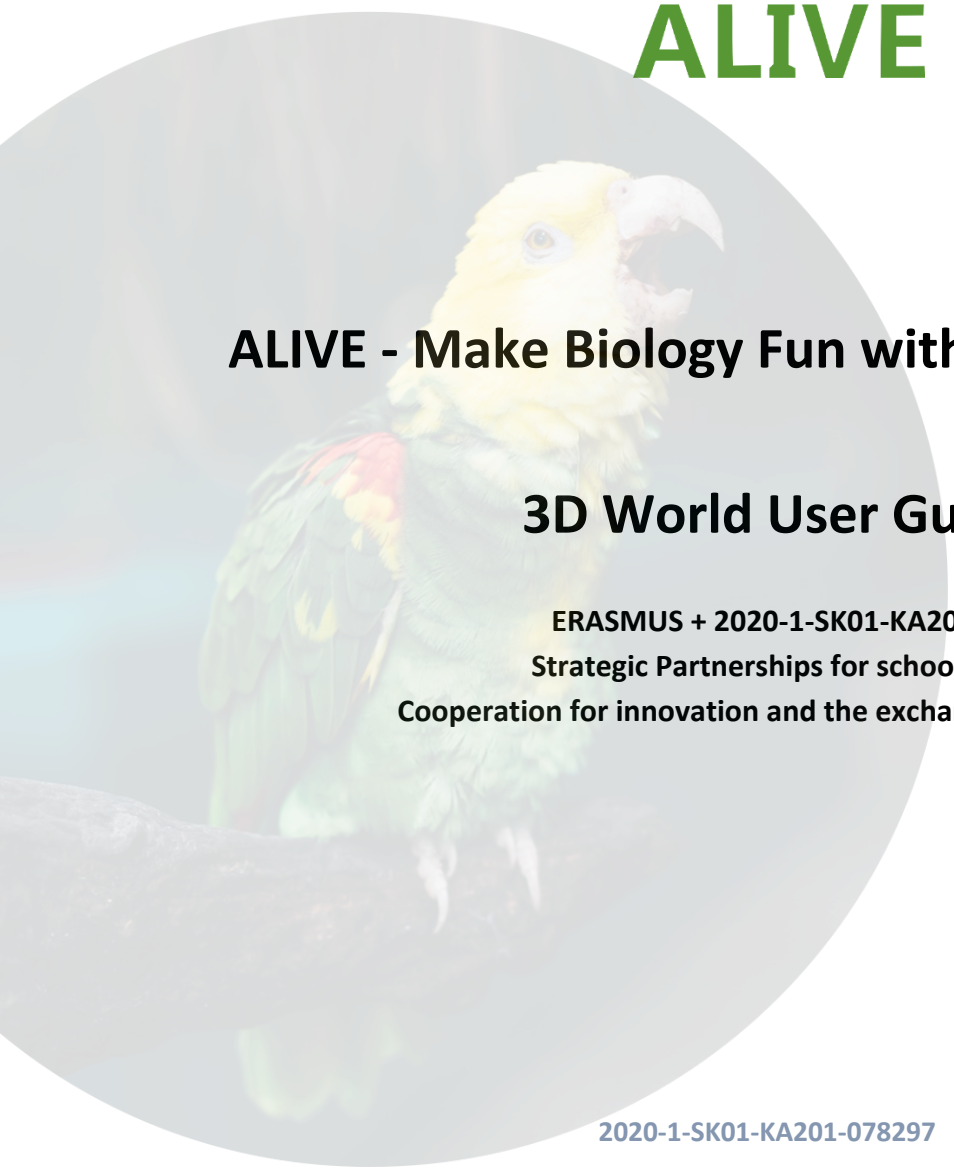


# ALIVE - Make Biology Fun with Virtual Reality

## 3D World User Guide

**ERASMUS + 2020-1-SK01-KA201-078297**
**Strategic Partnerships for school education**
**Cooperation for innovation and the exchange of good practices**

Contents

## 1. INTRODUCTION

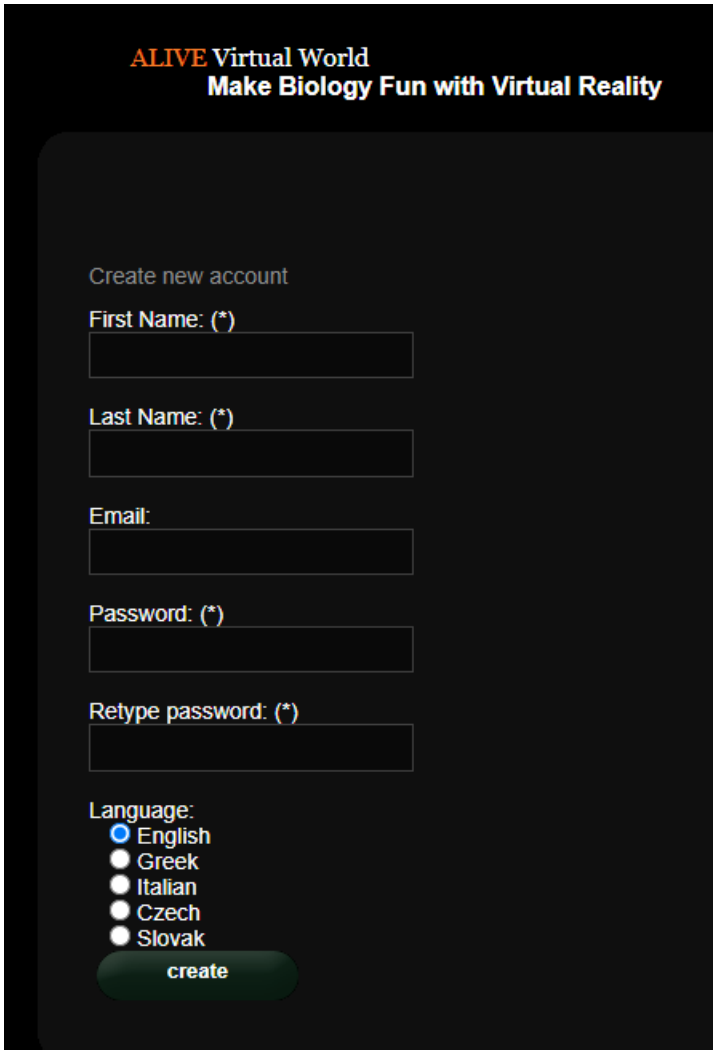
The ALIVE 3D World is the main output of the ALIVE project, hosting all learning material developed along with learning scenarios. The platform is freely available for students to use for self-learning purposes.

