plan / educational activities / working methods.

1. Students come to class. We talk briefly about the mechanical problem the teacher told us about.
2. Students and teacher discuss possible solutions to the problem the design might face. We discuss the advantages and disadvantages of each possible outcome.
3. Teacher gives some examples of possible solutions. Some of these have already been told in the discussion.
4. Students learn about all the different types of keys and pins they could use in their own version of the project. The group divides into groups of 3 students each and open the app Campfire.
5. When a group has only 1 pair of glasses available, group members without glasses can follow along on the screen.
6. The teacher explains how to launch the VR glasses and app.
7. The teacher shows on the power point the different steps the student must do.
8. Students can test the app with the VR goggles and open the meeting in their own team.
9. Each team makes sure it has a clear idea of the possibilities for creating the and makes it its own choice regarding the composition of the project.

10. When the visualisation is complete they can search for more information about their possible solution. The teacher walks around in class to get to know the possible outcomes and progress.

Roles: Who facilitates what? Who participates? What do we expect of the students?

For students STEM from 16 to 18 years old

1. Teacher -> instructs, leads the lesson
2. Students -> take part in the class activity and discuss with other students

Rules: Rules or principles are about how you want to learn and work together.

1. Open atmosphere -> everybody can share their ideas with the class.
2. Have respect for everybody that is taking part in the activity. Stay in your group and let everyone experience the process and listen to each others viewpoints on the project.
3. Each team learns from the other teams' ideas. Different perspectives on a problem require a professional environment.

Time: Describe the time path: What time do we start / finish / break? When is the time for reflection? What happens between contact times?

1. (2min) students in the classroom.
2. (5min) introduction to the problem coupled with a short class discussion
3. (3min) the teacher explains the assignment for this lesson.
4. (5min) The teacher explains what type of keys and pins there are available.
5. (5min) The teacher explains the most important features of the app "Campfire"
6. (25min) The students can start on their own and use the app to visualise the problem and the possible solutions. The teacher helps the students.
7. (5min) a small final discussion about the most common solutions before each team starts to design their own project.
8. (30-... min) time to draw out the project on the computer and gather some more information like dimensions and use of their chosen solution(s)

Approximately +- 100 min.

It's the startup lesson for an bigger project and can be followed by lots of types of different subject which require more time eventually.

Followable topics i would connect to this lessons are:

Types of bolts and nuts, sheet metal parts, different types of materials, practical work like actually make all the parts, ...

A lot of different topics can be connected to this project.



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