



Erasmus+

Project funded by: **Erasmus+ / Key Action 2, Strategic Partnership for Vocational Education and Training.**

**(European Commission, EACEA)**



## **04 - Handbook for VR WAMA Game-based 3D Virtual Reality Educational Environment**

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# 1 INTRODUCTION

VR WAMA project aims to respond to the continuing and urgent needs of the growing environmental engineering and waste management sectors to develop highly qualified VET students with great skills and competencies able to fulfill the sector needs for highly qualified and specialized professionals. In this line, the project aims to develop an innovative, state of the art, highly efficient and concrete training framework to assist VET students to better learn more and teachers to teach more efficiently the challenging domain of environmental engineering and waste management in an attractive, effective and educationally advanced way.

Its objective is to enhance the students' qualifications, expertise and skills and thus increase their employability and assist them to make a career in the environmental engineering industry. The project consists of three main phases which are the Design, Implementation and Evaluation. Design will take place during the first months of the project with main objective to identify the needs for environmental engineering training in VET sector, and then design suitable, state of the art curriculum and innovative course for addressing them by utilizing state of the art technologies. Specifically, several studies and roadmaps on environmental engineering and waste management on European level will be formulated and introduced. The Implementation of the courses and the 3D game-based virtual reality training environment will take place after with an aim to prepare the learning materials and integrate them in virtual environment. The final phase of the project regards extensive testing of the developed Virtual World through various pilot learning activities, evaluating it and using the results to improve and eventually finalize it.

Project's output:

- **Intellectual Output 1 (O1):** Reports and roadmaps on European level for competences and best practices in Environmental Engineering, Waste Management and 3D Virtual Reality Educational Environments
- **Intellectual Output 2 (O2):** Curriculum and innovative Courses Formulation on Environmental Engineering and Waste Management in

- **Intellectual Output 3 (O3):** Open Learning Resources
- **Intellectual Output 4 (O4):** Game-based 3D Virtual Reality Educational Environment

More information at [www.VR WAMA.eu](http://www.VR WAMA.eu)

## **2 GAME-BASED 3D VIRTUAL REALITY EDUCATIONAL ENVIRONMENT**

Opensimulator can be used to create a 3D Virtual World and adjust it for educational purposes. OpenSimulator is an open-source multi-platform, multi-user 3D application server. It can be used to create a virtual environment (or world) which can be accessed through a variety of clients, on multiple protocols.

You need a server or a Virtual Machine where you install the necessary software. XAMPP can be installed to support MYSQL Databases and FTP transfer of files. You must create an empty database to be used by Opensimulator. Then you download Opensimulator, extract it and then configure the necessary parameters to connect to the local Database and use specific ports of the system. Network configuration is also necessary to allow port forwarding for TCP and UTP traffic through the required ports, in order to allow remote users (from 3D Viewers) to access the server. The system's Firewall also needs to be configured.

A specific module of Opensimulator can be configured to create a webpage for Avatar Management, so people can create their own avatars. When you run Opensimulator for the first time, a first region will be created and the administrator user.

Following this initial implementation, users should be able to create their own avatar accounts and use specific 3D Viewer software like Firestorm, to add the Virtual World and then connect with their avatar. Connected avatars will be able to communicate by writing messages in the local chat (visible by other avatars nearby) and also find specific users and send private messages. They will also be able to use a set of Gestures/Animations for their avatars to perform.

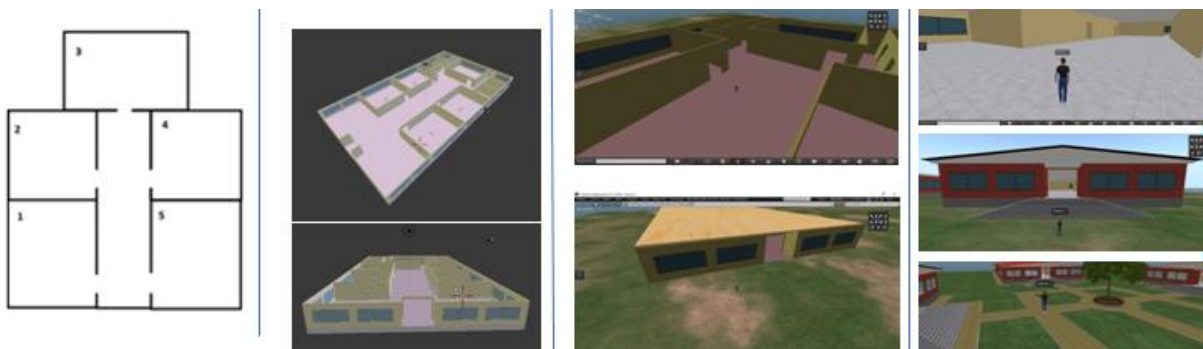
### **2.1 Design of the areas and buildings of the 3D World**

You can create one or more regions and configure their coordinates to specify their positions in relation to one another. Then you can adjust the terrain for each individual region using either heightmaps or by manually editing the terrain while connected with a 3D Viewer using the built-in tools.

For creating 3D objects like buildings, you can either use the built-in capabilities of 3D Viewers, by generating, editing, and combining simple “prim” objects. If you are more familiar, you can also use 3D Editing suites like Blender to design 3D objects and export them in the required “collada” format.

Additionally, there are archives with available 3D objects online where you can find specific objects to download and import in your 3D World.

In the following images you can see the steps for creating a school building for a Virtual World:



1. We start with a sketch or diagram of the building, as it is described in the scenario.
2. We then use 3D creation software to design the building.
3. We upload the exported file in Opensimulator and place it where we need it in the 3D World.
4. Finally, we adjust the textures for the walls and use scripts where needed (e.g., for doors or windows to open/close).

## **2.2 Implementation of general game mechanisms and scenario/material templates**

Apart from the general functionality of user interactions that the software allows, like moving your avatar, controlling the camera, editing appearance of your avatar and communicating with other users, you can create custom game mechanics, by taking advantage of the capabilities of the scripting language LSL.

For example, you can design and implement a custom HUD element that displays messages to the user or stores information about their progress. This HUD element is a window that will appear on the user's screen, and you can use buttons and images on it, to implement the functionality that you need.

Another common mechanism is to use NPC characters, controlled by scripts, that the user will be able to interact with, to receive information or take assessment activities. You can create a prototype script for NPC characters that you will later use to generate individual characters where needed.

You can also create some common types of assessment activities (quizzes, sorting and matching activities, puzzles e.t.c) and prepare prototypes that you can later adjust to implement specific iterations.

An important task is to author suitable learning scenarios that describe the required activities in a way that a technical team can interpret and proceed with implementation. It is advised to adjust these templates according to the game mechanisms you have created so the scenarios are in a format that will later facilitate their implementation.

An example template file "3D-ACTIVITY\_TEMPLATE.docx" is attached in Annex 1.

## **2.3 Integration of learning material in the 3D Virtual World**

According to the theory of the domain you want to teach and the content of the learning scenarios, you should have a collection of files that you want to integrate in the Virtual World to use alongside the learning scenarios. These material files can include presentation files with the theory, dialogues with NPC characters, questions and answers for quiz activities and other files depending on the assessment activities used in the scenarios. In most cases it is convenient to use Presentation files, and extract images for each individual slide.

You can upload all these image files using the 3D Viewer and manage them in your avatar's inventory. Then for each learning activity you implement, you can transfer the required images in the corresponding prim files so the LSL scripts can access and use them to set the texture for some object. For example, if the activity is a presentation panel, when you

click on a button, the texture of the main screen will change to display the next slide of the presentation.

If you want multilanguage support, it is convenient to use some prefix with the language code in the file names, which will be used in the scripts. You can use software like *Bulk Rename Utility*, to mass rename files according to some pattern.

## 2.4 Archive with scripts and objects

In the archive file “SCRIPTS.rar” you will find several scripts from our implemented scenarios that you can study and use for your own creations. Before using them, you should become familiar with the [LSL scripting language](#).