## 2. CONNECTION INSTRUCTIONS

### 2.1 Account Creation

You can create an avatar account (Firstname, Lastname, Password) here: http://vrworld.sch.gr:9045/wifi/user/account/

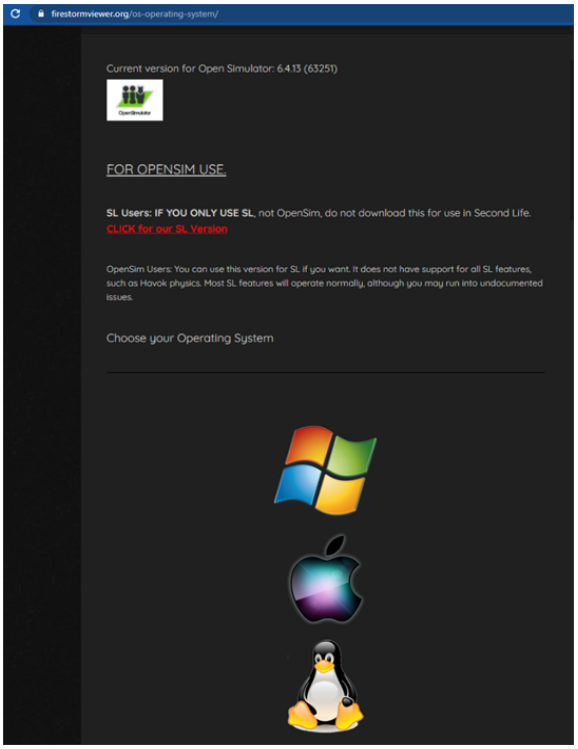
The Email field is optional. You will need to remember your First Name, Last Name and Password to be able to connect, so make sure you write them down.



## 2.2 Installation and Initial Configuration

To connect to the 3D World 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/

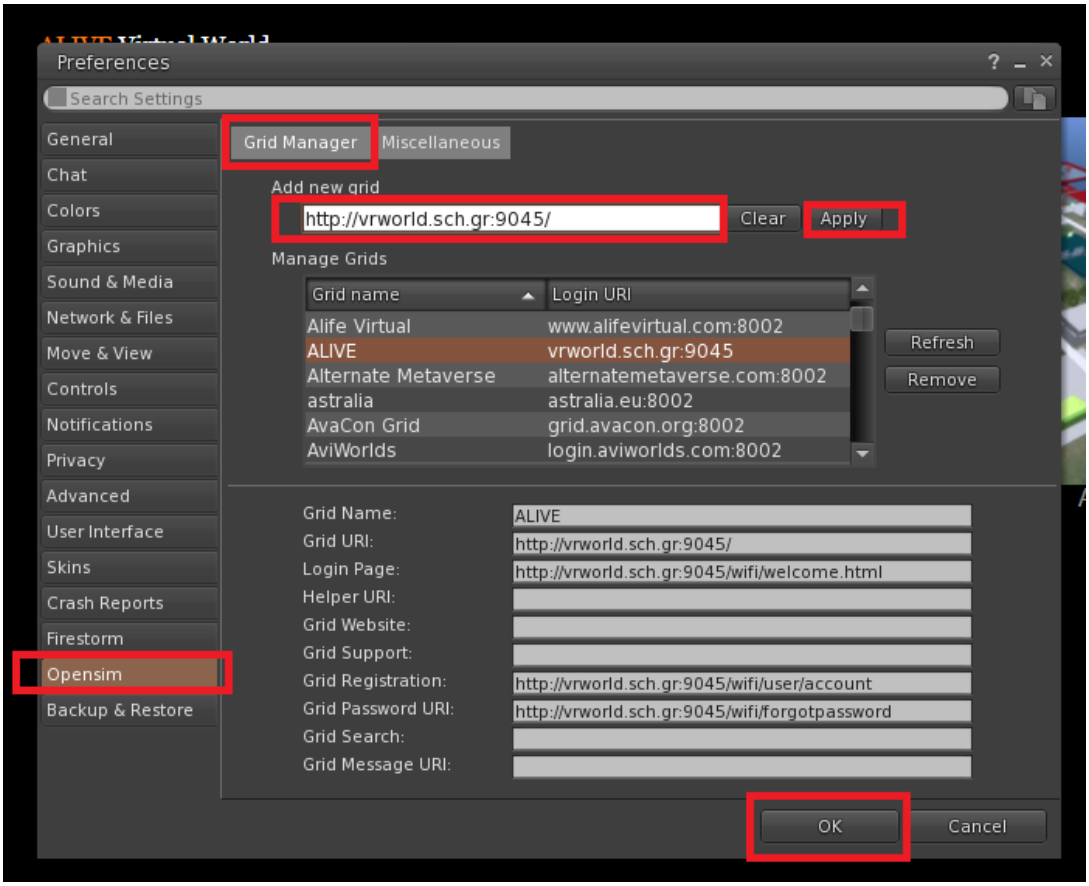
Scroll down to the "**Choose your Operating System**" section, select your Operating System from the available icons and download the suitable version.




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

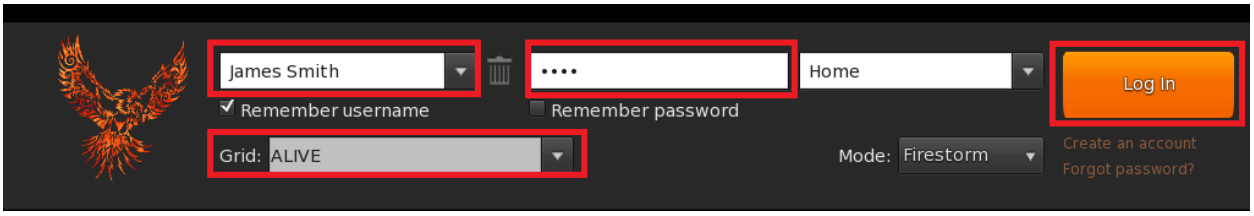
1. Viewer -> Preferences -> OpenSim
2. Add new grid: http://vrworld.sch.gr:9045/
3. then click 'Apply' and 'OK'

The grid should be now added to the **Manage Grids Table**.



