

Example of a PECC Workshop (Lesson plan)

For Grade 9

Unit 1

Introduction to Pocket Code/Game design

Structure of the unit: introduction, presentation, bricks on paper activity, game design

Lesson at 50 minutes: 1-2 units

Unit 2

Coding

Structure of the unit: bricks on paper activity, coding

Lesson at 50 minutes: 1-2 units

Unit 3

Presentation and closing

Structure of the unit: coding, presentation, discussion

Lesson at 50 minutes: 1-2 units

Unit 1

Introduction to Pocket Code

Structure of the unit: introduction, presentation, brick-on paper activity, game design

Lesson at 50 minutes: 1-2 units

Checklist

Power point presentation with examples, task explanation, and learning goal	<input type="checkbox"/>
For the bricks on paper activity per student: set of bricks, 3 planets, 1 background, 1 character, 1 motion type, coordination system, tap, scissor, A3 paper	<input type="checkbox"/>
Informed consent of parents	<input type="checkbox"/>
List of usernames/passwords	<input type="checkbox"/>
At the end of the lesson: collect the produced templates	<input type="checkbox"/>
At the end of the lesson: preinstall the "Shape of a Game" on the devices ¹	<input type="checkbox"/>

Timetable

5 minutes	Intro
15 minutes	Warm-up
15 minutes	Presentation
15 minutes	Explanations to the task
45 minutes	Bricks on paper activity
5 minutes	Closing
2 Units à 50 minutes	

Learning Goal(s)

Students can apply the concepts of loops/broadcast messages and explain for what they are used for.

Students can use bricks (different actions) and put them together in order to create a syntactically and semantically correct pseudocode on paper.

Result

All students start with the bricks on paper activity (coordination system) and choose their objects (own assets).

¹ Example: <https://share.catrob.at/pocketcode/program/48517>

Sequence:

Intro

Duration: 5 minutes

- What to expect (structure of the units, agenda)
- Collect informed consent
- Assign credentials to students

Warm-up

Duration: 15 minutes

Discussion:

- Which technical professions do you know?
- Which study/training do you need to acquire technical skills?
- What does a computer scientist do? Do you know people who are working in those fields?
- Who already has experience in coding? Which tools did you use for coding?
- What is coding? What is an algorithm?
- Which programming languages do you know?
- What kind of games do you play?
- What makes you play games?

Talk about role models, famous female IT specialists from the history and the IT profession in general.

Introduction to Pocket Code

Duration: 15 minutes

Presentation & collaborative program creation

- Slide 1: show the app Pocket Code + how to download
- Switch to live-demo 1
 - Show the menu/UI
 - Show "Explore" (community sharing platform), programs
 - Create a new program (starter program): show scripts, looks, sounds and brick categories
 - Ask students for the next step while programming
 - Show a program that already has two objects with two looks ² (ask: "What is an object?")
 - Add a look
 - Add a brick „When tapped“ and switch the look "Next look"
- Slide 2: explain loops
- Slide 3: explain broadcast messages
 - Switch to live-demo 2/starter program
 - Add a "Forever loop" brick and a "Wait" brick to program (to create an animation)

² <https://share.catrob.at/pocketcode/program/41332>

- Add “broadcast messages” to the program (“When tapped”, “Send to all”, second object: “When I receive” “Say Hello!”)

Explanation of the task

Duration: 15 minutes

“Your object wants to learn something about the planets and goes on a journey to outer space. The planets tell him/her some facts about themselves if the object touches them.”

Discuss the task: What concepts are needed?

- Slide 4: explain the task and learning goal (for today)
 1. Bricks on paper activity
 2. Take one background
 3. Choose one object
 4. Choose 3 planets
 5. Take a set of bricks
 6. Take “level of control” for the main character (inclination sensor, “When tapped” property) – allocated randomly
- Live demo 3: show the different kinds of movement with a program

Hint: Everybody should create his own program on paper. Students can work together in regard to their assigned sensor and can create their own assets (characters, planets).

Bricks on paper activity (hands-on) / Pseudocode

Duration: 45 minutes

- Slide 5 with hints:
 - Name your object.
 - Define the size of your object.
 - Where should you place your object?
 - Ask: What is a coordination system?
(→ coordination system)
 - What happens if the object touches the planets?
 - Which object needs to communicate with the others and when?
 - What do the planets have to say?
- Slide 6: show a slide of how it could look (the brick on paper template)
 - Ask: “What is a pseudocode?”

