STEAM EmbRaCe

A STEAM project for Empathy, Resilience and Creativity

App Development

Author(s)	
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Summary	
This course will cover the basics of Application Development projects. Students will learn how to design and develop an application for various scenarios and devices. Additionally, the seminar will cover some of the latest developments in App Development, and how these technologies are being used in various fields and commonly used products. This course is ideal for students interested in pursuing careers in programming, code development, UI/UX (User Interface / User Experience) design or related fields.	
Key elements	
Keywords	Coding / Platforms / Systems / Software / Design / Development / UI/UX / HTML / CSS / JavaScript
Subject	Computer Science
Age of students	12 - 17
Preparation time	10 hours
Teaching time	4 - 6 hours
Online teaching material	Replit IDE (online app)
Offline teaching material	Steam EmbRaCe “App Development” presentation
Resources used	-

Licenses
Trends
Smartphones / Applications / Portability / Adaptability / Responsive Development & Design
21st century skills
Creativity / Critical Thinking / Problem Solving / Collaboration and Teamwork / Technology Literacy

Lesson Plan

Activity	Description	Duration
Introduction to Application Development - Progressive Web App Basics	Using the Steam EmbRaCe "App Development" presentation, guide your students through the basic concepts of App Development theory and practice. Connect those concepts with familiar notions of everyday life (eg. apps we all use in our day to day habits). Make a reference of the programming languages and technology basics, such as HTML, CSS, JS etc. Establish the differences between the three languages and emphasize the functionality each one offers.	90 min
Development Environment Demonstration	Familiarize your class with the developing software you are about to use. Indicatively https://replit.com/ (free online use)	45 min
Development & Design	Proceed to writing code step - by - step. You can use a project by: https://replit.com https://www.cssacademy.com/ https://www.w3schools.com/	60 min

SEL practices

The following techniques support self-awareness and self-management which are the two main domains of the CASEL model in social and emotional learning.

At the beginning of the course we identify students' emotional state by following the activity "Practice for identifying emotional state".

At the end of the lesson students reflect upon their work by following the activity of Reflection.

After the reflection they practice the square breathing technique and the aim is for them to learn to practice this every time they are about to begin a challenging activity.

Assessment

Use the following exercises of graded difficulty for student assessment:

1. Create an interactive trivia using Kahoot! on the concepts discussed in class.
2. Create an interactive hot spot exercise using H5P where the student is required to identify syntax errors in given code snippets.
3. Create an interactive missing word exercise using Wordwall where the student is required to type in the missing keywords (reserved words), special symbols, operands and/or numbers in order for given code snippets to function properly.
4. Showcase real - world PWAs and ask students to identify how specific components of the app might have been coded.

About STEAM EmbRaCe project

This Learning Scenario has been created in the framework of the STEAM EmbRaCe project.

STE(A)M EmbRaCe aims to promote inclusion by engaging and inspiring students from different backgrounds. Students work on real-world STE(A)M problems, which will help develop their cultural empathy, resilience, and creative thinking. The idea is to create digital content which will be ready to be used by teachers in any classroom setting. More specifically, the project will allow the development of a 7-week course and teacher training on how to use the developed material with students.

Find out more about the STEAM EmbRaCe project:

https://steamingthefuture.gr/steam-embrace/

Annex 1

Use the following project repositories to find a project that suits the level of competence of your class and/or their specific interests:

https://replit.com

https://www.cssacademy.com/

https://www.w3schools.com/

Annex 2

If you have a class with younger students and/or students with no experience in programming, you may instead use MIT's AppInventor platform. AppInventor is a free to use online IDE that allows one to design mobile apps using a drag - and - drop interface and code their functionality using blocks similar to Scratch.

https://appinventor.mit.edu/