

3D Modeling Course Teacher Guide With Virtual Reality Note: 1,2 and 3. Weeks will be processed according to virtual art course (Virtual Art) according to the same program.

#### 4. Week

**NAME OF EVENT:** Digital Sculpture and Modeling Tools of Virtual Reality

**OBJECTIVE:** To introduce virtual reality (SG / VR ) Digital Sculpture and Modeling Tools .

**LEARNING OUTCOMES:** Participants;

- Vr Modeling Artists and their work learn,
- They learn about VR Modeling software,
- Oculus Medium software understands topics related to modeling tools,

**MATERIAL:** Oculus Rift VR Titles and Controls, VR-compatible computer, Oculus Medium Software, "VR-Modeling-Artists.PPT", "VR-Digital Sculpture Tools.PPT", "Clay Tool Use (Video)"

**DURATION:** 150 min. (a 10 min break is given at 50 min.)

#### COURSE OPERATION

1. “VR- Modeling Artists . PPT ” presentation opens . In the first 50 minutes of the lesson, VR artists are introduced. Using the artist's website links in the presentation, the works of the artists are watched and the methods of production are discussed in the classroom.

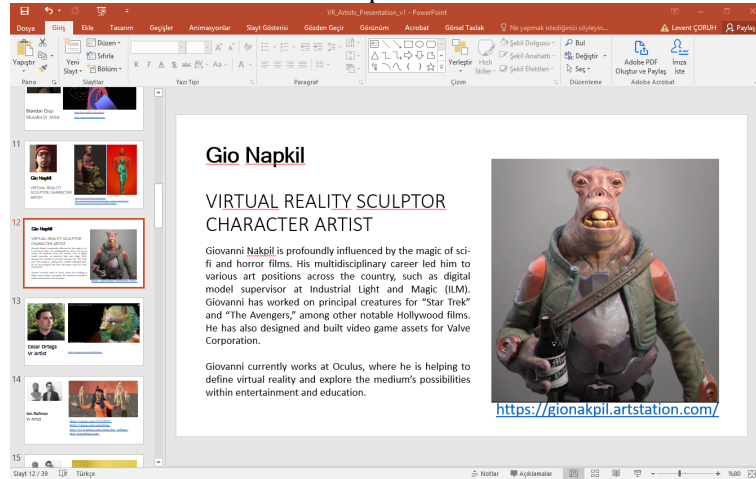


Figure 1 . VR Modeling Artists presentation.

2. “VR- Modeling Tools.PPT” presentation opens. Presentation of Media Oculus masterpiece is, sculpting the software's pages related to heat are shown. Software's are introduced by way of presentations to students.

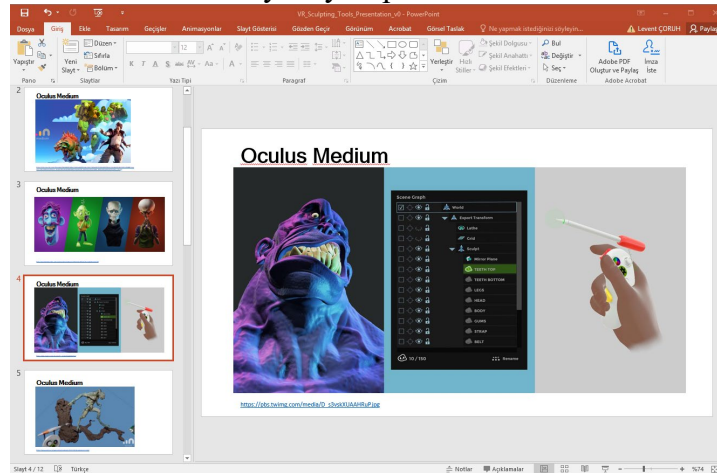


Figure 2 . Presentation of VR Modeling tools.

**3. Make the following statement to the student about digital sculpture modeling tools:**

*This course will focus on Oculus Medium, a digital sculpture production tool. With this software, virtual reality (VR) models you create the environment to revive the virtual to iskeletlendir or more details to add so jobs 3dsmax and transferred to professional design software such as Maya and b u models of 3 B can print with printers.*



**Figure 3 . a) Produced by Oculus Medium b) Rapid Prototyping with 3D printed in the model.**

Source: <https://www.tomshardware.com/news/oculus-medium-touch-art-program,33061.html>

**4.** Before starting the study, students are asked whether they watch TiltBrush "Clay Tool" training videos on the CDICAE project website specified in the course syllabus . Videos they do not watch are watched together.

