TÜBİTAK SOBAG 1001 PROGRAM NO: 223K485

SAGE Web Editor User Guide

SAGE (Virtual Reality Environments Development Editor) is a web-based platform where teachers and students can create their own virtual worlds without requiring any technical expertise. Through this platform, users can design virtual environments, add various objects to the scene, define interactive behaviors for objects, and test and experience the worlds they create.

This guide is designed to help first-time users learn the system step-by-step. It covers the entire workflow—starting from account creation and logging in, to creating worlds, navigating the editor interface, scene traversal, adding and editing objects, block-based coding, and testing the scene.

Sections in This Guide:

1. Account Creation and Login
2. World Management
3. Editor Interface and Scene Navigation
4. Adding Objects and Scene Design
5. Object Panel and Block Coding
6. Toolbar
7. Mobile Usage and Virtual Reality (VR) Mode

General Workflow to Create Your First Scene

The following steps outline the basic process for building a virtual world from scratch and testing your first scene in SAGE:

1. **Log in:** Access the system with your account (*Section 1*).
2. **Create a world:** On the World Management screen, enter a name, click **“+ Create”**, then click on its card and select **“Enter”** to open it (*Section 2*).

3. **Navigate the scene:** Move around using the **W, A, S, D** keys and rotate the camera with **Q** and **E** to get familiar with the environment (*Section 3*).
4. **Add objects:** Click **“Add Object”** in the bottom-left corner, select a category, click an object, and place it wherever you want in the scene (*Section 4*).
5. **Test it:** Optionally right-click an object to attach block code, then click the **Play** button at the top to run your scene (*Sections 5 & 6*).

1. Account Creation and Login

To use the SAGE Web Editor, you must first create a user account and then log in. The login screen features username/email and password fields. If you do not have an existing account, navigate to the registration screen.



Fig 1. Login Screen

1.1 Creating a New Account

If you do not have an account yet, you must first register. Follow these steps:

1. Click the **“Create a new account!”** link located at the bottom of the login screen.

2. Fill in the required fields on the **“REGISTER”** screen that appears (see Figure 2):
    - **Username:** The name that will identify you in the system.
    - **Email:** Enter a valid email address; you will use this address to log in.
    - **Password:** Enter the password you wish to use.
    - **Confirm Password:** Re-enter the same password to confirm it.
3. After reviewing your information, click the red **“Create Account”** button.
4. Once your account has been created, you can use the **“Log In”** link to return to the sign-in screen.