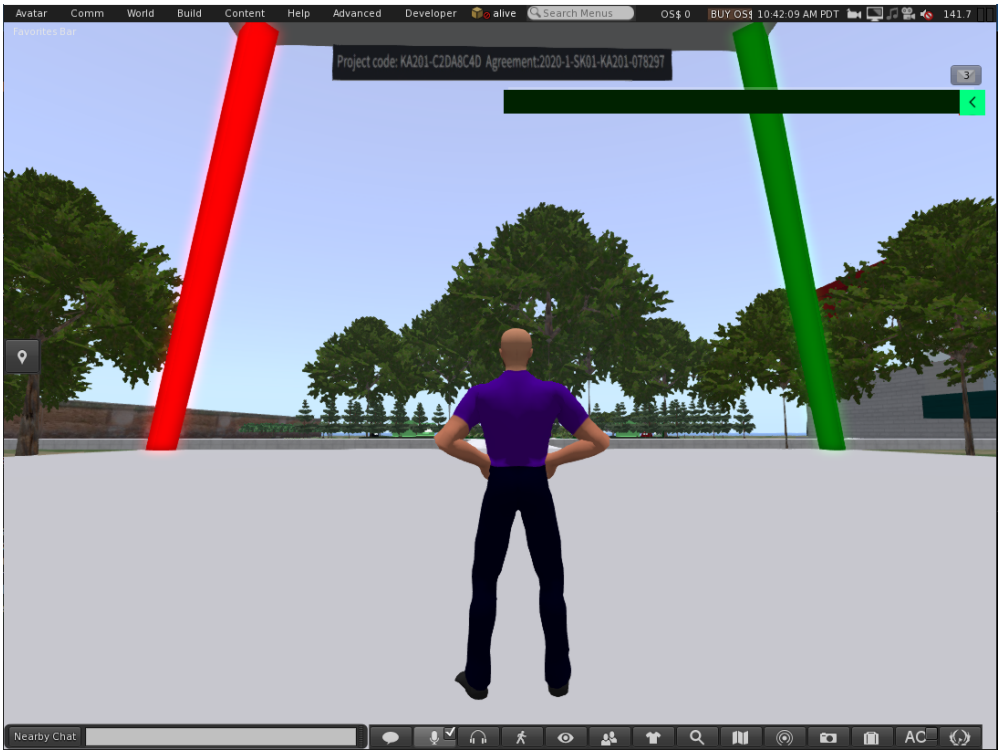

## 2.3 Connecting to the 3D World

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



If the “Grid” dropdown list does not appear in the form, then you have probably downloaded the wrong Firestorm option (return to the installation instructions and make sure you have selected the Opensim version of Firestorm).

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



# 3. BASIC CONTROLS

## 3.1 Moving Around

A presentation near the landing point, covers all the basic controls for moving around and controlling the camera. Follow the instructions and try to get accustomed with controlling your character.

If you like, you can choose to customize your character following the instructions.

## 3.2 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

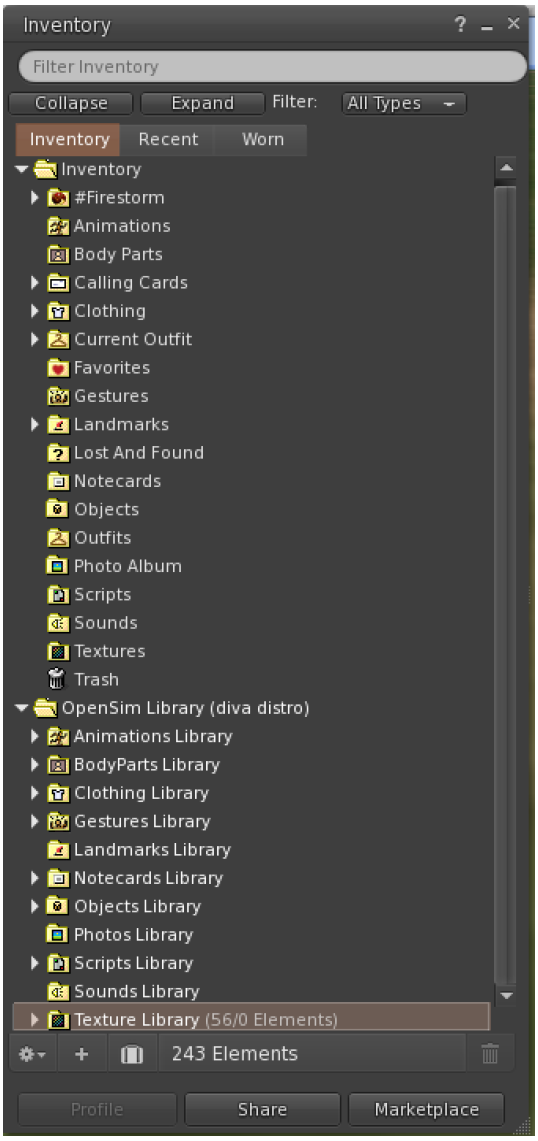
**World > World Map**

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

## 3.3 Inventory

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

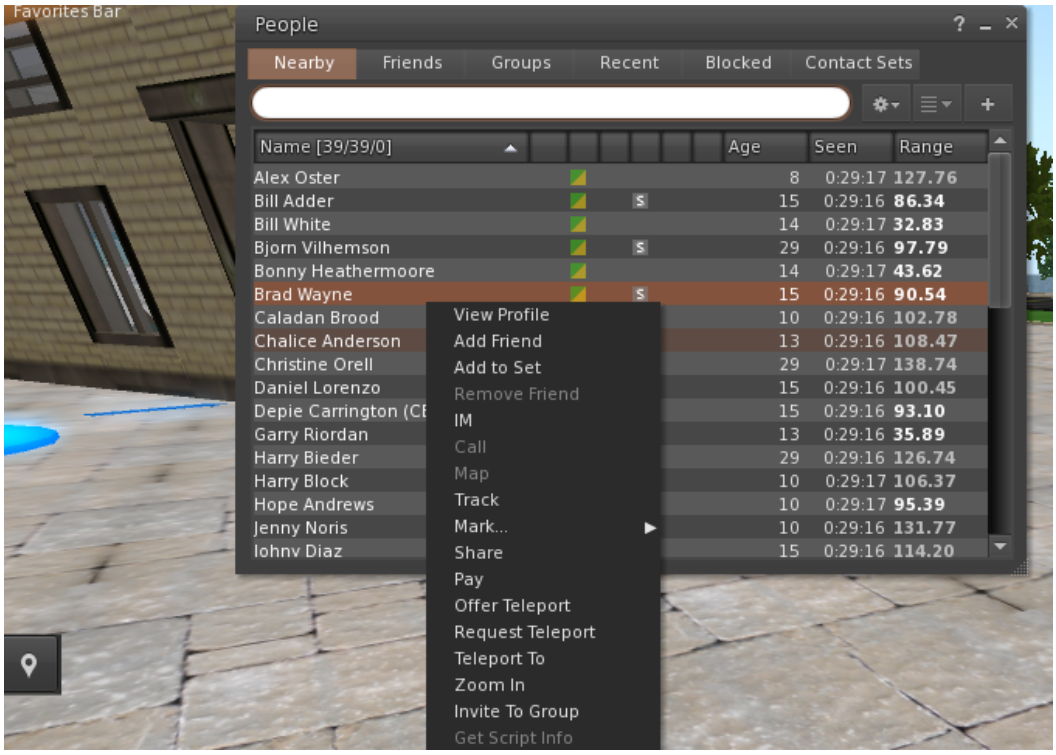
**Avatar > Inventory (Ctrl + I)**




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).