**5.** *The use of basic tools and controls is shown superficially, so that students can create geometries with the method of adding and removing with the Clay Tool. They are allowed to enter the VR environment directly and experience the environment and tools without being exposed to many theoretical issues. The students are given the following explanation: In the next weeks , the basics of digital sculpture creation and modeling tools in Oculus Medium software will be introduced in detail. Now please run the Oculus Medium software for 20 minutes to experience the experience of modeling Virtual Reality and focus on having your first contact by wearing the titles and entering the VR environment .*

**6.** Traditional clay sculpture mode to the llama methods VR modeling sculpture based on feedback received from students about the similarities and differences. Its advantages and disadvantages are discussed.

**7.** Students are asked to watch "Clay\_Tool", "Stamp\_Usage", "Sag\_Sol\_Hand\_Replacement", "Layer\_Resolution\_Change" videos from the CDICAE project website in preparation for the next lesson .

## **5. WEEK**

**NAME OF THE EVENT: Digital Sculpture and Modeling Tools of Virtual Reality**

**OBJECTIVE: To introduce** virtual reality (SG / VR ) Digital Sculpture and Modeling Tools .

**LEARNING OUTCOMES:** Participants;

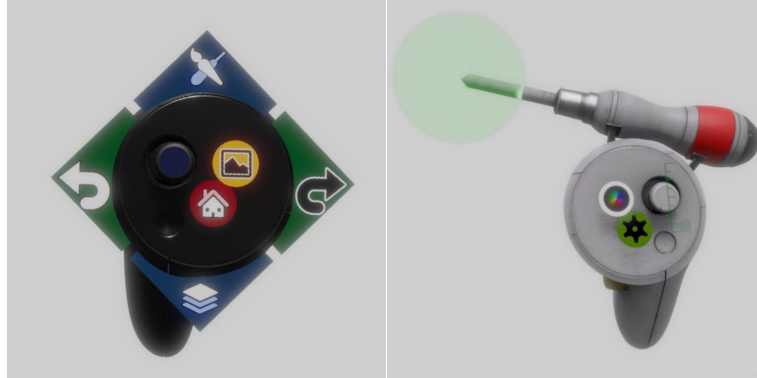
- Get information about VR Modeling Artists and their work,
- Have information about VR Modeling software,
- Understand the issues related to the Oculus Medium software controls ,
- Understand the issues related to Oculus Medium software models tools ,

**MATERIAL:** Oculus Rift VR Hood and Controls, VR compatible computer, Oculus Medium Software , (Video) ”

**DURATION:** 150 min. (10 minutes intervals are given every 50 minutes.)

## PROCEDURE:

1. **Working to start by introducing the properties of controls in detail. Explain the combinations and button combinations as follows:** The Oculus Medium software works with two controllers, the Primary Hand and the Second Support Hand. When the program is run for the first time, which one is the primary hand is selected. The primary hand can be changed later .

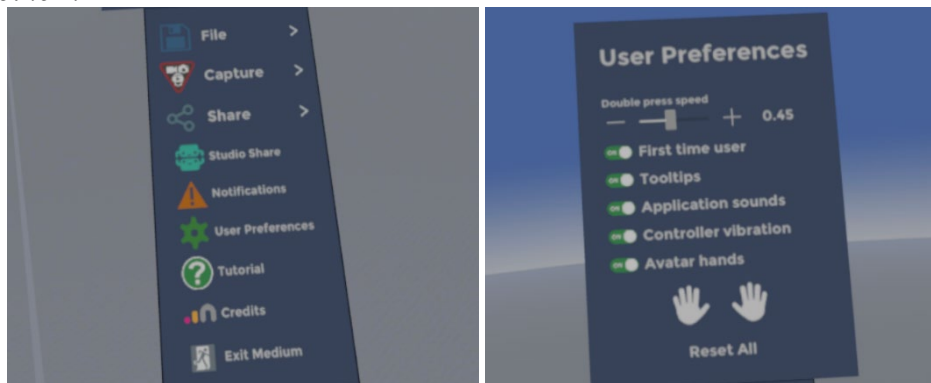


**Figure 1.** Oculus Medium Right and Left Control command patterns.

Source: <https://us.v-cdn.net/6024342/uploads/editor/0w/xmt7raidfeb8.pdf> (Oculus Medium Oculus Medium Users Manual V1)