- Presentation Panel
- NPC character Prototype
- Quiz Activity (through HUD)
- Quiz Activity with two possible answers
- Matching Activity
- HUD Element for dialogues

There is also an archive file “OBJECTS.rar” where we have included various 3D objects we have designed for this project. They are all in the “collada - dae” format so you can easily upload and use them on your own 3D World:

- Barn
- Buildings
- City Skyline
- Factory
- Factory chimney
- Gate
- Presentation Panel
- Scarecrow
- Sign
- Street

- Teleportation portal
- Traffic sign
- Video Panel
- Wall
- Waste Heap



### 3 INTRODUCTION TO THE VR WAMA GAME-BASED 3D VIRTUAL REALITY EDUCATIONAL ENVIRONMENT

The online platform provides the player with 10 learning scenarios and a broad array of OERs (textbooks, presentations, multimedia, 3D objects) and interactive learning material created and/or gathered by the Consortium to enable learning and improve performance. The 3D Virtual World also includes functionalities for gamification and carrying out virtual sessions like conferences and seminars, a media library and other learning activities.



The VR WAMA Game-based 3D Virtual Reality Educational Environment includes:

- 6 areas with several buildings and 3D constructions,
- 13 learning activities (e.g assessment opportunities),
- 7 presentation panels,
- 5 video panels.

### 3.1 Introduction

The user arrives in the first area, where there is a quick presentation with instructions about the controls and some basic concepts of the game. An NPC character makes an introduction and there are a few short activities that provide parts of the theory while the user can collect some first points.



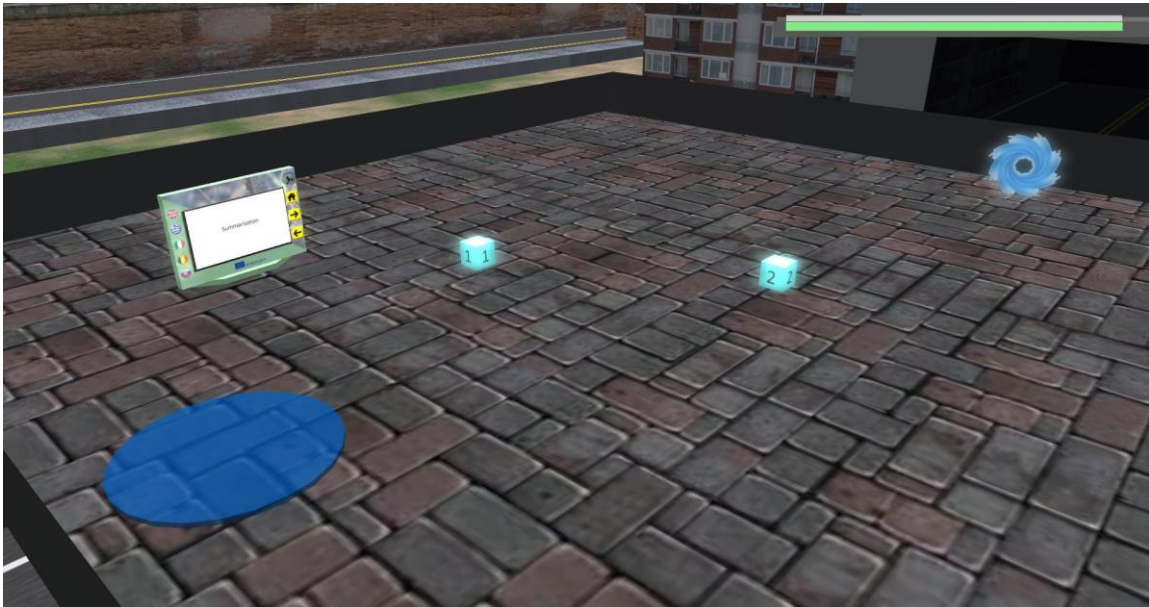
### 3.2 Smart City

In the second sub-area, the user must locate and interact with specific points, to receive information and answer questions to collect points.



### 3.3 Summarization

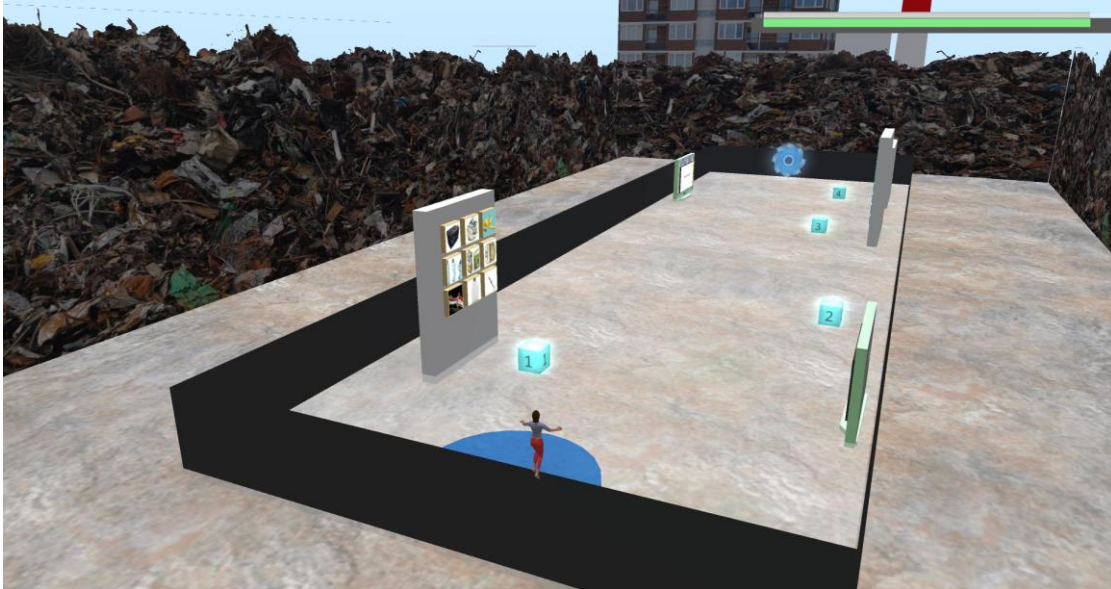
The third sub-area has a theory presentation with a summary of the concepts addressed so far and a quiz activity with multiple choice questions.





### 3.4 Waste Value & Pexeso Game

The next area takes the user in a landfill area outside of the city. There are theory presentations about Biodegradable Waste and various assessment activities.



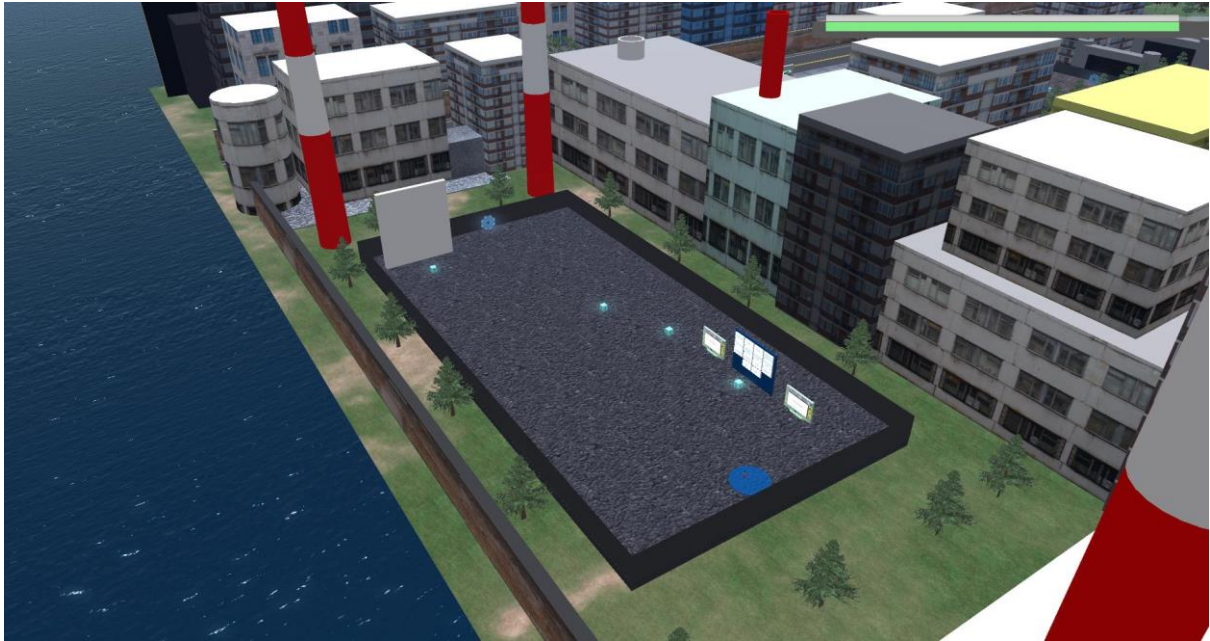
### 3.5 Circular Economy

Next the user arrives at a farm on a small island, near the city. There are theory panels about Climate Change and Circular Economy and a quiz with multiple choice questions.