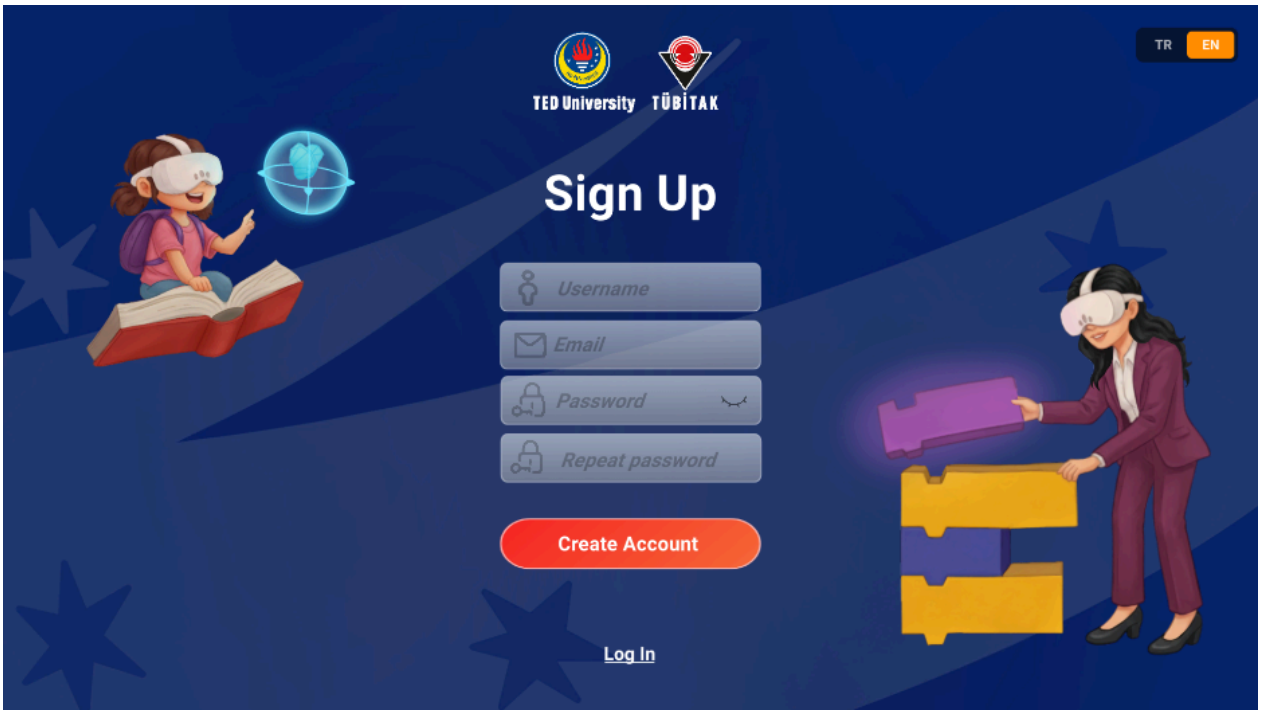


Fig 2. Register Screen

1.2 Logging In to the System

Once your account is ready, return to the login screen (see Figure 1) to log in:

1. In the **Email** field, enter the email address you used during registration.
2. In the **Password** field, enter your password.

3. Optionally, check the **“Remember me”** box so your credentials are saved for future sessions on the same device.
4. Click **“Log In”** to be redirected to the World Management screen.

2. World Management

The first screen you encounter after logging in is the **World Management** screen. In SAGE, each virtual environment you create is referred to as a **“world”** think of an environment as an individual project you are working on.

On this screen, you can perform three primary actions

- Create a new world
- Open and edit a previously created world
- Access a world owned by someone else using a share code

All worlds you have created are displayed on the screen as individual cards.



Fig 3. World management screen

2.1 Creating a New World

To create your first world:

1. In the input box at the top of the screen labeled **“Enter the name of the world you will create”**, type the desired name for your world.
2. Click the **“+ Create”** button on the right side.
3. The world you created will appear as a card in the lower section of the screen. This card displays a small preview and the name of your world.

> **Tip**
> Give your world a name that reflects its content (for example, “Forest Walk” or “Traffic Scene”). That way, when you create multiple worlds, you can easily tell them apart.

2.2 Opening an Existing World

To open a previously created world and continue working on it:

1. Select the world card you want to open from the list in the bottom section.
2. If it is a shared world belonging to someone else, enter the code provided to you into the **“Enter world code”** box in the bottom-left corner. (This code feature is designed to facilitate collaboration.)
3. Click the blue **“Enter”** button to enter the world. The editor screen will open, and you can start editing.

2.3 Deleting a World

To delete a world you no longer need, click the trash can icon in the top-right corner of the world card. Because deletion may be irreversible, make sure you really want to delete the world before proceeding.



3. Editor Interface and Scene Navigation

When you enter a world, the editor screen opens. A newly created world initially appears as an empty scene overlaid with a grid. This space serves as your canvas for designing.

The editor interface consists of three main sections:

- **Scene:** The 3D workspace where you place and arrange your objects.
- **Toolbar:** The menu located at the very top of the screen. From here, you can perform actions such as undo, play, and share.
- **Control Panel:** The area where you access menus such as adding objects and object properties/settings.