2. **Make the following explanation to the students about changing the right-hand and left-hand controls:**

*If you are left- handed , you can select hands from the pop-up panel by selecting the user preferences (User Preferences) from the menu that opens when you press the X button on the left control to change the right and left hand controls . Thus, the primary and secondary features of the controls will be changed to another .*



**Figure 6.** Right-hand and Left-hand switch.

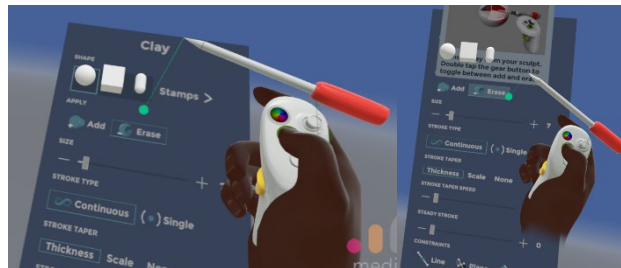
3. **Students tools palette as showing Recognize:** *When you push the left-hand joystick control with the thumb will be opened in the toolkit. Here you can select the appropriate tools for Clay, Paint (Paint), Smooth ( Inflate ), Inflate, Cut (Cut), Flatten, Swirl, and Smudge operations. The selection process; With the primary (right hand) control, you can point on the pallet and press the trigger.*



**Figure 4 . Oculus Medium Software Tools Palette**

Source: <https://cdn.mos.cms.futurecdn.net/fnkdfv2F2UsvG7G2FghEGh.png>

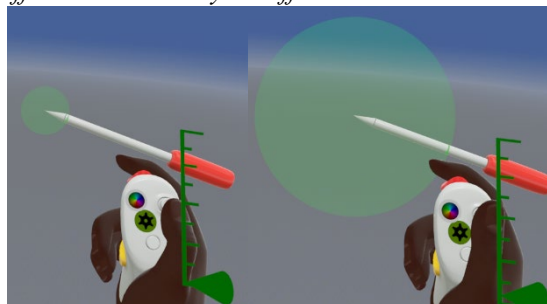
4. **Clay modeling** Students Leave the car and asked them to choose to make the following explanation: right on your hand control "green gear" press the button with the icon. Here you can choose the form of the GLASS, CUBE or CAPSULE for the clay you will use on the stage (you can think of it as a brush tip). The "Add" button must be active for the clay insertion mode and the "Erase" button for the delete mode. When you press the trigger in the insert mode, adding new volume to the place where your control tip is located, while in the delete mode, pressing the trigger while touching the existing volume, that part of the geometry will be deleted.



**Figure 5. Clay tool settings panel.**

Source: Screen quote (L. Coruh).

5. **Show the change of the brush size by applying it to the students;** When you push the thumb control stick on the right hand control back and forth, the brush size will increase and decrease . Now bring the brush length to different sizes and try the effect.



**Figure 6 . Adjusting the brush size .**

Source: Screen quote (L. Coruh).

6. Ask students to run the *Oculus Medium* software and wear their titles to enter the VR environment and try the introduced control features .
7. Encourage students to practice with the tools introduced in the remaining time until the end of the lesson and to try other tools. Guide the software to become familiar with the production logic and to spend enough time in the VR environment.

## 6. WEEK

**NAME OF THE EVENT:** Digital Sculpture and Modeling Tools of Virtual Reality

**OBJECTIVE:** To introduce virtual reality (SG / VR ) Digital Sculpture and Modeling Tools .

**LEARNING OUTCOMES:** Participants;

- Get information about VR Modeling Artists and their work,
- Have information about VR Modeling software,
- Understand the issues related to Oculus Medium software modeling tools ,

**MATERIAL:** Oculus Rift VR Hood and Controls, VR compatible computer, Oculus Medium Software , (Video) ”

**DURATION:** 150 min. (10 minutes intervals are given every 50 minutes.)

**PROCEDURE:**

1. Ask students to run the *Oculus Medium* software and wear their titles to enter the VR environment. Run the software by wearing your own title at the same time.