### 3.6 Waste Treatment

Finally, the user arrives at the industrial part of the city, studies the theory about Waste Treatment and takes a few final assessment activities.



## 4 THE VR WAMA 3D VIRTUAL WORLD: HOW DOES IT WORK?

### 4.1.1 Account Creation

You can create an avatar account (Firstname, Lastname, Password) here:

<http://vrworld.sch.gr:9020/wifi/user/account/>

In the language field, you can select one of the available languages.

VRWAMA Virtual World  
Improve the Efficiency and the Attractiveness of Environmental Engineering and Waste Management Training with Game Based Virtual Reality

VRWAMA

Create new account

First Name: (\*)

Last Name: (\*)

Email:

Password: (\*)

Retype password: (\*)

Language:

- English
- Greek
- Italian
- Romanian
- Slovak

create

Main menu

- HOME
- CREATE ACCOUNT

Login

FIRST NAME

LAST NAME

.....

login

forgot password

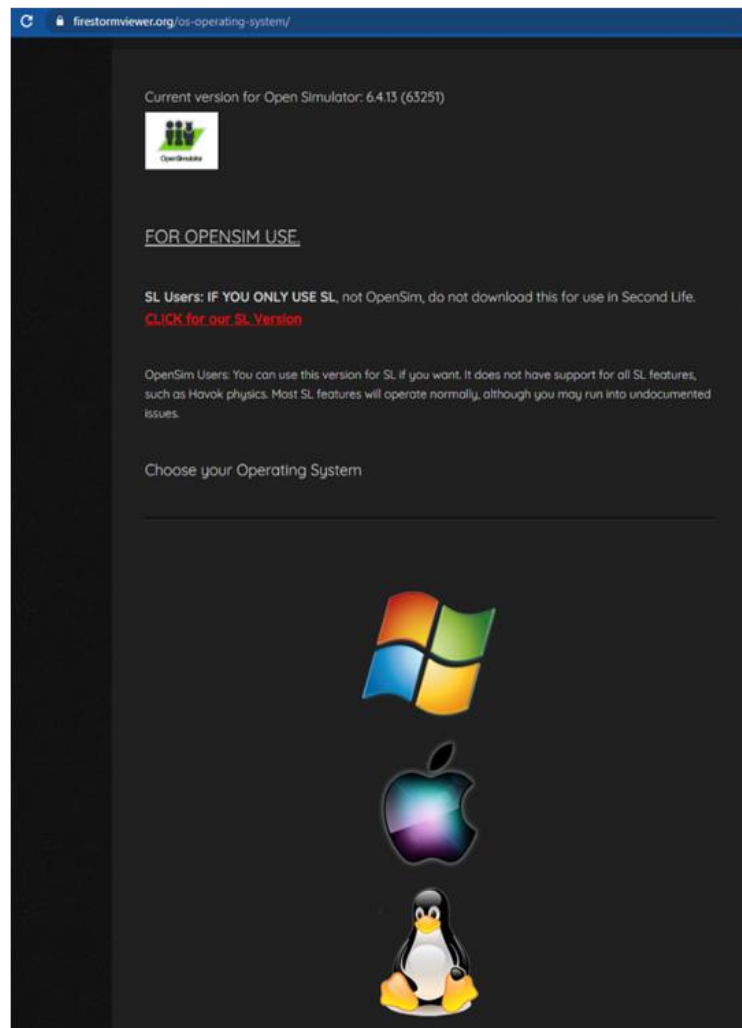
VRWAMA

Erasmus+

## 4.1.2 Installation and Initial Configuration

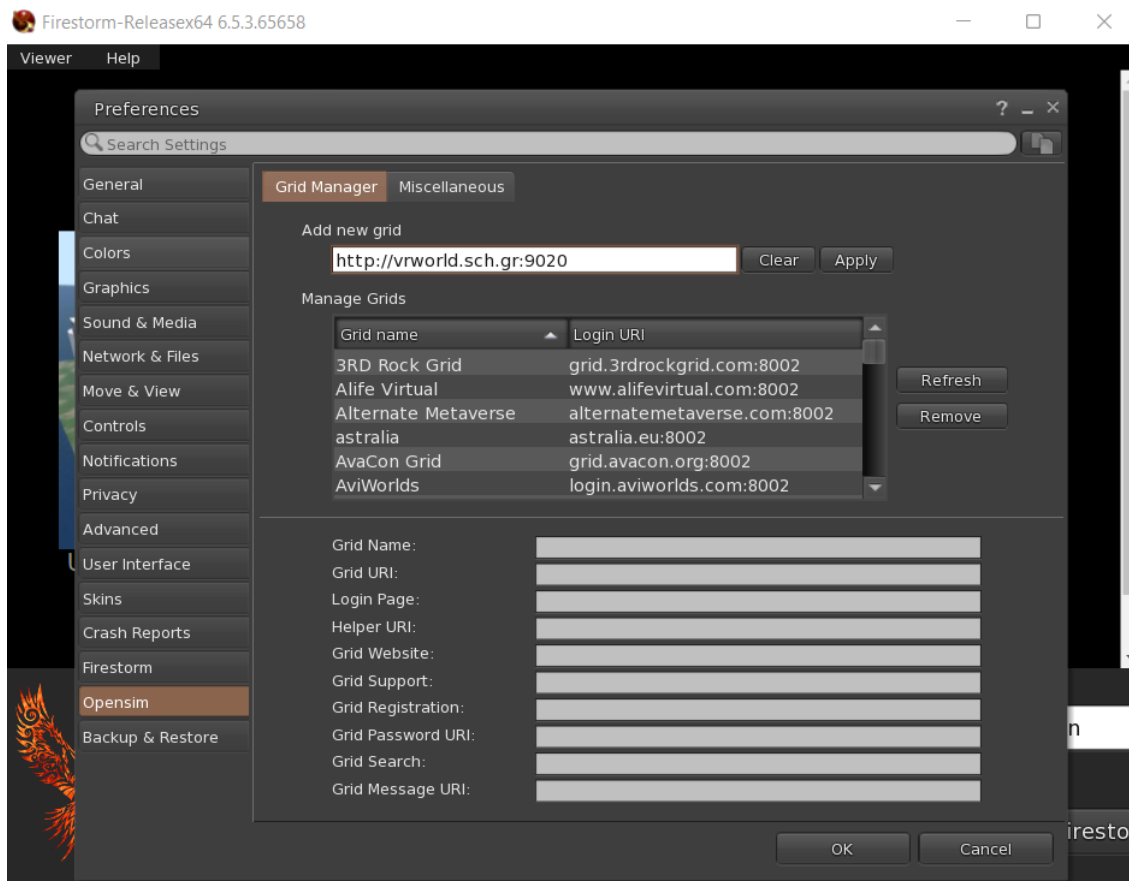
To connect to the VR WAMA Game-based 3D Virtual Reality Educational Environment with that avatar you need 3D Viewer Software such as Firestorm or Kokua. We recommend using Firestorm. You can download the version for OpenSim here: <https://www.firestormviewer.org/os-operating-system/>

Select your Operating System and download the suitable version.