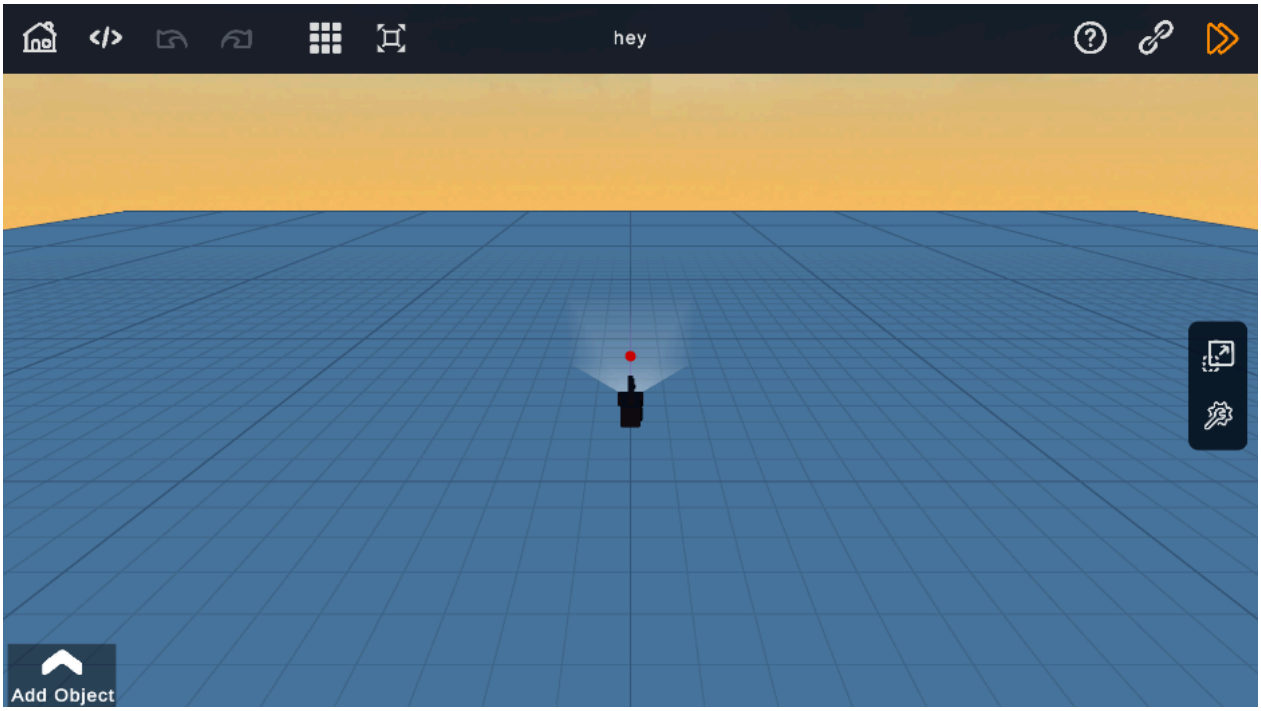


Fİg 4. Empty Scene

Keyboard controls are used to navigate freely within the scene and examine the environment from different angles.

Key	Function
W	Move Forward
A	Move Left
S	Move Backward
D	Move Right
Q	Rotate camera left
E	Rotate camera right
Shift	Move upward in the scene
Tab / Boşluk	Move downward in the scene

4. Adding Objects and Scene Design

The way to bring your empty scene to life is by adding objects to it. You can design your own environment by placing ready-made assets—such as humans, animals, trees, buildings, and vehicles—into the scene.

Steps to add an object:

1. Click the **“Add Object”** button in the bottom-left corner of the screen.
2. In the panel that opens, objects are listed by category:
    - Humans
    - Animals
    - Trees
    - Structures / Buildings
    - Vehicles (and other similar categories)
3. Select the object you want to add.
4. Then, click the exact spot in the scene where you want the object to stand. The object will be placed at the clicked location.