2. *Introduce students to the use of Stamps as follows: Press the button with the "green gear" icon on your right hand controller. Then click on the "Stamps" button. Stamps allow you to quickly obtain complex shapes through ready-made geometries. You can add ready-made objects to your scene in categories such as household items, basic geometries, human anatomy, mechanical parts, rocks, dresses etc. You can even use it as a brush tip.*

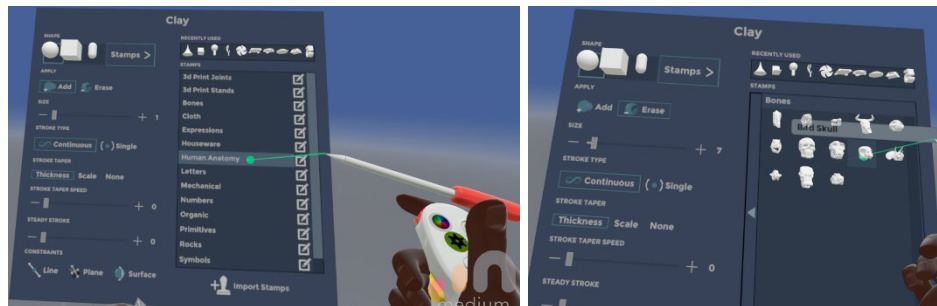


Figure 1 . Oculus Medium software Clay tool stamps panel .

Source: Screen quote (L. Coruh).

3. **Make the following statement about the Stroke Type setting:**

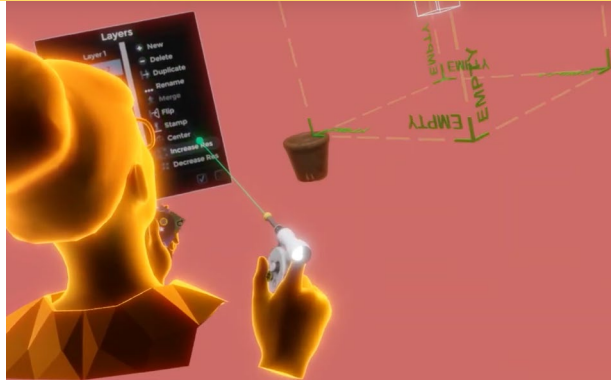
*There are two options as drawing type, continuous and single. You can switch between modes by checking the Continuous or Single drawing type to the Stroke Type option. If you want to create a ready stamp on the stage, it is useful to select the single drawing mode.*

4. Then ask the Students to select a stamp and increase the brush size to add the stamp of their choice to each scene as objects. Get verbal feedback about the usage difference of the modes.

5. **Make the following statement about changing the Layer resolution they will create :**

*You can increase the resolution of the layer (Layer) they are in to make the stamps you just created on the stage appear more detailed. To do this, either select the layer or open the Layers panel by pulling down the control bar you control with your left thumb, create a new layer by pressing the "New Layer" button and select the resolution with the "Increase Res" option from the "Actions" command group several times. increase.*





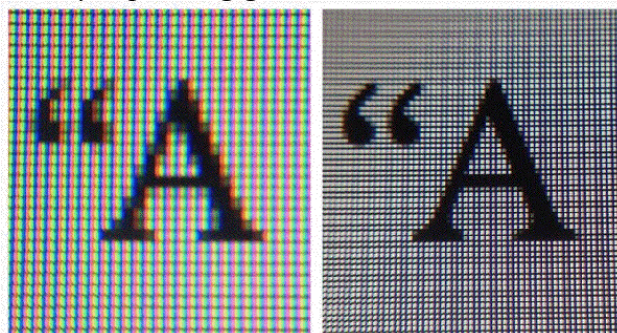
**Figure 2 .** Oculus Medium software k provincial tool belonging stamps panel.  
Source: <https://www.youtube.com/watch?v=9vWDdz6vJos> (Oculus Medium Basics: Stamps).



**Figure 3 .** Ready-made stamps created in layers of different resolutions.  
Source: Screen quote (L. Coruh).

6. By creating two layers, as shown in Figure 3, practically increase the resolution of one by 3 times and create the same ready stamp in both layers. Ask the students about the reason why the detail difference may be caused.