### 3.4 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).

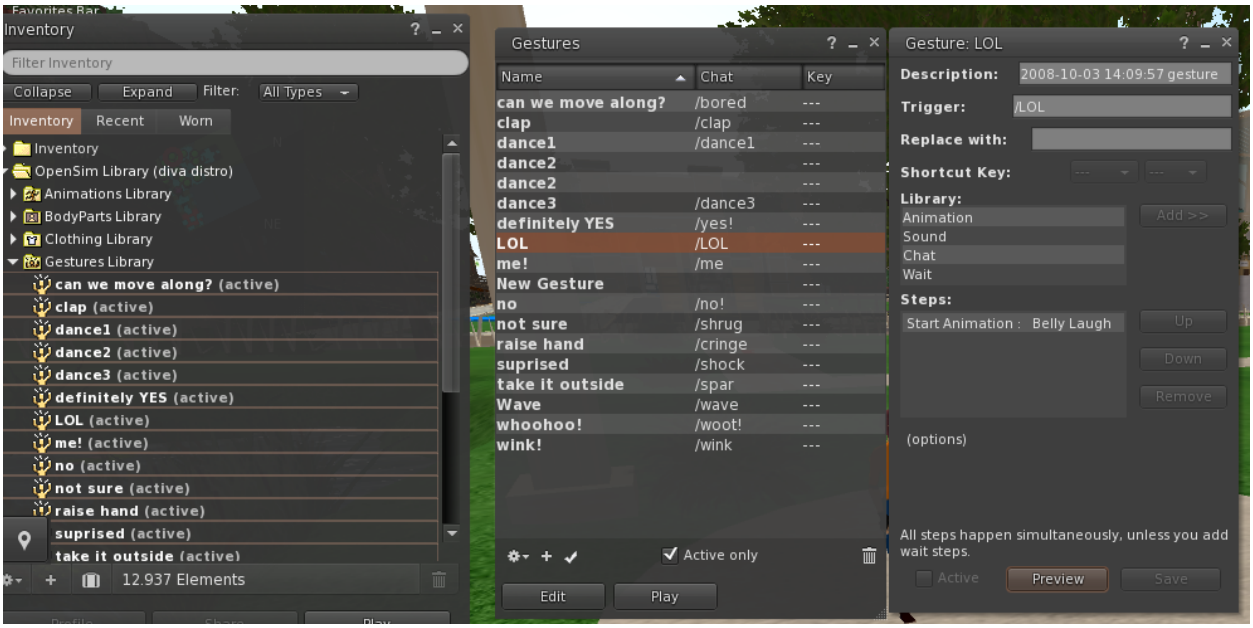



If you have already added some user as a friend, you can find them in the 'Friends' tab, even if they are not online at the moment. You can send them a private message and they will be able to see it as soon as they log in the virtual world.

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 **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.

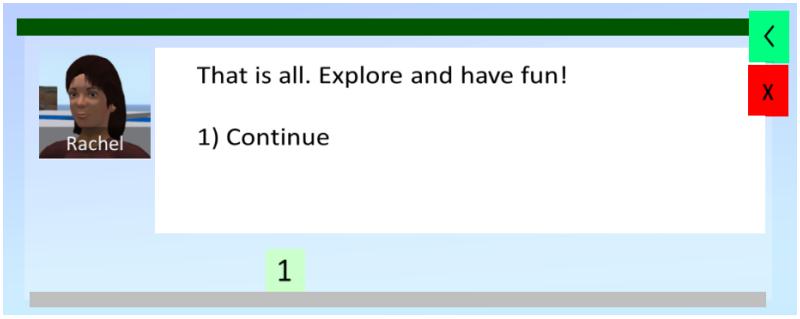
Communication with voice with other users in the virtual world is not possible directly from the 3D Viewer.

However, we have prepared a voice channel in a Discord server (https://discord.com/channels/530417588509868032/1034621054636793916), where users can join and participate in conversations while they are connected to the 3D World. You can direct all your students to enter the "alive-voice" voice channel.

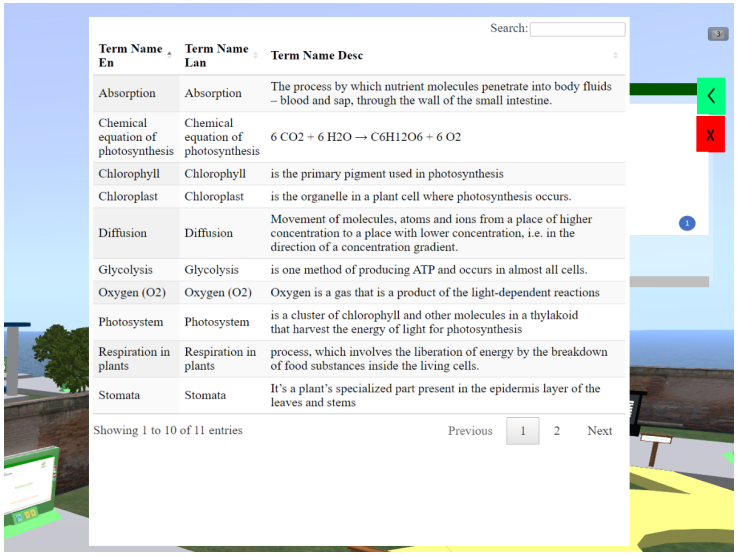
# 4. THE ALIVE VIRTUAL WORLD

## 4.1 The HUD Object

The HUD Object is a panel that will appear on the top right part of the screen and will display messages from the characters or the game.

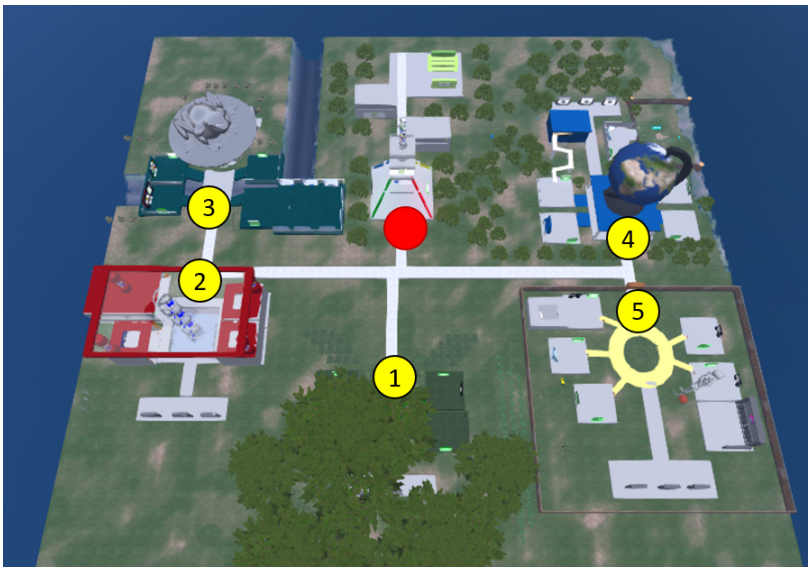



The HUD object also gives access to the TERMS JOURNAL. When you complete activities in the 3D World, you are awarded with term entries. Click the Green Button of the HUD object to view the terms you have collected:



## 4.2 Navigation

The following map shows how the courses are distributed. You begin from the Alive Tower (Red Circle on the Map) and you are free to visit each one of the courses (Yellow Circles).