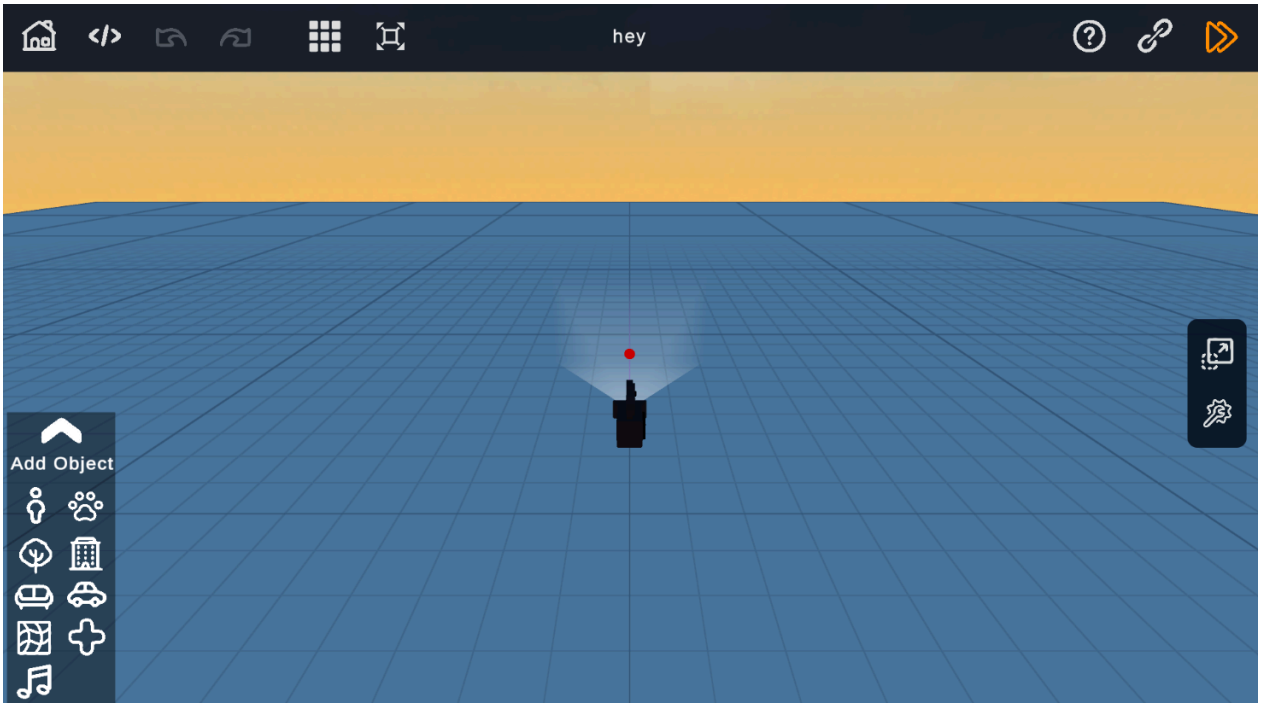


Fig 5. Object insertion menu view

Using the same method, you can build a rich, vibrant scene by adding multiple objects from different categories. An example scene designed with various objects is shown below:



Fig 6. Example scene with added objects

Here is the English translation for this section:

5. Object Panel and Block Coding

To change the settings of an object you have added to the scene, right-click on that object. This action opens the object's control panel. Through this panel, you can adjust the object's properties and define behaviors (interactions) for it.

5.1 Options in the Panel

- **Codeable:** Enables the ability to add behaviors (code) to the object.
- **Block Code:** Opens the drag-and-drop visual coding panel.
- **Link / Connect:** Creates a connection between objects.
- **Interaction Area:** Defines an interaction zone around the object.

- **Speak / Think:** Adds text (a speech or thought bubble) above the object.
- **Delete:** Removes the object from the scene.

5.2 Transform Tools

The small toolbox located next to the control panel allows you to modify the position, orientation, and size of the selected object:

- **Move (Translate):** Changes the object's position in the scene.
- **Rotate:** Turns the object to change the direction it faces.
- **Scale:** Resizes the object by making it larger or smaller.

> You can also use the **Z**, **X**, and **C** shortcut keys to perform these move, rotate, and scale operations.



Fig 7. Object control panel

5.3 Defining Behaviors with Block Code

Clicking the **Block Code** icon on the object control panel opens the coding panel. In this workspace, you define behaviors by dragging and combining **event** and **action** blocks. An event block answers the question *“when?”* (for instance, *“when clicked”*), while an action block answers *“what should happen?”*.

Using block code, you can make objects move, orchestrate interactions with the user, and design various scenarios within your scene. You don't need prior programming experience—simply select the appropriate blocks and snap them together.