Once you have downloaded, installed, and opened Firestorm, you need to add the VRWAMA 3D World in the list of available destinations (you only do this before connecting for the first time):

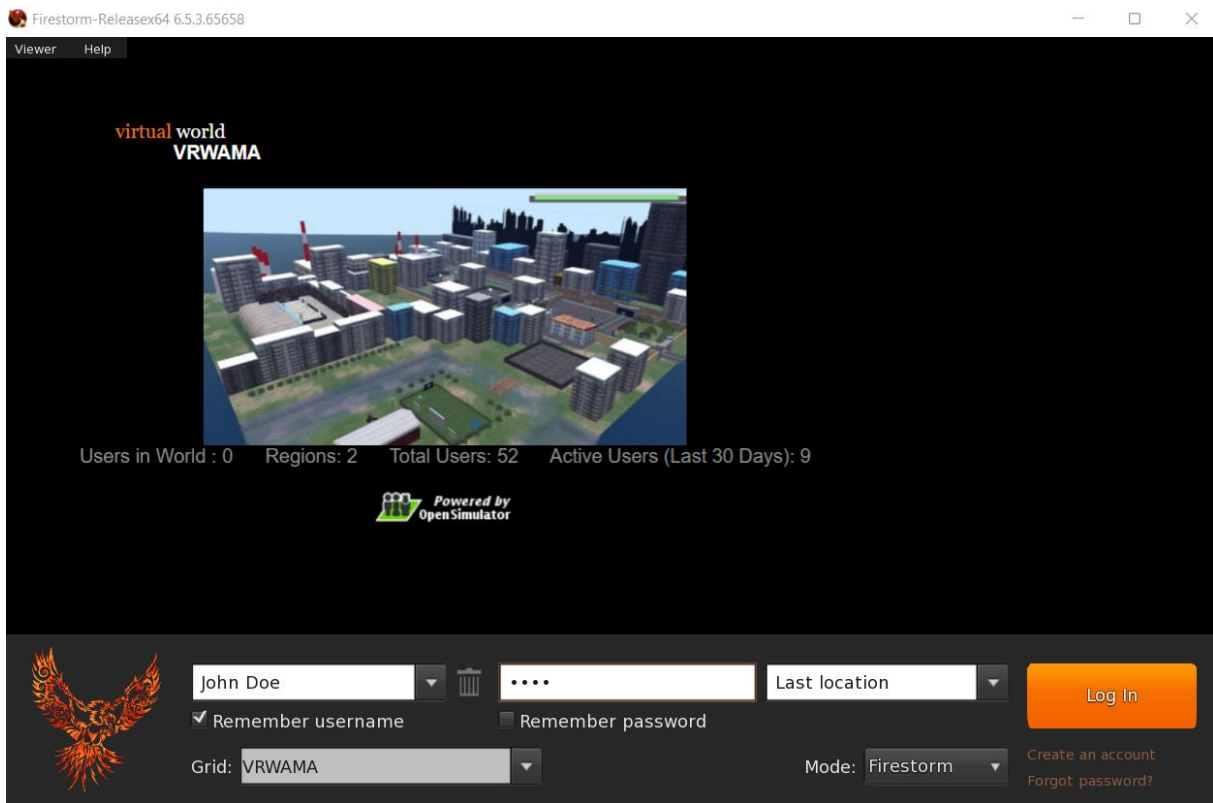
1. Viewer -> Preferences -> OpenSim
2. Add new grid: **http://vrworld.sch.gr:9020/** then click 'Apply' and 'OK'



## 4.2 Connecting to the 3D World

Use your username "Firstname Lastname" and password and select the "VRWAMA" grid from the drop-down menu. Click 'Log In' to enter.





After a connection is made you will be inside the virtual world with your avatar.



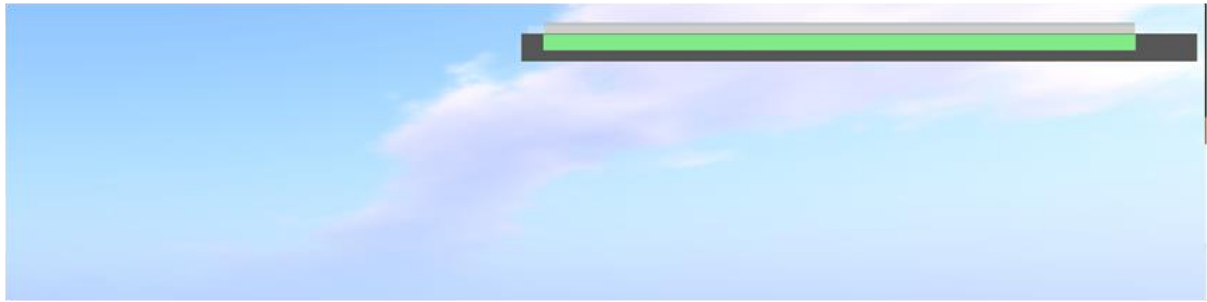
### 4.2.1 Basic Game Concepts

The instructions panel near you, will give you the necessary information to navigate through the World and take part in the learning activities.

There are instructions about how you can move around with your avatar, control the camera, adapt your avatar's appearance and communicate with other users of the VR WAMA Game-based 3D Virtual Reality Educational Environment through text messages or animations/gestures of your avatar.

The HUD object is a window that will appear on the top right of your screen during the learning activities, displaying information and dialogue options.

Check the top right part of your screen and you should see a bar like the one on the next image:

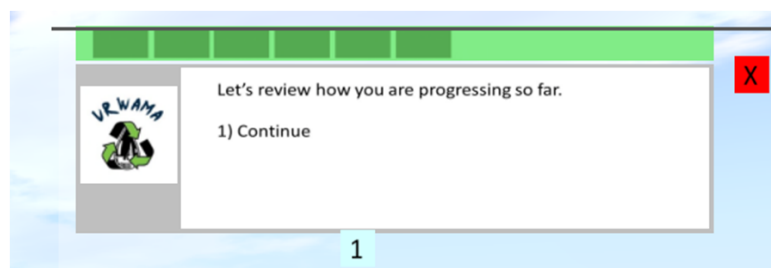


When a message needs to be displayed, the HUD Object will expand, and you can use the numbered buttons below to select an answer:

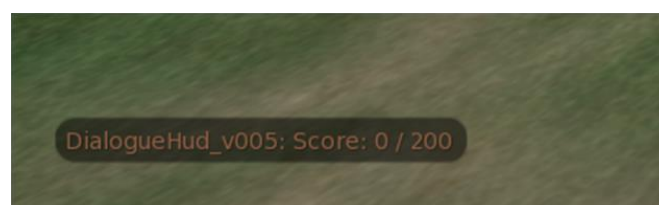


Click the red button on the right, to minimize the HUD object at any time.

The HUD object also displays your progress through the game. As you successfully complete activities, you collect points. These points are reflected on the green bar on top.



By clicking on the green bar, you also receive a message with the exact number of points you have collected. The maximum score is 200.



There are six different areas in the VR WAMA game.

There are light blue boxes in these areas that indicate activities. Click on them to read instructions about what you must do.



The activity boxes are numbered, and it is advised to visit them in that order.

The last activity of an area may teleport you to the next area. Otherwise, you can click the corresponding, rotating portal, when you complete all the activities to directly teleport to the next area.



## **5 INTEGRATING THE VR WAMA GAME-BASED 3D VIRTUAL REALITY EDUCATIONAL ENVIRONMENT INTO THE LEARNING PROCESS**

To integrate virtual reality or other educational technologies into the school curriculum, it is not necessary to have expensive and hard-to-find tools and technologies but it is possible to start with simple methods and techniques based on the creative use of technologies. So, any educational tool, even a well-developed one, to reach its full potential must be carefully used. Virtual worlds certainly have a very high pedagogical potential

In such teaching activities the teacher must be a facilitator therefore he or she must know and structure in detail the experiences he or she will propose to the classes, in this sense, it is up to the teacher to find the appropriate time and ways to integrate the virtual world into everyday teaching. Therefore, it is important to proceed in stages so that both the teacher and the classes have time to learn and assimilate behaviors and practices.

With the help of didactic technologies and virtual reality in particular, the teacher can transform the lesson into a laboratory activity, in which he or she is the director and facilitator of cognitive processes and of collaborative and inclusive teaching, he or she can guide the student through processes of research and acquisition of knowledge and skills that involve different times and modes of learning.

It is in fact through active learning, that it is possible to take advantage of open and reusable learning materials, simulations, hands-on experiments and educational games, which allow for doing and making mistakes by noticing the error and trying again.

Moving beyond the transmissive model and adopting new and open models and tools for active teaching enables students to experience continuous learning situations that allow them to argue their reasoning, correct it, and apply innovative models and methodologies that allow them to develop new skills.

The classroom thus becomes a place of learning, personal and collective growth, moving from an environment designed for teaching with the lecture at the center, to one with a new conception of time and space, to engage and motivate students, transforming the

educational model, changing languages to make students protagonists of learning, not just passive and silent listeners, in a continuous process of improvement.



In this new context, VR WAMA Game-based 3D Virtual Reality Educational Environment can be used as a useful educational tool to motivate and engage pupils and at the same time improve the quality of their learning by stimulating creativity, the collaborative aspect, reflection and learning by doing.

VR WAMA Game-based 3D Virtual Reality Educational Environment is a 3D digital environment in which users can interact with each other and use or create objects, establishing relationships through their avatars and communicating with text, images, gestures, sounds and three-dimensional representations, overcoming the limitations of a traditional classroom environment where some tasks can be difficult to accomplish.





Given the themes of environmental engineering and waste management, the game lends itself very well to being integrated into science and civic education course activities. The following is a proposed methodology for integrating the game.