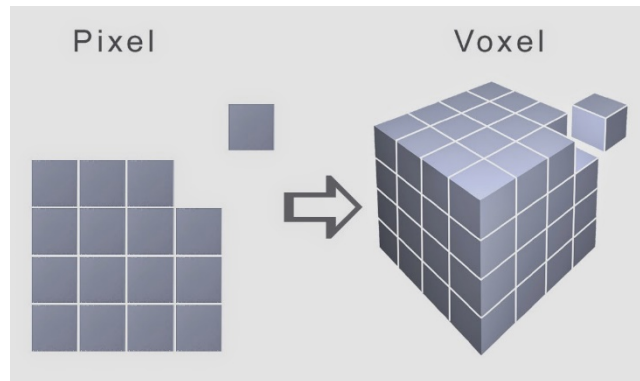
7. **Explain the concept of Voxel (Volume Pixel) to the students as follows:**  
**When the resolution for the image is mentioned, the amount of the elements that make up the image, that is, the smallest unit that creates the image, comes to mind. The term Pixel is derived from a combination of the words "Picture" and "Element", meaning the smallest element that makes up the picture. Pixel are 2D 2D Raster graphics that can be defined as each colored dot (usually square) that creates the image in a horizontally and vertically expanding grid.**



**Figure 4 .** Pixeller in Different Resolutions.  
Source: <https://www.quora.com/What-is-pixel-per-inch-in-mobile>

*Voxel (Volume Pixel) is the 3D dimension of the pixel. While Pixel only covers an area in the horizontal and vertical (X, Y) direction, Voxel has a volume in three*

directions, horizontal, vertical and depth (X, Y, Z). Apart from the volume feature, it is the element with the smallest volume that creates the image, similar to the definition of pixel.



**Figure 5 . Pixel and Voxel (Volume Pixel)**

Source: [https://miro.medium.com/max/1121/1\\*RIQ6mPYoFhS7pk6YyLPNqQ.jpeg](https://miro.medium.com/max/1121/1*RIQ6mPYoFhS7pk6YyLPNqQ.jpeg)

8. Previous week introduced the "CLAY TOOL" and that "STAMPS", "Resolution Switching", "Changing hands" commands as an individual experiencing able to releasing her selection of students from 20 min's. Ask them to make digital sculpture work . Make the following reminder to the students about the studio work:

*Seals Applications The purpose of the stock and clay tool to create original forms using together , forming layers of different resolutions, the layers between the gun to make Graduating ready stamp category and recognize objects, if you are left-handed is to change hands for control. You are expected to create unique geometries using the information learned in the studio work.*

9. At the end of the 20-minute period, ask the students to change their titles and evaluate the work of their friends orally . and make the following explanation:

*Now the operation of your friends without having to adhere to the previous one, k , I want you to develop according to the terms of point of view. Your time for this is 20 minutes.*

10. At the end of the period, the students are provided to return to the titles they put on and see how their studies have changed and developed in another direction.

11. In the remaining time, the students are asked to make and save a free theme model .

12. CDICA project in preparation for the next lesson the students from the website VR Modeling Course topics from " Flattening Tool ( Flatten Tool )", " Alias Tool (Smooth Tool)", " Transport Agent ( Move Tool )" , "Painting Tool (Paint Tool)" videos they are asked to watch.

## 7. WEEK

**NAME OF THE EVENT:** Digital Sculpture and Modeling Tools of Virtual Reality

**OBJECTIVE:** To introduce virtual reality (SG / VR ) Digital Sculpture and Modeling Tools .

**LEARNING OUTCOMES:** Participants;

- Get information about VR Modeling Artists and their work,
- Have information about VR Modeling software,
- Understand the issues related to Oculus Medium software modeling tools ,

**MATERIAL:** Oculus Rift VR Hood and Controls, VR compatible computer, Oculus Medium Software , (Video) ”

**DURATION:** 150 min. (10 minutes intervals are given every 50 minutes.)

**PROCEDURE:**

1. Before starting work, the students mentioned in the syllabus CDICA project website via the Oculus Medium V R Modeling related tools " Flattening Tool ( Flatten Tool )", " Alias Tool ( Smooth Tool )", "Painting Tool ( Paint Tool)", "Migration Tool ( Move Tool )" are asked if they watched the training videos. Videos they do not watch are watched together.