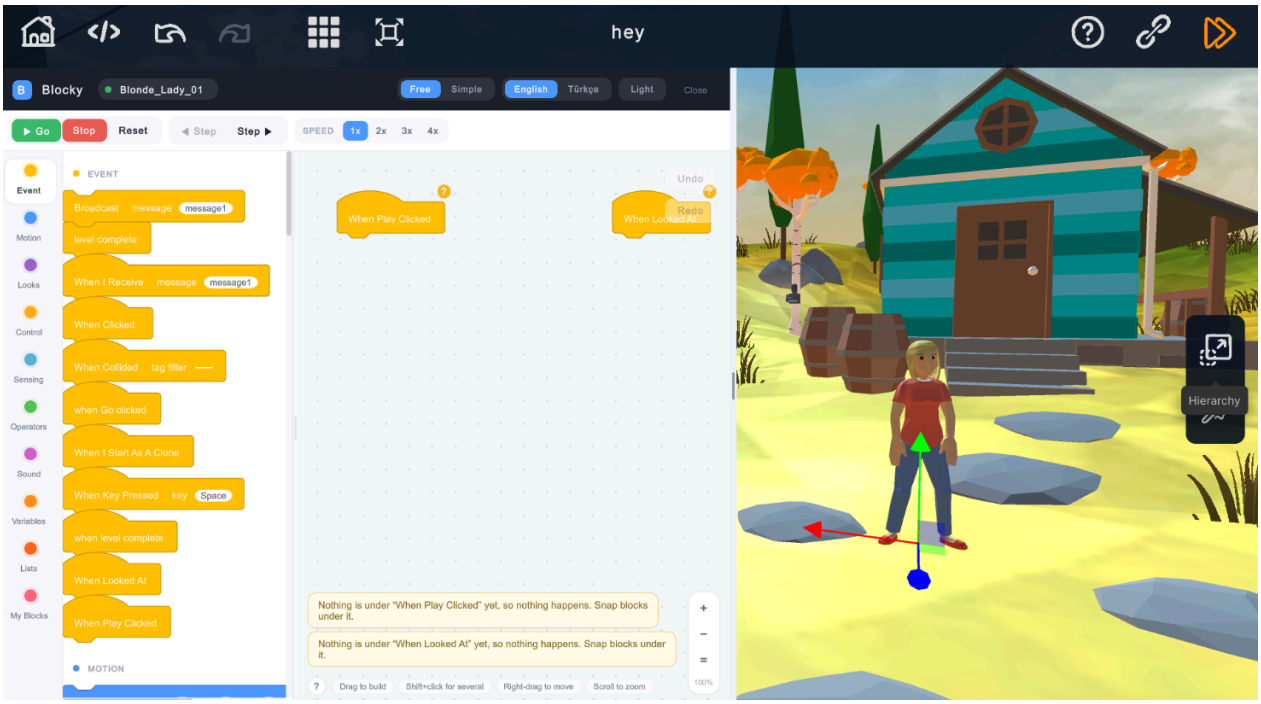


Fig 8. Block Code Panel

6. Toolbar

Located at the very top of the screen, the toolbar allows you to manage operations within your scene and test the environment you have built. The locations of the toolbar buttons are shown below:



Fig 9. Toolbar description

The primary tools available in this section include:

- **Main Menu (🏠):** Returns you to the home page (World Management screen).
- **Code View (< >):** Provides quick access to the block coding panel.
- **Undo / Redo:** Reverts your last action or reapplies the action you just undid.
- **Help (?):** Grants access to information and support resources regarding the application.
- **Share Code:** Displays the unique identification code (ID) of the world you are currently working on. You can copy and share this code with others so they can access the same world.
- **Play (▸):** Runs your scene. In this mode, all defined interactions and block codes become active, allowing you to observe object behaviors in real time.

About Play Mode

While designing, it is recommended to **frequently** test your changes using the **Play** button. Play mode lets you experience the scene exactly as an end user would, making it easy to identify and resolve issues early on.

Here is the English translation for this section:

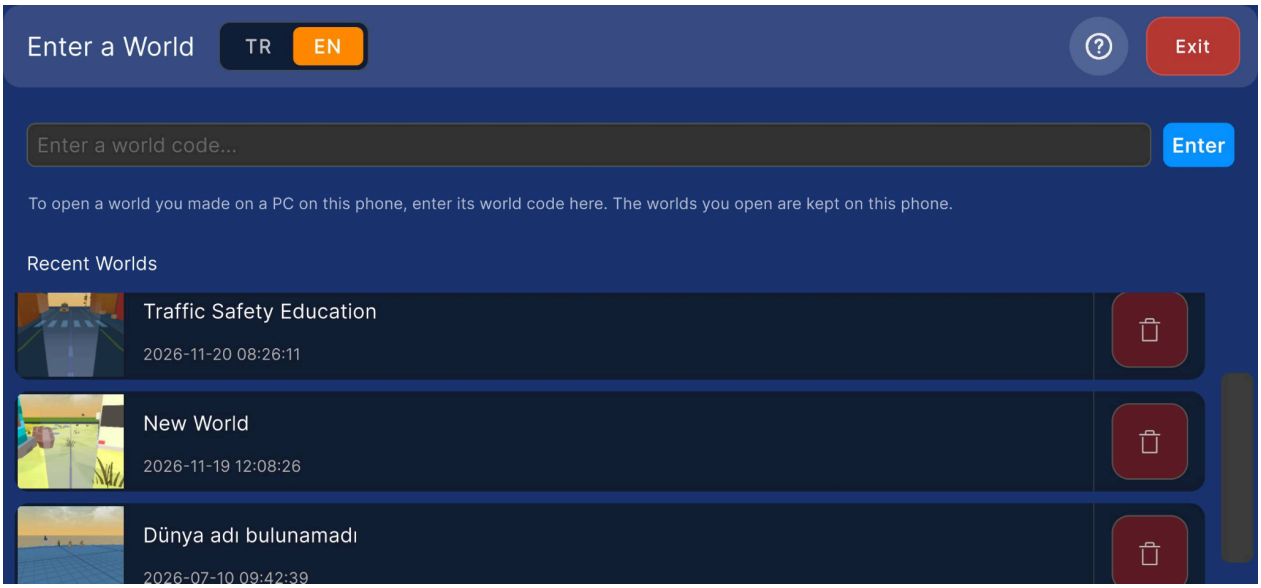
7. Mobile Application and Virtual Reality (VR) Mode

You can access SAGE not only from a computer, but also from your smartphone or tablet. On mobile, you can join a created world, explore the scene using touch controls, and, if desired, experience it immersively using a VR (Virtual Reality) headset. This section explains the three main screens of the mobile experience in sequence.

7.1 Joining a World (World Entry)

On mobile, you are greeted by the **“Enter World”** screen. From here, you can join an existing world using its code:

1. In the **“Enter world code...”** field at the top, type the code of the world you wish to join.
2. Tap the blue **“Enter”** button on the right. The world will open, and you will enter the scene.
3. Worlds you have previously accessed appear in the **“Recent Worlds”** list. Simply tap on any card to quickly re-enter that world.



Fg 10. "World Entry" screen on mobile

Where do I find the world code?

The world code is shared by the creator of that world by clicking the link icon shown in Figure 9. On the desktop editor, this code can be viewed and copied via the **Share Code** option in the Toolbar (see Section 6).

7.2 Mobile Scene View and Controls

When you enter a world, the scene opens in a full-screen view on your phone. You can look around by physically moving your device or by dragging your finger across the screen. The touch buttons in the corners of the screen serve the following functions:

- ‹ **(Back):** Exits the scene and returns to the previous screen (World Entry).
- ↺ **(Reset):** Restores your view and position to the starting state; useful if you ever lose your orientation.

- ▲ / ▼ **(Up / Down):** These arrows in the bottom-right corner let you ascend or descend within the scene.
- **VR Goggles Icon (top-right):** Opens the scene in Virtual Reality (VR) mode (detailed in Section 7.3).