Closing

Duration: 5 minutes

Summarize and recap.

Unit 2

Coding

Structure of the unit: bricks on paper activity, coding

Lesson at 50 minutes: **1-2 units**

Checklist

Distribute tablets/smartphones (note down which students use which tablets)	<input type="checkbox"/>
Distribute the handmade templates/collect them again at the end of the lesson	<input type="checkbox"/>

Timetable

5 minutes	Repetition
35 minutes	Finish bricks on paper activity
10 minutes	Research facts to planets (internet)
05 minutes	How to start?
40 minutes	Coding
5 minutes	Upload
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2 Units at 50 minutes	

Learning Goal(s)

Students create their game according to their self-made template. Students use the app Pocket Code, add bricks (actions), objects, and looks to their games, do research (research facts to planets), and try to solve these tasks alone or in teams.

Result

All students finish the bricks on paper activity; they collect facts about the planets (3 facts per planet) and all start to code in Pocket Code.

Sequence:

Repetition

Duration: 5 minutes

Discuss:

- What did we do the last time?
- How many of you already finished with X or X (last sub-goals)? Who needs more time?
- What was difficult? What was easy? Open questions?

Finish bricks on paper activity

Duration: 35 minutes

Foster teamwork and provide support.

Research facts to planets (internet research)

Duration: 10 minutes

- Allocate the tablets.
- Students search for three facts to include about each planet (internet research).

How to start?

Duration: 5 minutes

- Slide 7: Explain the “Shape of a Game”.
- Life demo 3: Show how to add new scenes and rename the scene.

Coding

Duration : 40 minutes

Start with your games.

Provide hints: add each brick one by one and execute the program to see what happens. Test often and adjust if something is not right

Foster collaboration:

- Observe the teamwork.
- Build confidence: praise students, provide recognition of work done.
- Balance extrinsic and intrinsic motivators.
- Foster originality and self-expression.
- Be gender aware!

Upload and Closing

Duration: 5 minutes

Upload programs and collect templates.

Unit 3

Presentation and Closing

Structure of the unit: coding, presentation, discussion

Lesson at 50 minutes: **1-2 units**

Checklist

Prepare quiz	<input type="checkbox"/>
Program upload	<input type="checkbox"/>

Timetable

5 minutes	Repetition
70 minutes	Coding, extra tasks, uploading
10 minutes	Students present
10 minutes	Quiz
5 minutes	Discussion and closing
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2 Units at 50 minutes	

Learning Goal(s)

Students code their own games and integrate the “Shape of a game” in their games. They can explain the different parts and concepts used.

Result

Students can present their programs to their peers and explain different concepts. They upload their programs to the community website.

Sequence

Repetition

Duration : 5 minutes

Discuss:

- What did we do the last time?
- How many of you already finished with X? Who needs more time?
- What was difficult? What was easy? Open questions?
- Ask questions you are going to ask at the end of the unit during the quiz.

Finish programs (coding) and upload the game

Duration: 70 minutes

Students who finished earlier can work on extra tasks:

- Include the “Shape of the Game” (use of variables)
 - Ask: When does the game start/end? What are variables?
- Add a quiz at the end with questions about the planets. (Use of “Ask” brick)..
- Help your colleagues.

Upload the games.

Presentation

Duration: 10 minutes

Two volunteers present their games in front of their peers (one who used the inclination sensor and one who used “When tapped”-property, one girl/one boy).

Sequence:

- Present the game (play).
- How did you manage the movement of the object?
- How did you add the end screen?

Quiz

Duration: 10 minutes

Possible questions:

- What happens when you tap on the play button?
- Each object consists of: (a, b, c).
- Which block categories can you remember?
- Which loops did you use or which ones can you remember?
- What do you need for objects to communicate with each other?

Discussion and Closing

Duration: 5 minutes

Discuss in plenum:

- The answers of the quiz

- Who is planning to continue coding with Pocket Code? (reasons for/against)
- What did you like the best/the worst? Recommendations?
- Do you want to use the app in other/in this courses again?