SESSION TITLE

Raspberry Pi Gaming Console

ACTIVITY IN A SENTENCE:

Creating a gaming console with retro games by using open source technologies.

DISCIPLINES INVOLVED IN ACTIVITIES:

ICT, Coding, Engineering

RECOMMENDED AGES:

12 – 18

LEARNING ENVIRONMENT (CONTEXT SETTING):

Ideally the activity is run in a Makers lab – IT lab. However, it can also be carried out in an ordinary classroom with just the essentials needed (see Resources Needed).

LEARNING OUTCOMES:

- Internet researching
- Setting up and use of raspberry pi
- Introduction to coding
- Trial and error method

RECOMMENDED EXPERTISE:

IT teacher with Open Schooling knowledge.

SDG LINKS:

- **Goal 4:** Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all
- **Goal 17:** Strengthen the means of implementation and revitalise the Global Partnership for Sustainable Development

TIME IT TAKES TO COMPLETE:

4 hours

MATERIALS / RESOURCES NEEDED:

- Raspberry pi
- SD card, Computer
- MicroSD card reader (a method to connect your SD card to your computer or laptop)
- Internet connection
- Screen (to connect the raspberry pi)
- Game controller of your choice (keyboard also works)

CONTENT FOR LEARNERS:

Detailed instructions can be found *here*.

TIPS FOR SCALING FOR DIFFERENT AUDIENCES:

For younger learners, the necessary files could be already loaded into the SD card.

Activity

Introduction:

Create a gaming console by using open technologies with the use of Raspberry pis.

This activity is an easy, introductory activity that learners can work on with the correct technologies. *The raspberry – pi platform* includes many ideas and teaching material for open source community projects and can be combined with *the arduino space* for more complex and automated issues.

Within Open Schooling, students need to be introduced to the basics of these tools, a process which can take from a few hours to many weeks and can then implement their knowledge and creativity in a vast range of different projects, using science and technology to solve local issues.

Part 1

1.   Download the necessary files (OS) on your computer from *RetroPie*, depending on your raspberry pi version.

2.   Then, you have to download a program to import the files to the raspberry pi through the SD card. For Windows you can use: *Raspberry Pi Imager* or *Etcher*. Once the program's image/OS and SD card have been chosen, write it to the SD card and wait until the operation completes.

3.   Insert the SD card onto the raspberry pi so you can start using it.

Part 2

1.   Turn on the raspberry pi. A menu should pop up. On this menu, configure the connected controllers and an unused button or key as your Hotkey Enable button. When you get to "OK" at the end, press the button you have configured as "A" (East) to complete this step.

2.   Then you have to enter Game ROMs into your system. ROM stands for *Read Only Memory*, and in this context are digital copies of a game. You have plenty of ROMs to choose from. More on transferring ROMs to your system can be found *here*.

Part 3

After you've transferred your ROMs, you need to restart EmulationStation in order for them to show up. You can restart EmulationStation by pressing Start > Quit > Restart EmulationStation, or with SSH access by rebooting your pi with sudo reboot. Once rebooted, you should see the game systems appear on the system list.

An emulator is a software that acts like an old gaming device console.

USEFUL LINKS:

• *More on transferring ROMS*

• *The whole procedure on youtube*

Figure 5.20: Students playing with their Raspberry Pi Retro Gaming Console. Credit: Vocational School of Myrina.

Credit: This activity was developed by the Vocational School of Myrina (EPAL Myrinas) using raspberry pi configurations from RetroPie.org and was run in collaboration with SciCo, OSHub Greece.