In some locations you will come across a teleportation panel that allows instantly reaching a specific course:

## 4.3 NPC Characters

At the beginning of each course, you will find an NPC character that will introduce you to the topics involved.

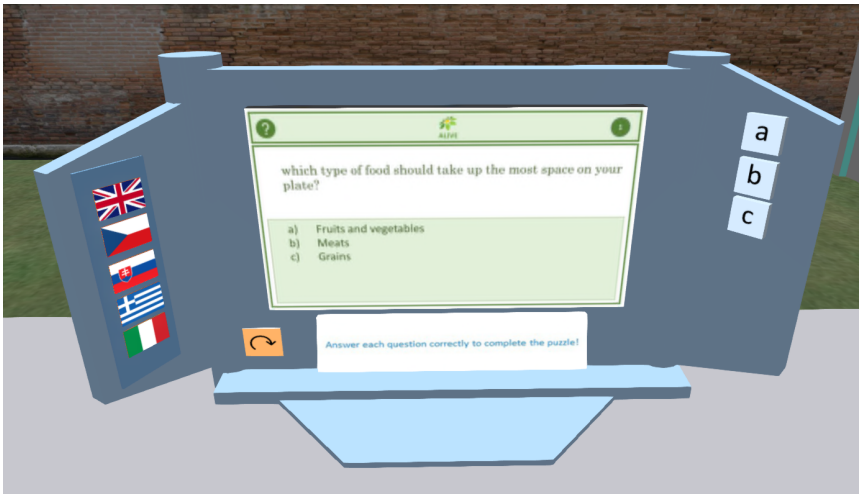
## 4.4 Theory

Each course consists of multiple topics. For each topic you will find a presentation panel with the theory:

## 4.5 Assessment Activities

For each topic you will also find at least one assessment activity (e.g. quizzes, matching, sorting, classifying)

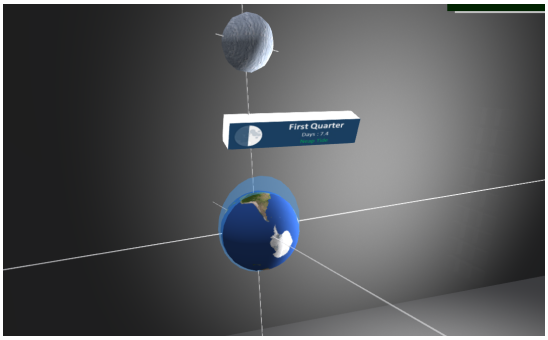
Assessment activities usually include instructions about what you need to do.




## 4.6 Living Lab Activities

Some of the topics include, more complex activities, where you need to perform experiments, observations or other tasks.

Again, the activities are accompanied by specific instructions about what you need to do.



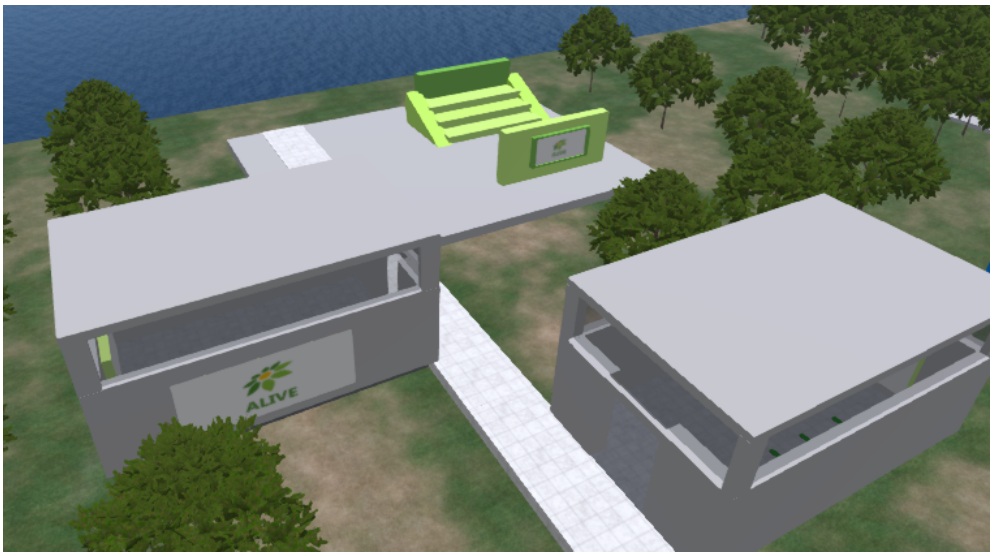
## 4.7 General Assessment Activities

At the end of each Course you will find three assessment activities based on all topics you have studied.

The terms collected in your TERMS JOURNAL can greatly help you with these!