## 5.1 VR WAMA Methodology

A pedagogical methodology, that exploits Alice and David Kolk's Experiential Learning Theory (ELT) can be use the VR WAMA virtual world and and to help teachers in fully exploit the potential of virtual worlds. As discusse in the ELT, is fondamental into experiential learning activities to activates a learning cycle in which "*the learner "touches all the bases" - experiencing, reflecting, thinking, and acting - in a recursive process that is sensitive to the learning situation and what is being learned*".

The didactical model we propose is based on a Flipped Classroom approach in which the new concept to learn will be introduced like homework while classroom time is used for collaborative activities, debates and discussions among students and with teachers. In this way, the role of the teacher changes from that of a protagonist to that of a facilitator in the

learning process capable of guiding the students in the immense sea of virtual worlds and not letting them lose their bearings and thus the final learning objective.

Game activities are carried out at home while collaborative activities are carried out during classroom meetings. The following figure shows the general scheme of each VR WAMA meeting.

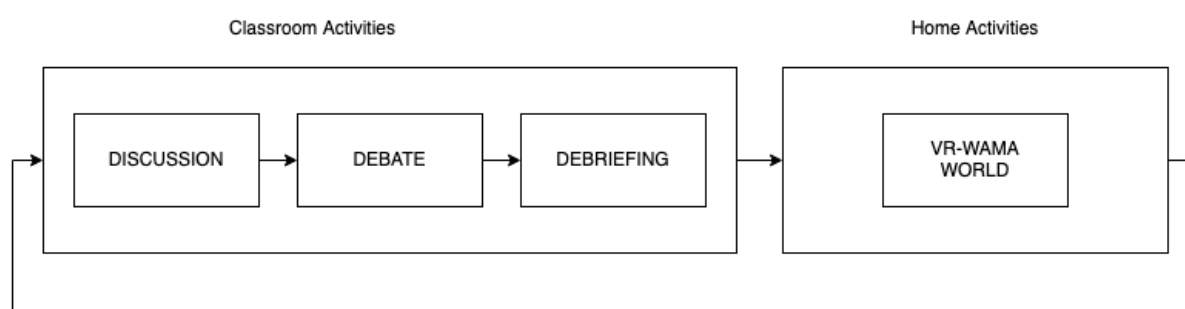


Fig. 1. Scheme of VR WAMA Methodology

The VR WAMA methodology includes 7 meetings, one for each scenario of the virtual world. The first meeting, the one corresponding to the first scenario and the introduction to the virtual world, will be the only meeting in which VR WAMA will be used in class. In this first meeting, the teacher will explain to the class the basics of using the virtual world at home such as: how to install the Viewer software, how to enter in the virtual world, and the basics of how to move and get around in the environment.

Following the ELT approach, each of the six subsequent meetings are divided into four different phases linked to the ELT phases: (Concrete Experience, Reflective Observation, Abstract Conceptualisation, and Active Experimentation):

- Discussion
- Debate
- Debriefing
- Virtual World Game

The activity in the virtual world allows students to deal with a concrete experience (CE) even though it is simulated in the virtual world, the discussion activity will allow them to transform the game experience into new knowledge through reflective observation (RO)



Debriefing activities will enable the active experimentation (AE) mode. Finally, the debriefing activity will allow them to conceptualize the topic in abstract form (AC).

At the beginning of each meeting, the teacher invites students to discuss their experience in the virtual world and tell what they have seen, done, and learned. This activity will create a relaxed classroom climate, capturing the students' attention and facilitating the continuation of the lesson. He will then initiate a class debate activity. He will divide the class into two groups and for each scenario, one group will support the position of the green and ecological solutions and the other group that of the non-green solutions. Each group in the debate will have the task of expressing ideas views and opinions to support their solution, trying to enhance the strengths and hide or minimize the weaknesses (if any).

Discussion and debate activities are fundamental and allow the creation of "*a conversation space where members can reflect and talk about their experience together*". Each group will be able to translate the information acquired during the game phase in the virtual world into knowledge capable of stimulating critical thinking about the environment and waste management that they experience in real life.

Even in the debate phase, the teacher's role is fundamental; in fact, he will be the one to mediate the discussion and stimulate arguments if necessary.

He may, for example, use some text present in the virtual world and provided by the HUD or NPCs to start a debate topic, such as:

*"Paper can be recycled 5 to 8 times*

*Repeated recycling shortens cellulose fibers, and they will not be able to create a new paper, such paper (recycled) can be composted.*

*Each ton of recycled paper saves about 17 trees, + 4000 kW of energy, 26,000 liters of water, 3 m<sup>3</sup> of landfill space and 1 500 liters of oil.*

*The paper is collected after sorting, separated on the line so that larger impurities are removed from it.*

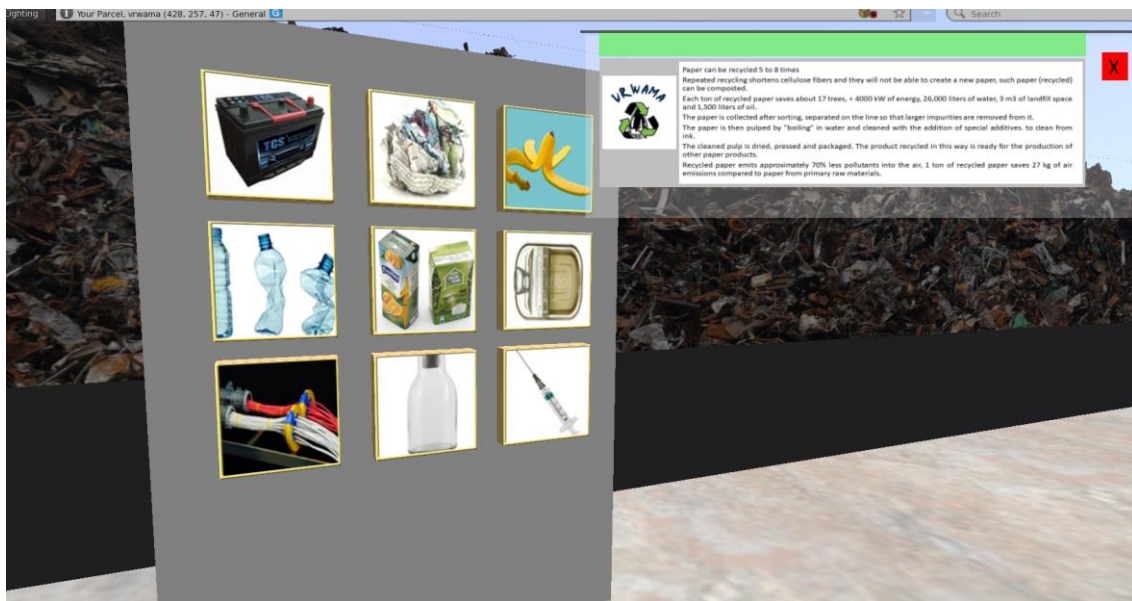
*The paper is then pulped by "boiling" in water and cleaned with the addition of special additives. to clean from ink.*

*The cleaned pulp is dried, pressed and packaged. The product recycled in this way is ready for the production of other paper products.*

*Recycled paper emits approximately 70% less pollutants into the air, 1 ton of recycled paper saves 27 kg of air emissions compared to paper from primary raw materials.”*

At the end of the debate, there will be a debriefing phase led by the teacher who will put in order the ideas, information, and knowledge that the students have learned. The debriefing will be useful to consolidate information gathering during: the experiential phase in the virtual world, during the debates, during the discussions and through the virtual resources made available in the platform (presentations and videos or activities in general).

Finally, the teacher will present the topic of the next VR WAMA game scenario that the students will face at home on their computers.



HUDs and NPCs in the virtual world will give informed advice to support students in their game activities. The advice will lead students towards the right learning path. Various tools have been included in the game. The journey through the virtual world will be continuously supported by the presence of 3D objects and audio-visual feedback that will capture the player's attention by directing them to the educational resources in the world.

The interactions between these objects and the player's avatar will provide the game experiences useful for the player's education such as Quests, Questions, and simulated practical activities.

## **5.2 Pedagogical tools, Events and Actions**

Many pedagogical tools and methodologies have been integrated within the VR WAMA virtual world, such as:

- Video
- Multimedia Presentations
- Quests
- Points
- Leaderboards
- Experiential activities
- Self-assessment activities
- Simulations

In the scenario design phase, the appropriate tools and methodology were chosen to convey a specific information content.