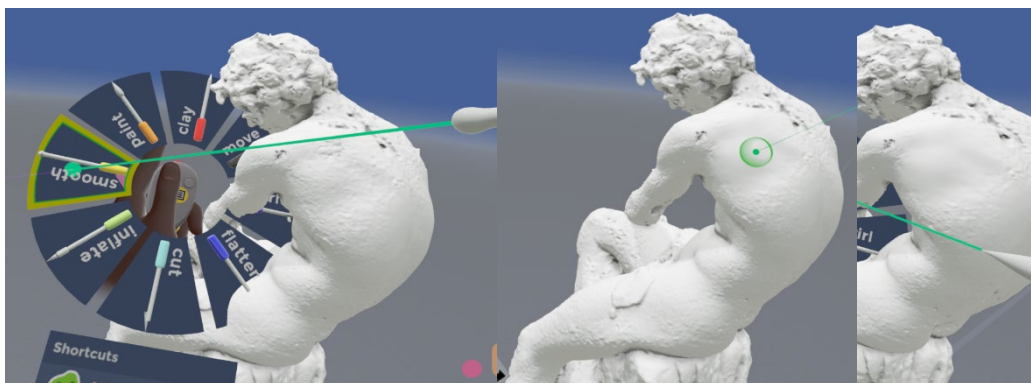
2. Then, the instructor makes the following explanation about the topics covered in the videos;

*With the Smoothing tool (Smooth) in the Oculus Medium tools palette, you can soften the recesses on the surface. After selecting the tool Smooth softened to line holding his right hand toward the surface by pressing the trigger (or holding) can soften the surface as you want. You can adjust the size of the area to be softened by pressing the green gear icon in the current tool menu you open.*



**Figure 1 . Pixel and Voxel (Volume Pixel)**

Source: [https://miro.medium.com/max/1121/1\\*RIQ6mPYoFhS7pk6YyLPNqQ.jpeg](https://miro.medium.com/max/1121/1*RIQ6mPYoFhS7pk6YyLPNqQ.jpeg)

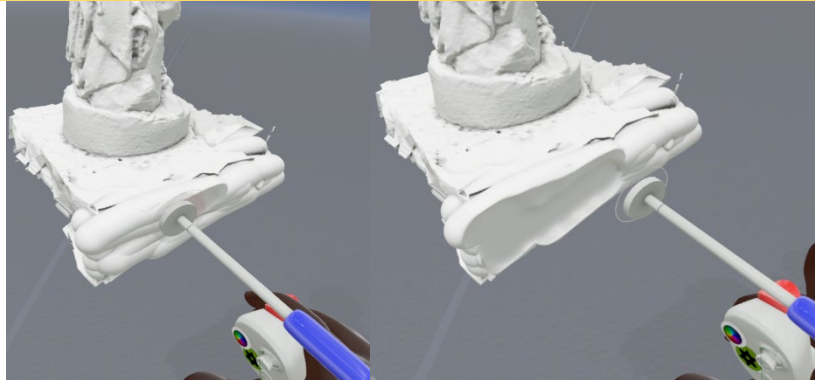


**Figure 2 . Softened surface.**

Source: Screen Capture (L. Coruh).

3. Make the following explanation to the students about the straightening tool; Oculus Medium car on the palette Flattening Tool ( Flatten Tool) with the region you want, you can flatten the surface.

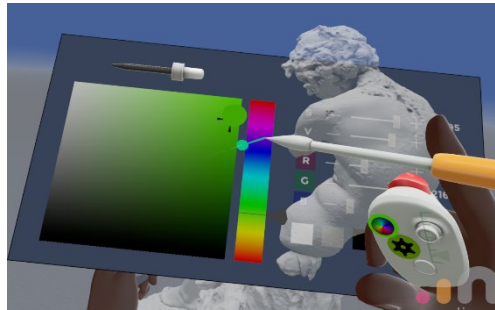




**Figure 3 .** Flattened surface.

Source: Screen Capture (L. Coruh).

4. **Give the following explanation to the students about the painting tool; Oculus Medium tools Painting palette Tool ( Painting Tool) and can color as the surface of the painting with spray paint gun is. To do this, first open the color palette by pressing the B button on the right hand control and select a color.**



**Figure 4 .** Color choice .

Source: Screen Capture (L. Coruh).

*You can spray the color of your choice on the model by holding down the right hand control trigger .*



**Figure 5 .** Surface painting.

Source: Screen Capture (L. Coruh).

