

AppInventor (very basic programming)

Amedeo Lepore | 19/04/2023

Get students started with App Inventor programming!

App Inventor is a web application IDE originally provided by Google, and now maintained by the Massachusetts Institute of Technology (MIT). It allows newcomers to computer programming to create application software (apps) using very simple coding language based on graphical blocks. Everything with online tools and with no needs to install or configure anything locally.

LEARNING OBJECTIVES

Understand the basics of programming using simple coding block language

Understand the basic of UX (User eXperience) Design starting with simple user interfaces

Develop app functionality using blocks

Work with data storage and manipulation

Implement user input and interaction

Utilize advanced components and extensions

Debugging and testing apps

Publish and distribute apps

App development best practices

Explore further learning resources and opportunities

C'S OF EDUCATION

COLLABORATION

COMMUNICATION

CRITICAL THINKING

CREATIVITY

AGE GROUP

From 13 to 19

SCENARIO LANGUAGE

English

TOTAL DURATION

13 hours 30 minutes

SUBJECTS

DESIGN - TECHNOLOGY

INFORMATICS / ICT

S1. UNDERSTAND THE BASICS OF APP INVENTOR

45
MINUTES

a1.1 Gain knowledge of the history and purpose of App Inventor

INTERACT & INSTRUCT

C'S OF EDUCATION

COMMUNICATION

CREATIVITY

TOOLS

Presentation or Web-conferencing tool

DESCRIPTION

Students are required to present their group project findings in a mini-conference. Teachers assigns each student a role to play when presenting e.g. a politician, a researcher, an author.



a1.2 Navigate the App Inventor interface and tools

INTERACT & INSTRUCT

C'S OF EDUCATION

CRITICAL THINKING

TOOLS

Mind mapping tool

DESCRIPTION

Students analyse and visualise the relations between concepts by creating a mind map. Mind maps or concept maps are visual representations of the relationships between concepts. The concepts are placed in nodes (often circles), and the relationships between them are indicated by labelled arrows connecting the concepts.



a1.3 Recognize the components and structure of an App Inventor project

INTERACT & INSTRUCT

C'S OF EDUCATION

COMMUNICATION

CRITICAL THINKING

TOOLS

Online quiz platform and a quiz prepared by the teacher in advance.

DESCRIPTION

A short, ungraded online quiz to check for understanding (True/False, multiple choice, matching, etc.). Students can discuss their answers in pairs before answering. Both students and the teacher receive immediate feedback. Depending on the type of quiz (with questions displayed on the main screen or on students' devices only), the teacher can provide general feedback for the whole class group or students can work independently on the feedback provided on their screens.

2. DESIGN USER INTERFACES WITH APP INVENTOR



a2.1 Utilize the designer view to create and modify app layouts

INVESTIGATE & RESEARCH

C'S OF EDUCATION

COLLABORATION

COMMUNICATION

CREATIVITY

TOOLS

Image based tools: image sharing tool, online whiteboard ; Multimodal production tools : digital pinboard, presentation tool; Knowledge organization and sharing tools: social bookmarking tool.

DESCRIPTION

Firstly student work in small groups on a certain topic assigned by the teacher. Then, they are divided into new groups and rotate between the stations teaching each other about the content they were working on.

45
MINUTES

a2.2 Work with various components, such as buttons, labels, and images

INVESTIGATE & RESEARCH

C'S OF EDUCATION

CRITICAL THINKING

TOOLS

Form or poll tool

DESCRIPTION

Students provide feedback on their level of interest in the concept or topic suggested by their peers or by the teacher. They can show that they are very much interested, quite interested, or not interested at all. Alternatively, they can grade their level of interest on a scale, e.g. from 1 to 10.

45
MINUTES

a2.3 Implement responsive design principles for different screen sizes and orientations

INVESTIGATE & RESEARCH

C'S OF EDUCATION

COLLABORATION

COMMUNICATION

CRITICAL THINKING

TOOLS

Classroom: paper and post-it notes. This activity can also take place online by making use of digital canvases or shared documents.

DESCRIPTION

The teacher puts large sheets of paper with questions or topics in different places in the classroom and divides the class into the groups equal to the number of sheets. Each groups gets 5-10 minutes to brainstorm ideas on the topic. When the time is up, they move to another poster.

45
MINUTES

a3.1 Explore the concept of visual programming with blocks

EXCHANGE & DISCUSS

C'S OF EDUCATION

COMMUNICATION

CRITICAL THINKING

TOOLS

Infographic tool

DESCRIPTION

Students analyse data and create an infographic poster which visualizes and summarizes the core components as well as the logical relations between the components.