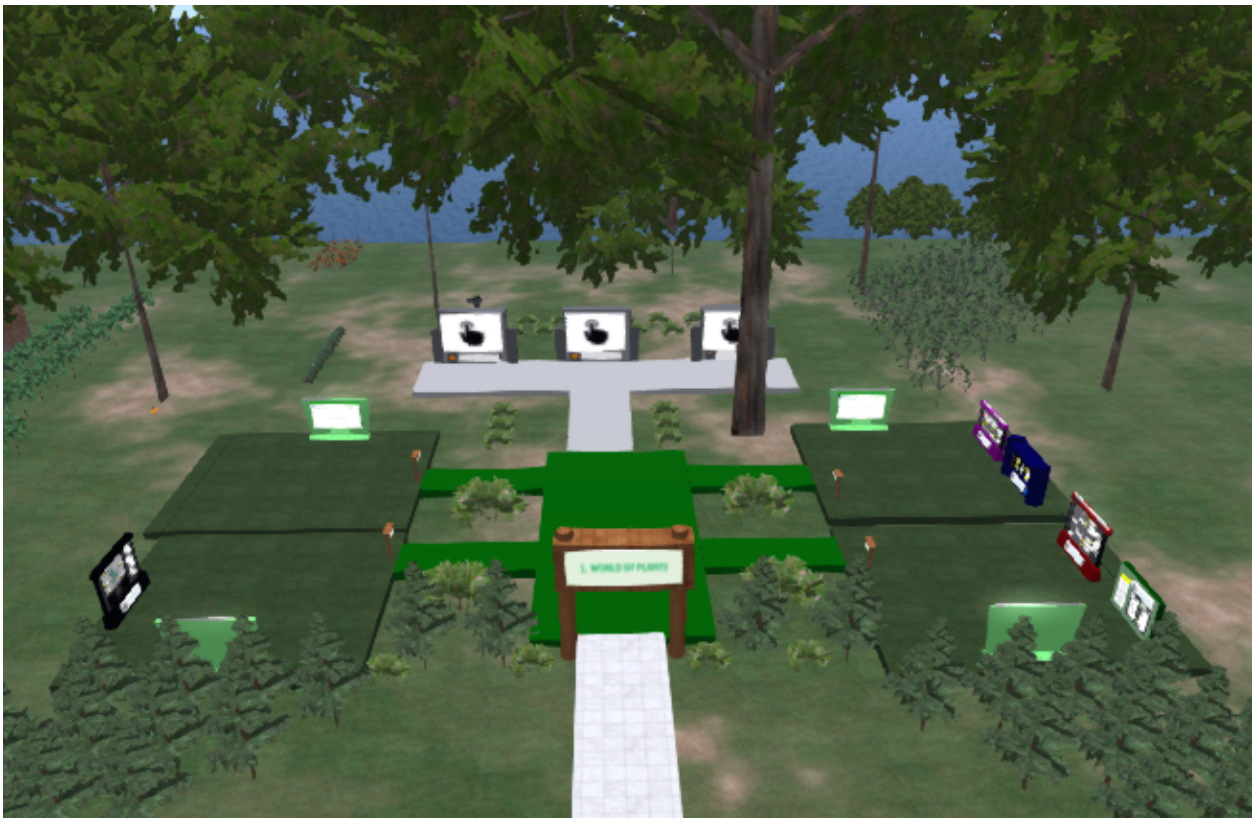

## 4.8 Classrooms and Auditorium

Near the landing area of the ALIVE Tower, you can find Classrooms and an Auditorium that can be used for learning sessions between teachers and students:



# 5. THE ALIVE COURSES

## 5.1 Course 1: WORLD OF PLANTS



**Course content:**

1. **Photosynthesis**
2. **Plant´s respiration**
3. **Movement of water in plants and nutrition of plants**
4. **Reproduction of plants**

The theoretical objectives:

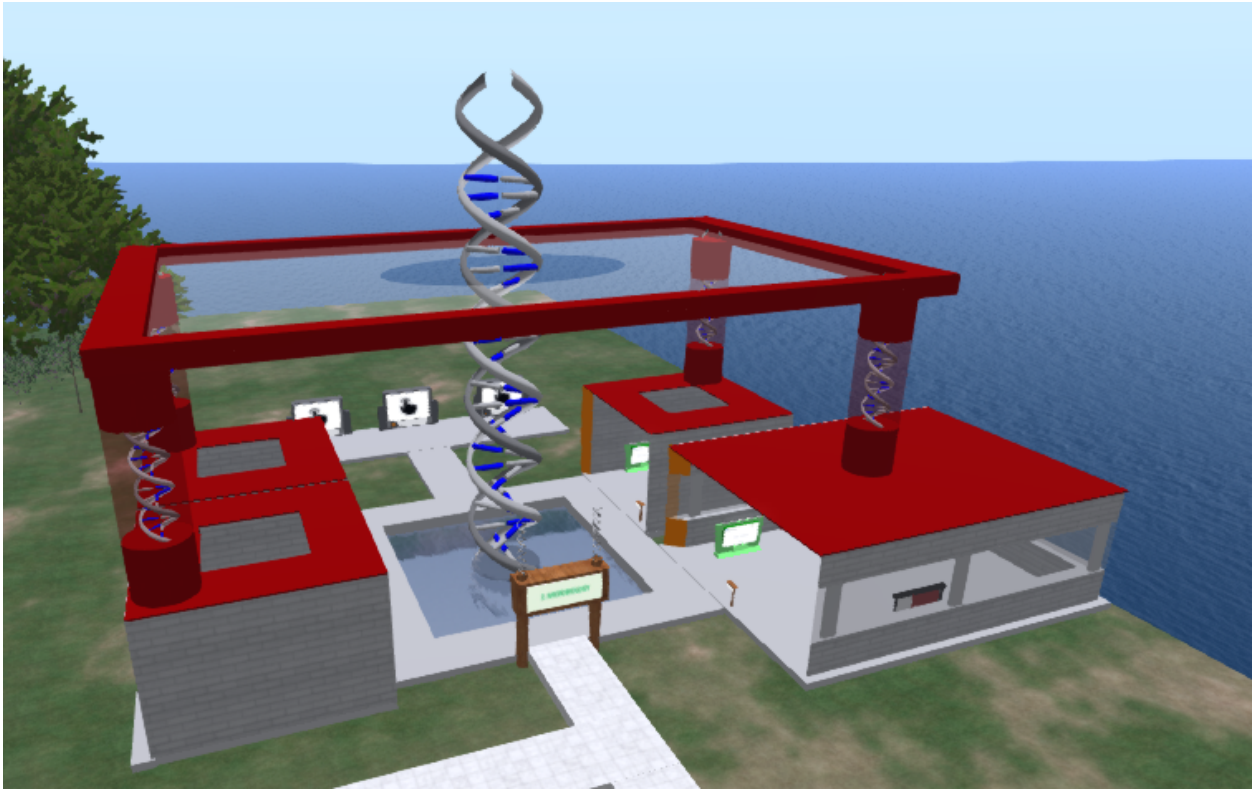
- Understand the way plants produce essential organic matter and the importance of chlorophylls in plants;
- Understand the distribution of plants based on their diet and understand the basic relationships between organisms (positive, negative and neutral);

- Be able to distinguish parts of plants (root, stem, leaf, flower) and characterize their main function (eg nutrient uptake, photosynthesis, reproduction);
- Know the methods of plant propagation, understand their advantages and disadvantages and be able to give examples of their practical use.

The practical objectives:

- Recognize the importance of plants as essential oxygen producers;
- On the basis of the acquired knowledge to be able to understand the importance of water for plants and to be aware of the negative manifestations of its scarcity;
- Ability to use information and communication technologies and resources in obtaining and processing information, as well as the presentation of their own work.