Of fundamental importance are gamification tools such as Points and the leaderboard. Thanks to them, it is possible to gamify the in-world activity and stimulate competition among peers. Students will be involved in-world activities with which they will earn points and for which they will be placed on special leaderboards.



Although made up of 7 different scenarios, the virtual world is a single educational path that aims to educate and sensitise the student in the field of environmental engineering and waste management. The gamified path will be a journey that starts from the introductory phase in which the student will discover how to move the avatar and will lead him or her through a series of events to discover the importance of the circular economy, the green economy and caring for our planet. Although the student can visit all areas of the virtual world independently, it is possible to follow the learning path thanks to events generated as a result of actions taken by players. The virtual world experience is also made possible by the presence of NPCs and specific navigation portals. At the end of each game scenario, it will be possible, following specific game events, to use a portal to move from one scenario to another. The game actions are varied and can range from the simple exploration of an environment, to answering questions, to interacting with 3D objects to solve queries or quests.

### **5.3 What are the key steps to implementing the VR WAMA Game-based 3D Virtual Reality Educational Environment in formal and non-formal education?**

To integrate the VR WAMA virtual world within a formal learning pathway, it is important to have a educational figure capable of organising and structuring the educational pathway in the best possible way. The educational figure, be it a teacher or a trainer, must have some basic requirements in order to be able to implement the VR WAMA model such as: computer skills, ability to manage the class in group work, knowledge of debate methodology, knowledge of the VR WAMA game environment.

This last requirement is fundamental during the in-class phases. At the discussions and debriefing phase, the teacher will have to provide the information and will have to resolve the doubts that the students will present. Most of the doubt are not content-related and therefore concerning the problem of waste management, but also technical and therefore concerning the general game mode and that specific to the single quest or VR WAMA activities in general. It is therefore fundamental that the teacher, trainer before starting a session of VR WAMA use in his/her own course explores the virtual environment firsthand, navigating in the various lands made available and completing all the quests and game activities.

There are no particular indications to be observed for informal learning. Anyone able to install the viewer and connect to the VR WAMA world will be able to easily go and view the game activities and the many educational resources made available by the environment.

## 6 SCENARIOS

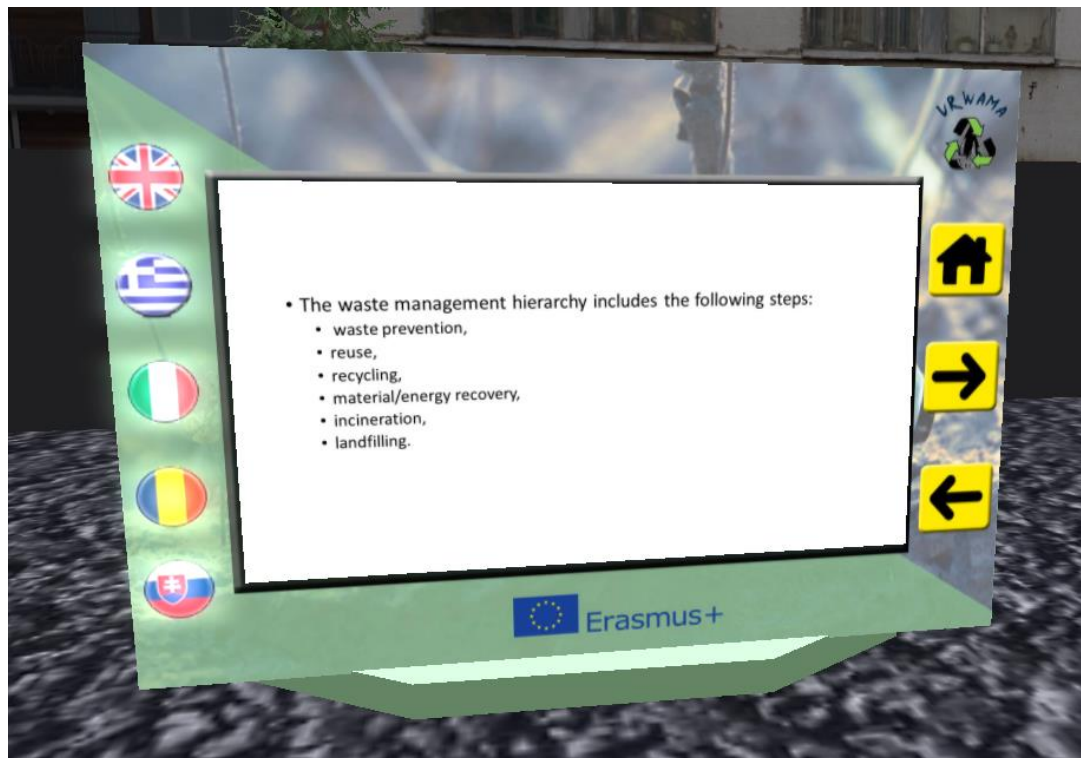
At the beginning of most scenarios, there is a blue colored circle on the ground to help you locate it. It is also the place where you are teleported when you complete the previous scenario.



Each scenario takes place in a separate area, where you should find several numbered boxes that correspond to learning activities. It is advised that you take these activities in this specific order. Just click on one of the boxes and you will receive instructions on your HUD.



The presentation panel is the main way of providing theory material to the users. It contains buttons that allow users to navigate the slides of the presentation and buttons that change the selected language.



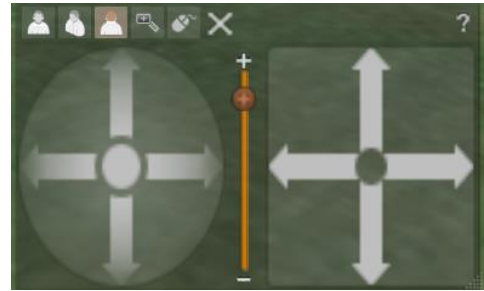
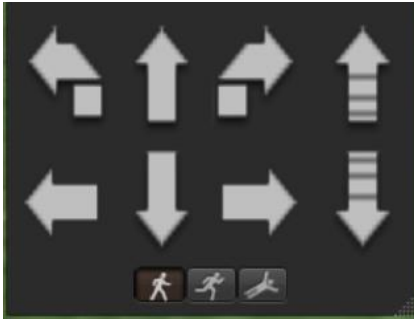
## 6.1 3D VIEWER CONTROLS

The following are general information about the capabilities of Opensim, through the 3D Viewer Software Firestorm:

### 6.1.1 Movement and camera control

One way to move the avatar and control the camera is using two small windows offered by the ED Viewer, that contain all the necessary buttons.

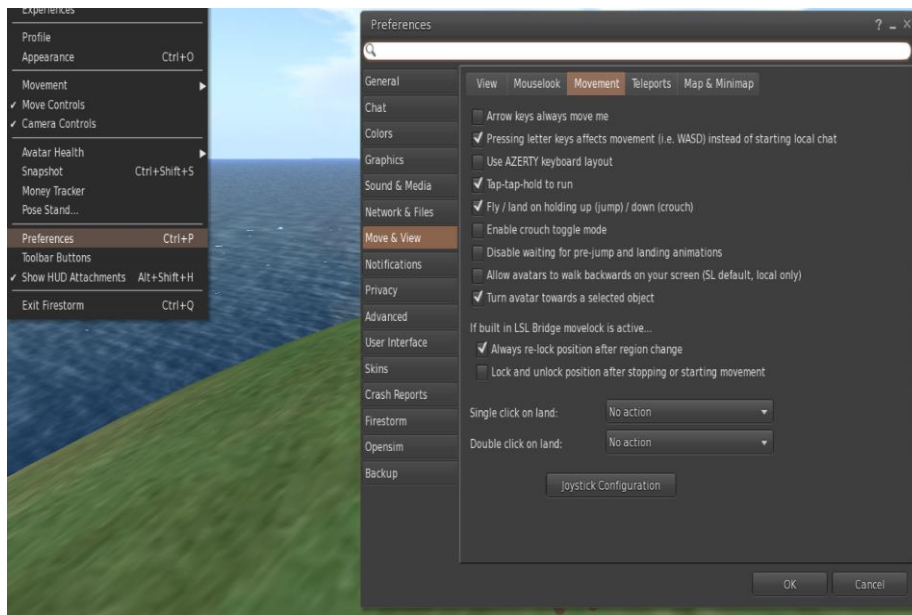




If these windows do not appear, you can enable them from the top menu:

- **Avatar > Move Control**
- **Avatar > Camera Control**

This is not an easy way, so we suggest using the keyboard controls. For movement you can use the arrow keys or the WASD keys. For WASD to work correctly, you have to enable it from the Preferences options:



You can use F to Begin Fly mode:

- You can use E to go Higher
- You can use C to go Lower



MOVEMENT CONTROLS	
Key	Function
A or Left	Turn left
Shift-A or Shift-Left	Move left
C or PgDown	Crouch / Fly down
D or Right	Turn right
Shift-D or Shift-Right	Move right
E or PgUp	Jump/Fly up
F or Home	Fly on/off
S or Down	Walk backward
W or Up	Walk forward
Space	While moving, press Space for slow motion ( <a href="#">WASD</a> must be enabled)

*Useful keyboard moving controls*

CAMERA CONTROLS	
Key	Function
Alt-up/down arrow	Zoom camera
Alt-left/right arrow	Rotate camera left/right
Alt-Ctrl-up/down arrow	Rotate camera up/down
Alt-Ctrl-Shift-arrows	Pan camera

## 6.1.2 Navigation

There are two kind of maps you can use for navigation:

### World > Minimap

- It shows a small map where you can Identify your location and it updates according to Avatar movement
- It acts as a compass
- You can use this map to **teleport** to another point by Double Clicking required location

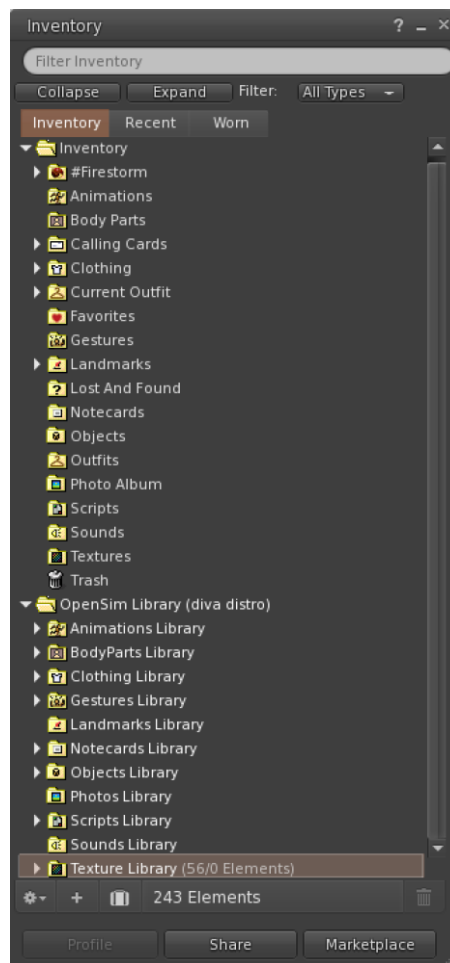
### World > World Map

- Larger overview of the region with filtering feature
- You can zoom in/out to find more regions nearby

## 6.1.3 Inventory

Each avatar has an inventory of files organized by file type:

- **Avatar > Inventory (Ctrl + I)**



You can create files for your avatar's appearance (BodyParts and Clothing folders), you can find or create text files with notes (Notecards folder) or find Objects that you have received from the activities (Objects folder).

#### 6.1.4 Adjusting your appearance

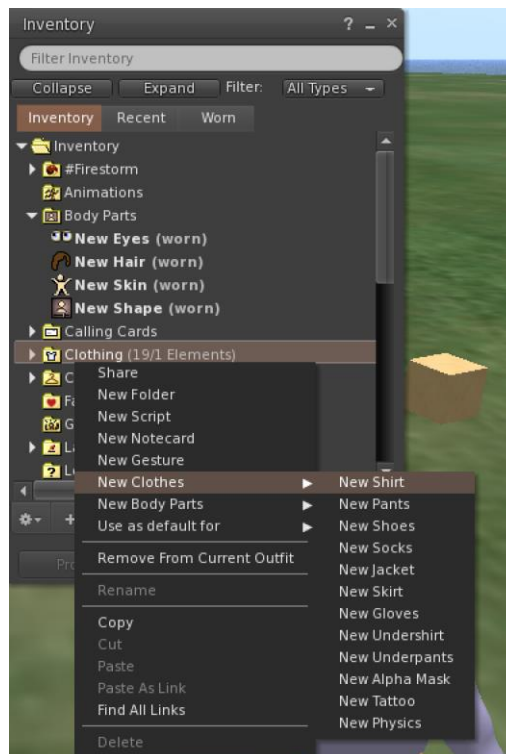
For customizing your body, 4 types of objects need to be created/edited:

- Eyes - double click on it for replacing current
- Skin - double click on it for replacing current
- Shape - double click on it for replacing current
- Hair - double click on it for replacing current



You can further customize outfit by **right click on your avatar > appearance > edit outfit**

You can create custom clothes, by creating clothe files in your Inventory and double clicking them. **Inventory > Clothing > (right click) new clothes > choose type of outfit.**

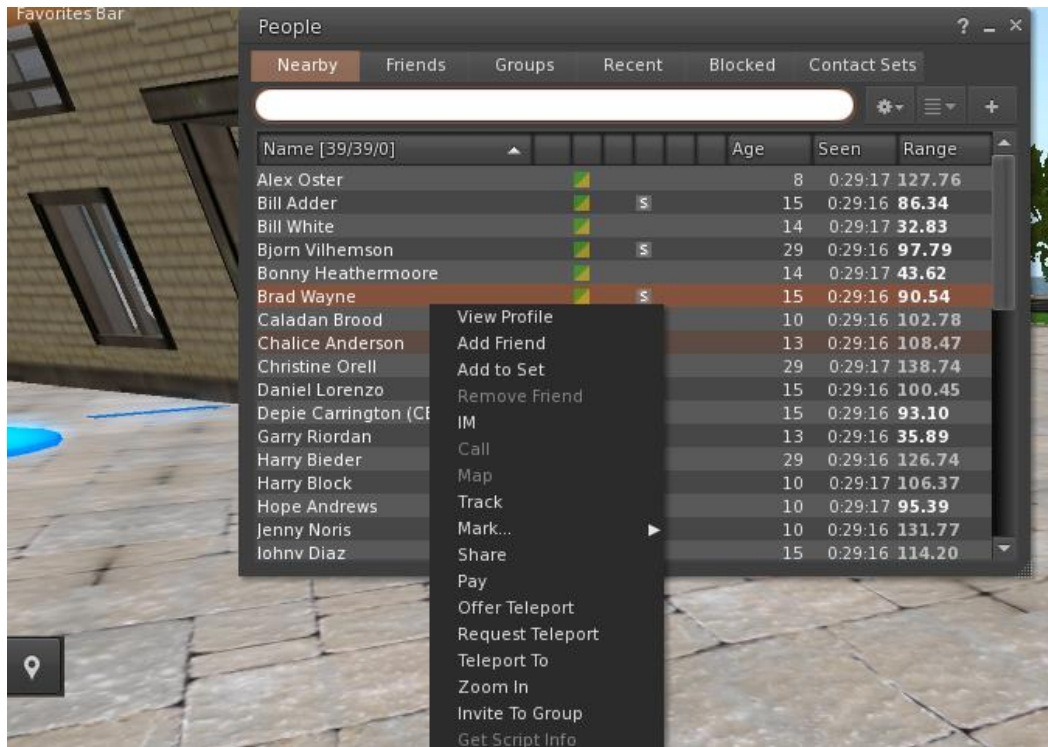


Then right click and select edit to adjust the appearance of each cloth item as you desire.



### 6.1.5 Communication

You Can add other user avatars as friends to easily find them and be able to teleport to them. From the Viewer's navigation bar, select **Comm -> People**, to open a window that display a list with all nearby users. Right click on one of the users and you get the option to view their Profile, add them as a friend, send a private instant message (IM), request that you teleport to them(Request Teleport) or that they teleport to you (Offer Teleport), and to create a distinct marker on his place to easily find him (Track).