45
MINUTES

a3.2 Utilize built-in blocks for basic operations and events

EXCHANGE & DISCUSS

C'S OF EDUCATION

COLLABORATION

COMMUNICATION

CRITICAL THINKING

CREATIVITY

TOOLS

Rubric tool

DESCRIPTION

The learners are positioned in an inner and an outer circle. The students in the inner circle discuss a topic and the members of the outer circle observe someone from the inner circle, by making notes and/or using a rubric.

45
MINUTES

a3.3 Create custom procedures and functions to simplify code

EXCHANGE & DISCUSS

C'S OF EDUCATION

COLLABORATION

CRITICAL THINKING

TOOLS

Poll or brainstorm tool

DESCRIPTION

Students brainstorm on open ended questions about a certain topic. They create in small groups a driving question for their project work.

45
MINUTES

a4.1 Understand different data types and structures in App Inventor

CREATE

C'S OF EDUCATION

COMMUNICATION

CREATIVITY

TOOLS

Presentation or web-conferencing tool

DESCRIPTION

Students and teacher invite a real audience other than peers in the classroom, e.g. other classes of the school, parents, partner schools, an outside expert.

45
MINUTES

a4.2 Use TinyDB for local data storage

CREATE

C'S OF EDUCATION

DESCRIPTION

aa

45
MINUTES

a4.3 Manage and manipulate lists for dynamic app content

CREATE

C'S OF EDUCATION

COMMUNICATION

CRITICAL THINKING

TOOLS

Paper or shared online document.

DESCRIPTION

Teacher asks students to write three summaries of the text or lesson: one between 10 to 15 words, second one between 30 to 50 words and the third between 75 to 100 words. This allows the students to refine their understanding and choose only the important elements for the first description.

45
MINUTES

a5.1 Capture user input using text boxes, sliders, and checkboxes

CREATE

C'S OF EDUCATION

CRITICAL THINKING

TOOLS

Interactive video tool

DESCRIPTION

The teacher shares a video with the students to which feedback questions, instructions or quizzes have been added. By analyzing the individual results on the platform of the tool, the teacher gets feedback on the understanding of the students.

45
MINUTES

a5.2 Create interactive experiences with touch gestures and device sensors

CREATE

C'S OF EDUCATION

COMMUNICATION

CRITICAL THINKING

TOOLS

Both resource list and questions can be added to a shared online document.

DESCRIPTION

Students are presented with a specific problem or question and with a selection of resources (usually a list of links to online materials) that they can use to answer the question.

45
MINUTES

a5.3 Build multimedia applications using audio, video, and camera components

CREATE

C'S OF EDUCATION

COMMUNICATION

CRITICAL THINKING

TOOLS

Polling tool

DESCRIPTION

Before, after or during a speech, the teacher asks a question to the class. Students answer (with a short paragraph) individually or in groups using a voting tool. Answers are displayed on the board and can be discussed with the class. For instance "what can we learn from this activity?" would be a good question to raise metacognition skills. PROS : every student has time to think and propose an answer.

56. ADVANCED COMPONENTS AND EXTENSIONS

45
MINUTES

a6.1 Integrate web APIs and services using the Web component

PRESENT & SHARE

C'S OF EDUCATION

DESCRIPTION

aaa

45
MINUTES

a6.2 Leverage built-in and third-party extensions to enhance app functionality

PRESENT & SHARE

C'S OF EDUCATION

COLLABORATION

COMMUNICATION

CRITICAL THINKING

TOOLS

null

DESCRIPTION

In the first round the students individually reflect on a question or problem that requires higher-order thinking skills. In the second round the students pair up in groups of 2. After explaining their individual thoughts, they try to come to a consensus. The 3rd round is a plenary session with sharing the thoughts of the groups and a class group discussion.

45
MINUTES

a6.3 Understand the process of creating custom extensions for App Inventor

ASSESSMENT & FEEDBACK

C'S OF EDUCATION

COLLABORATION

COMMUNICATION

TOOLS

Texts can be distributed or paper of on a shared online document.

DESCRIPTION

The teacher assigns parts of a text or task to different students in the group. Each student becomes an expert in his part and then explains it to the other students.

The Scenario Tool has been created within the Novigado project, which is funded with support from the European Commission's Erasmus+ Programme. The Scenario Tool and any of its content reflects the views only of the author(s), and the EC cannot be held responsible for any use which may be made of the information contained therein.