## 5.2 Course 2: MICROBIOLOGY



**Course content:**

1. **Osmosis, diffusion, mitosis, meiosis**
2. **Influence of microorganisms on human life and the environment (viruses and bacteria)**
3. **Basics of genetics**
4. **Cells as a basic building unit**

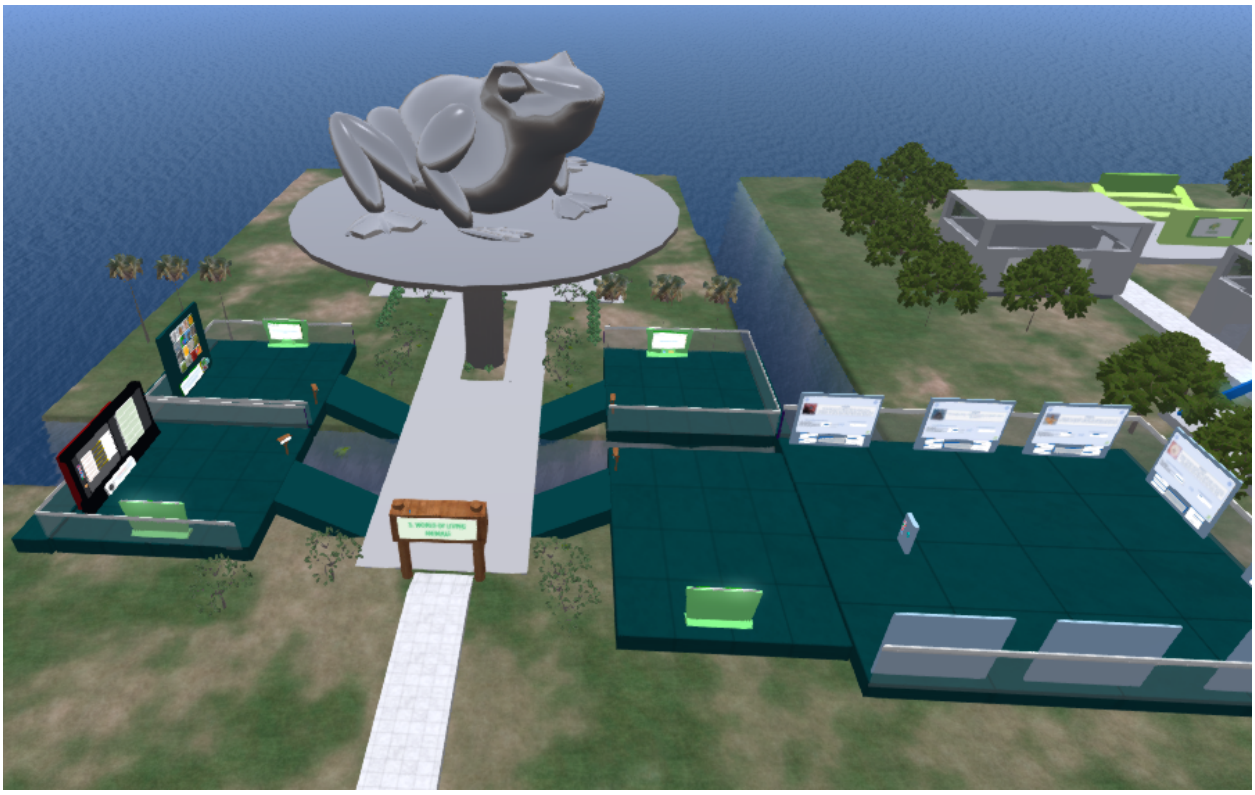
The theoretical objectives:

- Know the importance of bacteria and viruses;
- Know the basic structure, functions and vital manifestations of plant and animal cells, unicellular and multicellular organisms;
- Know the nature and importance of heredity in nature and for humans

The practical objectives:

- Be able to give examples of viral and bacterial diseases. Also understand the difference between harmful and beneficial bacteria and be able to give an example of beneficial bacteria (symbiotic, fermentation decomposition);
- Using examples of simple attempts to understand the principle of diffusion (tea bag) and osmosis (potato);
- Based on the acquired knowledge, be able to recognize plant and animal cells and identify individual cell organelles in the picture;
- Use good practices and techniques in practical activities, follow safety and health rules, use teaching, compensatory and other aids, develop skills in working with natural products and in observations;
- Apply theoretical knowledge and experience in practical conditions.

## 5.3 Course 3: WORLD OF LIVING ANIMALS



**Course content:**

1. **Evolution**
2. **The importance of insects for life on Earth**
3. **Parasites**
4. **Reproduction in animals**

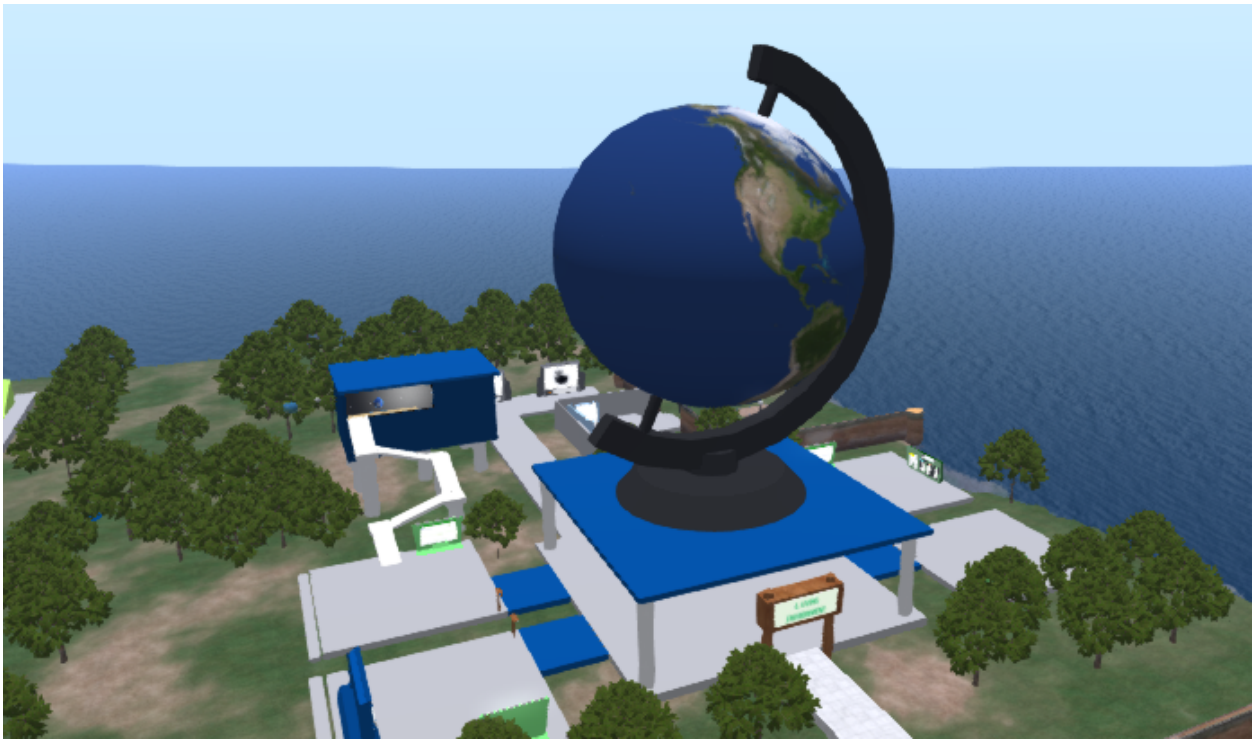
Theoretical objectives:

- Understand and explain the process of evolution of species by recognizing and justifying the changes that occur in species characteristics over time and the influence of the environment.
- Develop the ability to recognise that groups of species traditionally considered harmful can be very important by realising their key roles in maintaining the health of ecosystems or even be used in practical applications.
- Understand that reproductive strategies used by different animals can be shaped by environmental factors.