5. **In the remaining time, students are asked to model and save a free theme.**
6. **Students after visa first as a preparation course from CDICA project website VR Modeling Course topics from " Transport Agent (Move Tool)", "Cutting Tool ( Cut Tool)", " Blow Tool (Move Tool )" video monitoring is desired.**

## 8th-9th WEEK

### NAME OF THE EVENT: MID-TERM EXAM

**EVALUATION METHOD SUMMARY:** Mid- term exam evaluation of this course is based on a work of art and process assessment : Exams are measured over 100 points. A process evaluation form will be used for evaluation (Appendix) .

### EVALUATION PLAN

Exam	topic		
Midterm Project 1	Art Work	70%	
General Performance	Individual Classroom Performance	20%	Total 100%
Exam Presentation	Visual Presentation Performance	10%	

### EVALUATION CRITERIA :

- Art Work
  - Preparation (25%)
    - Developing Design Idea
    - Preparation of Working Text (Manifesto)
    - Sketch
    - Selection of suitable tools / software / tools (Brush etc.) to work
  - Timing (10%)
    - Working in accordance with the lesson plan
  - Quality (35%)
    - Conclusion study and sketch compatibility
    - Aesthetic quality
    - Originality and Creativity
    - Attention to Details and Touch-ups
  - Exam Presentation (10%)
  - General ( In-Class Individual ) Performance (20%)
    - Careful use of studios and equipment
    - Working discipline and independent performance
    - The complexity / level of digital technology used
    - Attendance to the course
    - Participation in activities related to the field

**DURATION:** Day 1 artwork and report submission.

Day 2 15 min visual presentation + 5 min question answer time.

## 10. WEEK

**NAME OF THE EVENT:** Digital Sculpture and Modeling Tools of Virtual Reality

**OBJECTIVE:** To introduce virtual reality (SG / VR ) Digital Sculpture and Modeling Tools .

**LEARNING OUTCOMES:** Participants;

- Get information about VR Modeling Artists and their work,
- Have information about VR Modeling software,
- Understand the issues related to Oculus Medium software modeling tools ,

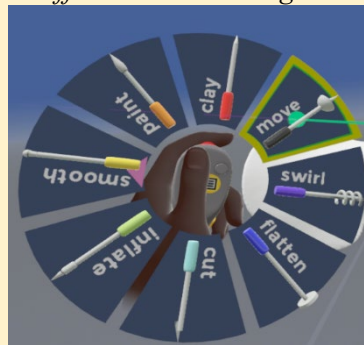
**MATERIAL:** Oculus Rift VR Hood and Controls, VR compatible computer, Oculus Medium Software , (Video) ”

**DURATION:** 150 min. (10 minutes intervals are given every 50 minutes.)

1. Before starting work, the students syllabus specified in CDICA project website via the Oculus Medium modeling commands regarding " Migration Tool (Move Tool)", "Cutting Tool ( Cut Tool)", " Blow Tool (Move Tool )" are asked if they watch a training video monitor. Videos they do not watch are watched together.

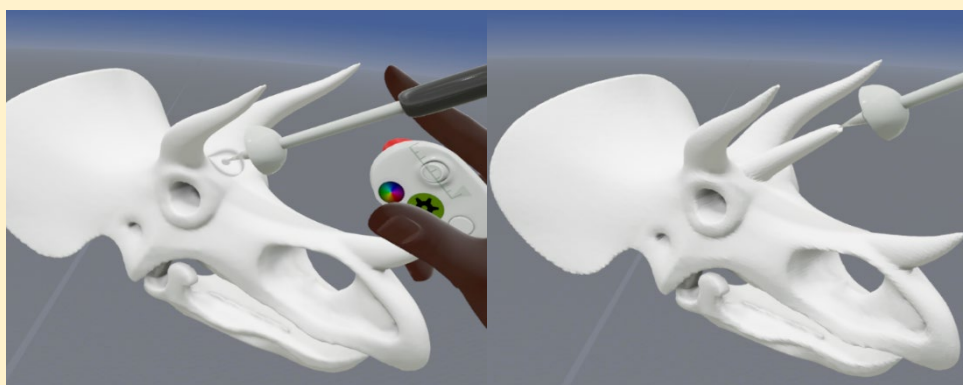
2. Then, the instructor makes and explains the following explanation about the topics covered in the videos :

*With the Move tool in the Oculus Medium tools palette, you can stretch the geometry outward or inward from the point where you touch the surface. Depending on the size of the brush, the area covered by the transport effect will also change.*



**Figure 1 .** Move tool.

Source: Screen Capture (L. Coruh).