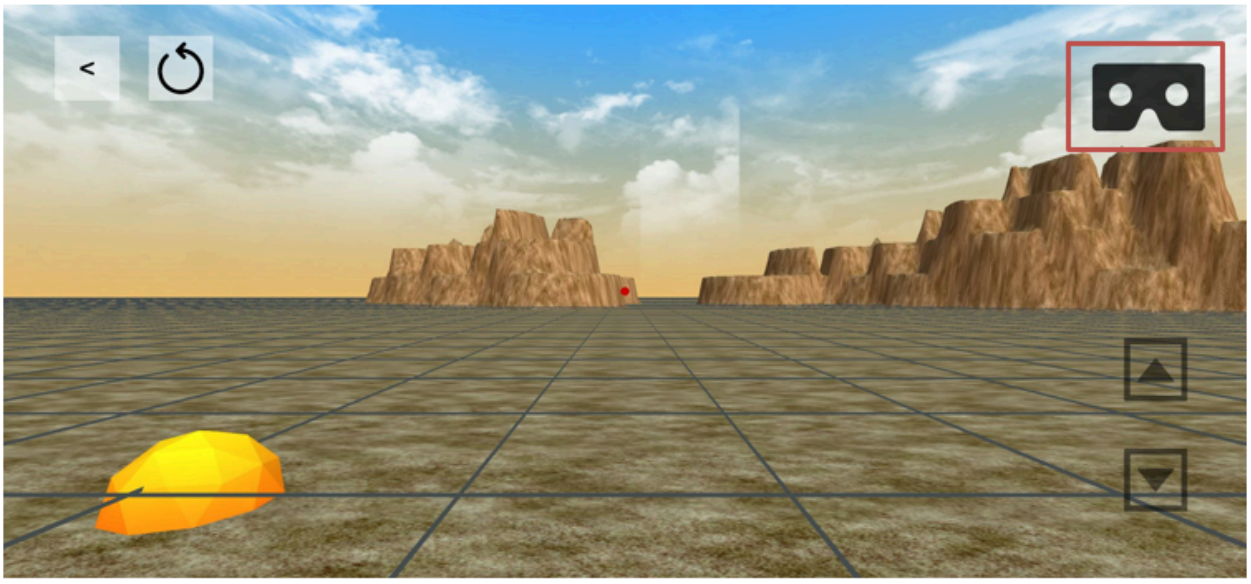


Fig11. Mobile scene view and on-screen controls

7.3 Virtual Reality (VR) Mode

Tapping the VR goggles icon in the top-right corner splits the screen in two, rendering an independent view for each eye. This split-screen display is designed for slotting your phone into a compatible VR headset (such as a Google Cardboard-style viewer) to experience the scene in full 3D immersion.

While in VR mode:

- Turn your head left, right, up, or down to inspect the environment from any perspective.
- *To move forward through the scene, simply tilt your gaze downward toward the ground; this triggers movement, letting you walk through the virtual world.*
- To exit VR mode and return to the standard mobile view, tap the **X** icon in the top-left corner.

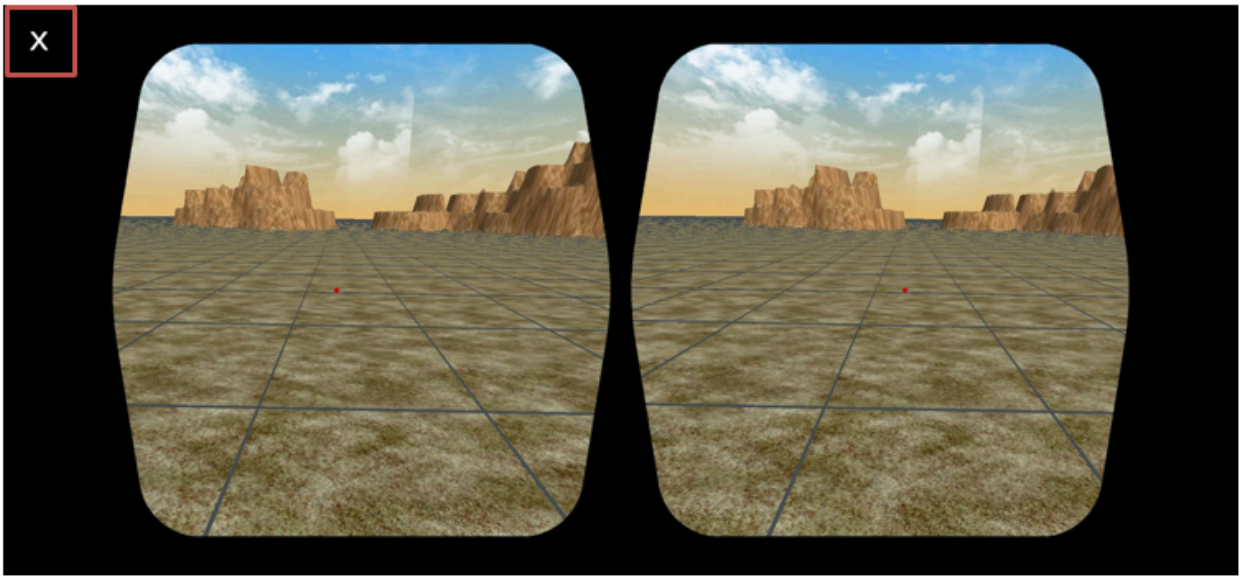


Fig 12. Virtual Reality (VR) mode – split-screen view