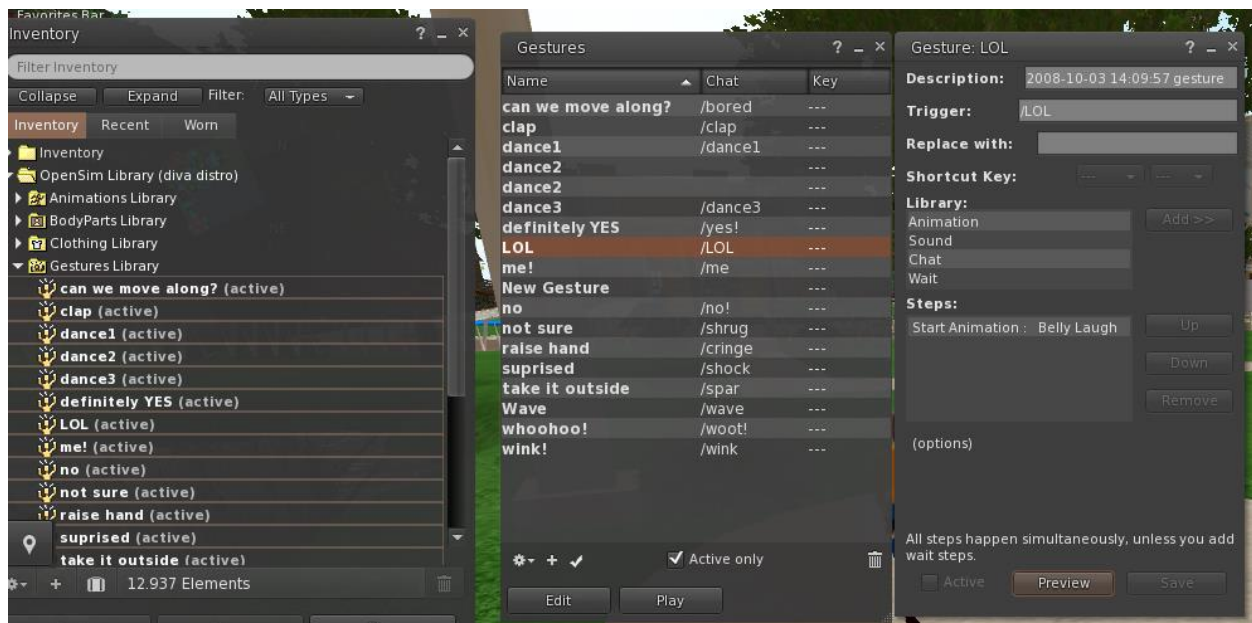


If you have already added some user as a friend, you can find them in the 'Friends' tab, even if they are not online at the moment. You can send them a private message and they will be able to see it as soon as they log in the virtual world.

You can open the chat window (**Comm -> Chat**) to view and participate in conversations. The default '**Nearby Chat**' displays all discussions that happen near your avatar. There is also a shortcut for righting quick messages that nearby avatars will receive by using the chat bar on the bottom left of your screen.

You can configure and use Gestures to be used with chat. Gestures are animations performed by your avatar to indicate or emphasize your attitude or your emotions. You can associate specific Gestures with specific words, so when you include them in your chat messages, your Avatar will perform the animations.

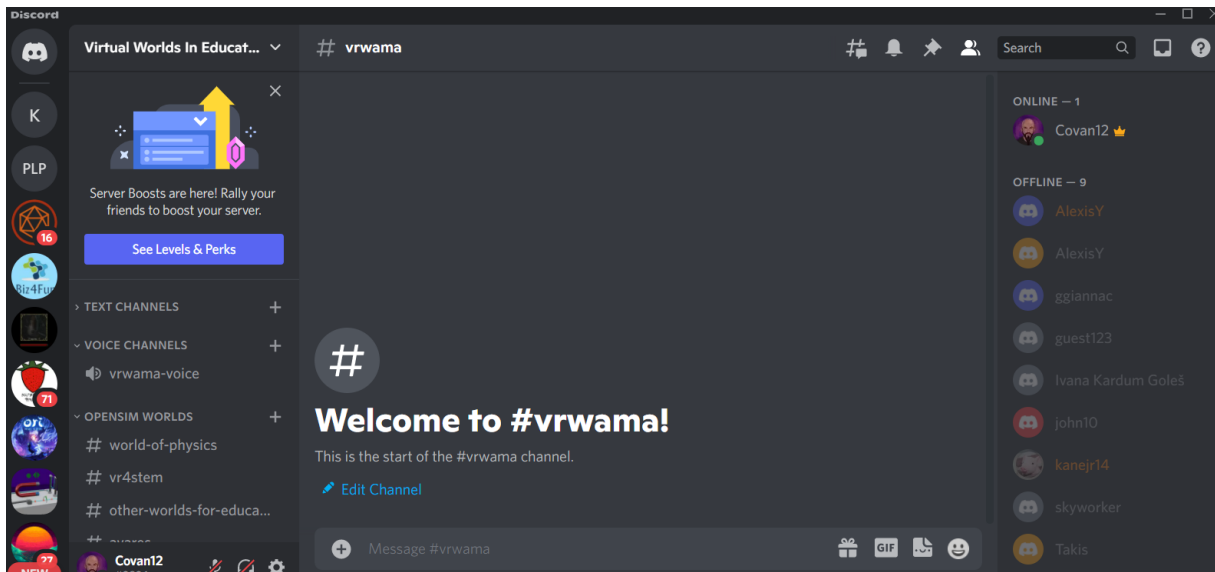
First, open your Inventory (**Avatar -> Inventory**) and locate the "**Gestures Library**" folder, under "Opensim Library". There are several gesture files in that folder, and you can right click and select "Activate" the ones you want your avatar to be able to perform.



Then open the Gestures Window (**Comm -> Gestures**) and you will see the Gestures you have activated. Double click on one of the Gestures and you will see your avatar performing the animation. Select a Gesture and click the “**Edit**” button to view the details. There is a Trigger field that shows the command to use in chat to perform the Gesture. For example, you can write **/LOL** in the chat menu to make your avatar perform a laughing animation.

You can use the groups window (**Comm -> Groups**) to join or create a Group with other users to communicate with.

Communication with voice with other users in the virtual world is not possible directly from the 3D Viewer. However, we have prepared a voice channel in a Discord server, where users can join and participate in conversations while they are connected to the 3D World. <https://discord.gg/KQbh5gAk>



## 7 ADDITIONAL RESOURCES

Moving and Camera Control: [http://wiki.phoenixviewer.com/fs\\_movement\\_and\\_camera](http://wiki.phoenixviewer.com/fs_movement_and_camera)

All Keyboard Shortcuts: [http://wiki.phoenixviewer.com/keyboard\\_shortcuts](http://wiki.phoenixviewer.com/keyboard_shortcuts)

Chat: [http://wiki.phoenixviewer.com/fs\\_chat](http://wiki.phoenixviewer.com/fs_chat)

Inventory: [http://wiki.phoenixviewer.com/my\\_inventory\\_tab](http://wiki.phoenixviewer.com/my_inventory_tab)

Editing Outfits: [http://wiki.phoenixviewer.com/my\\_outfits\\_tab](http://wiki.phoenixviewer.com/my_outfits_tab)

Editing Shapes and Other Body Parts: [http://wiki.phoenixviewer.com/fs\\_edit\\_body\\_part](http://wiki.phoenixviewer.com/fs_edit_body_part)

Gestures: [http://wiki.phoenixviewer.com/fs\\_gestures](http://wiki.phoenixviewer.com/fs_gestures)



## 8 ANNEX I – 3D ACTIVITY TEMPLATE

### Introduction

Brief introduction about the goals of this Activity

### Location

Description of the area where the 3D activity takes place.

### Individual Objects

Describe all the individual 3D objects that are used in this activity. Use images if possible, to help.

1	Object Name	Object Description	Reference Images
2	Object Name	Object Description	Reference Images
3	Object Name	Object Description	Reference Images
4	Object Name	Object Description	Reference Images
...	...	...	...

### Interactions

Describe in detail the phase of the activity, the interaction between avatar and object, use of the objects and (if necessary) how the objects interact with each other or with other elements of the virtual world (e.f. NPCs). Please describe WHEN a specific interaction happens (event that triggers it) and WHAT exactly happens (the actions).

You can add images or links to videos to help the description of the activity.

#### *Examples:*

Object X constantly rotates around itself

Object X glows bright when the avatar touches it

Object X has a label over it with the text: "Click Me". When the avatar clicks object X, he receives a notecard (describe the contents with the separate template)

Object Y is initially not visible. When the avatar clicks object X then object Y becomes visible.

When avatar clicks object Y a dialogue menu appears, with the text “Select the size of the object” and possible options: “2m”, “3m”, “4m”.

When user selects one of the options, then object Z is resized accordingly.

...

### **References**

Add any links to web pages or videos that may help to develop the resource.