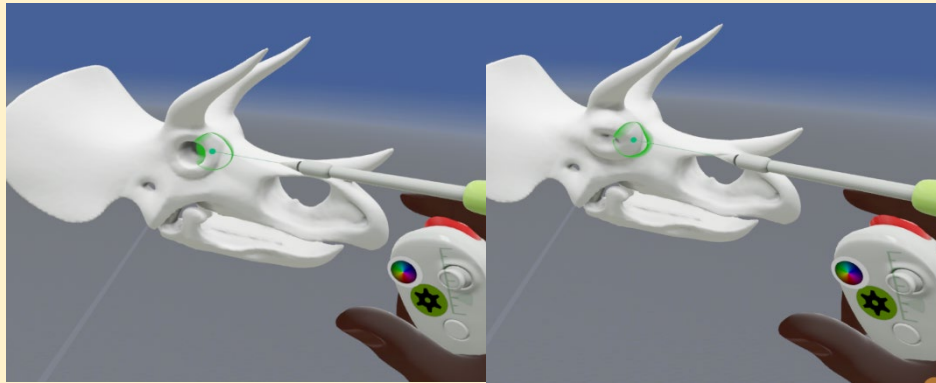
**Figure 2 .** Use of Move tool.

Source: Screen Capture (L. Coruh).

*With the Inflate tool in the Oculus Medium tools palette, you can hover the object area by hovering over the object geometry with your brush.*



**Figure 5 . Inflator tool .**  
Source: Screen Capture (L. Coruh).



**Figure 5 . Inflation tool usage .**  
Source: Screen Capture (L. Coruh).

*With the Cut tool (Cut) in the Oculus Medium tools palette, you can cut the object from a desired section. This section does not have to be linear. When you pass the right hand trigger by pressing the right part of the part you want to cut, the object and the cut part will be separated into separate layers and can be selected from the layers menu and will be moved and sized independently.*



**Figure 4 . Use of cutting tool .**



**Figure 5 .** Use of cutting tool .  
Source: Screen Capture (L. Coruh).

3. *By releasing the topic selection , ask the students to make digital sculpture work by focusing on the commands introduced in the rest of the lesson .*
4. *Inform students to prepare original study sketches and bring them to the next lesson for the final project they will develop.*

### 11 , 12, 13, 14 and 15 WEEKS

#### **ACTIVITY NAME: Virtual Real Painting Tools**

**OBJECTIVE:** Studio Work with Virtual Reality (SG / VR ) Painting Tools

**LEARNING OUTCOMES:** Participants;

- Understand the issues related to Google TiltBrush software ,
- With the Google TiltBrush software, they comprehend the application practices on the topics they learned in the previous week.
- They meet new commands with the Google TiltBrush software.
- They adapt to the painting environment with SG .

**DURATION:** 150 min. (10 minutes intervals are given every 50 minutes.)

#### **PROCEDURE:**

1. Students are asked to make self-assessment and peer assessment for visa studies. Feedback is received from students about the studies.
2. Sketches they developed for the final work are evaluated.
3. They continue their individual studies for 5 weeks, where students will develop their projects. The trainer monitors the work of each student periodically and guides them as necessary. This guidance should be done by giving and encouraging the critics that will carry each student forward individually according to the working speed, style and nature of the study.



## 16th 17th WEEK

### NAME OF THE ACTIVITY: FINAL EXAM

**EVALUATION METHOD SUMMARY:** The final exam evaluation of this course is based on a work of art and process evaluation : Exams are measured over 100 points. A process evaluation form will be used for evaluation (Appendix) .

### EVALUATION PLAN

Exam	topic		
Midterm Project 1	Art Work	70%	
General Performance	Individual Classroom Performance	20%	Total 100%
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    - Developing Design Idea
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    - Sketch
    - Selection of suitable tools / software / tools (Brush etc.) to work
  - Timing (10%)
    - Working in accordance with the lesson plan
  - Quality (35%)
    - Conclusion study and sketch compatibility
    - Aesthetic quality
    - Originality and Creativity
    - Attention to Details and Touch-ups
  - Exam Presentation (10%)
  - General ( In-Class Individual ) Performance (20%)
    - Careful use of studios and equipment
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    - The complexity / level of digital technology used
    - Attendance to the course
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**DURATION:** Day 1 artwork and report submission.

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