Practical objectives:

- Provide background knowledge, and skills that can help resolve common misconceptions with regards to evolution,
- Develop the ability to view biological species (including human) in the context of (evolutionary) time and (ecological) space.
- Recognise and be able to communicate the important impact of insects in ecosystems and in human-related activities/applications.
- Understand threats posed by parasites and become able to recognize ways to overcome them at the personal, community, and global level.
- Recognize and develop the ability to adopt personal hygiene measures that contribute towards maintaining the health of the reproductive system.

## 5.4 Course 4: LIVING ENVIRONMENT



**Course content:**

1. **Biodiversity**
2. **Climate change – its impact on ecosystems**
3. **Water cycle and water movements**
4. **Ecological pyramid**
5. **Natural resources and Sustainability**

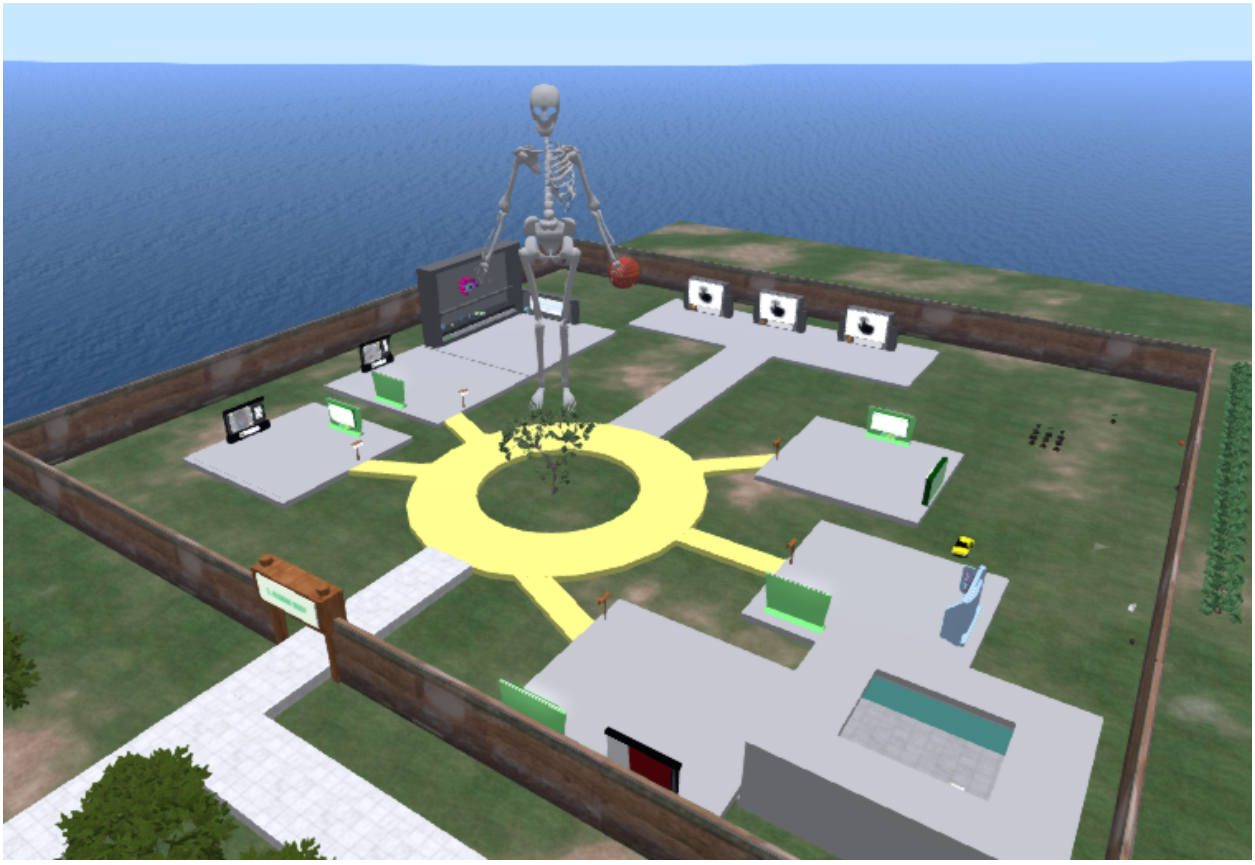
The theoretical objectives are to:

- understand, analyze and evaluate the relations between man and his environment based on knowledge of the laws governing life on Earth,
- develop the ability to understand the links between local and global issues and to adopt one's responsibility concerning the environment,

- develop a sense of individual responsibility for man's relationship to the environment as a consumer and producer.

The practical objectives are to:

- provide knowledge, skills, and habits that are necessary for everyday actions and human attitudes to the environment,
- develop cooperation in the protection of the environment at the local, regional and international levels,
- be able to assess the objectivity and relevance of information on the state of the environment and communicate about it, rationally justify one´s views and opinions,
- develop the ability to use information and communication technologies and resources in obtaining and processing information, as well as the presentation of their own work.



**Course content:**

1. **Circulatory system + Blood types**
2. **Nervous system**
3. **Respiration system**
4. **How can nutrition influence the functioning of organism?**
5. **Defense functions of the organism (How does the immune system work?)**

Theoretical objectives are to:

- understand and explain the structure and function of the organs of the respiratory system.
- develop the ability to recognize the upper and lower airways, to understand the mechanism of breathing and the principles of external and internal breathing.

- recognize the harmful effects on the respiratory system and the factors and consequences of polluted air. The harmfulness of smoking and inhaling toxic substances.
- understand the concept of blood and understand its meaning. Know the components of blood and their properties, blood groups. Understand the meaning and function of blood vessels. Understand the importance of blood and the consequences of its loss.
- understand the structure and operation of the heart, blood circulation. External manifestations of heart activity.
- understand the nervous system, its meaning and function. Be able to identify nerve cells and nerves. Know the concept of reflex.

Practical objectives are to:

- provide basic knowledge and skills that can help to understand the functions of the main parts of the respiratory system.
- describe the exchange of respiratory gases in the lungs, explain the essence of breathing. Recognize the external and internal breathing. Determine the movements of the diaphragm and intercostal muscles by observing inhalation and exhalation.
- determine the components of blood on a sample and explain their meaning. Name the blood groups.
- mark and name the parts of the heart, to understand the importance of the heart valves for the activity of the heart.
- understand the meaning of artery, vein and capillary. Know the importance of coronary arteries. Recognize difference between arteries and veins according to the direction of blood flow. Know the meaning of sap, sap vessels and lymph nodes.
- understand the basic properties of the nerve cell and the meaning of nerves, the course of the reflex arc and the basic parts of the central nervous system, the basic structure of the peripheral nervous system and their meaning.