Supporting Gifted and Talented Students in your Classroom

"Kinder-Coding" Lesson Plan

1 SUMMARY INFORMATION

YOUR NAME & SURNAME: Ifigenia K. Kampadeli

TITLE OF YOUR LESSON: Kinder-Coding

TIME FRAME: 45-50 Minutes

SIZE OF CLASS: 17 Students

OTHER RELEVANT REMARKS: This is lesson plan addresses to kindergarten students ages 4 and 5.

SHORT DESCRIPTION OF THE LESSON AND HOW IT FITS INTO YOUR ONGOING CURRICULUM: This lesson plan has been developed in order to acclimate students with coding and early programming skills.

LEARNING OBJECTIVES: Kindergarten students, including the academically gifted one, will be introduced to basic coding and early programming skills through age-appropriate and hands-on activities. In total, this lesson plan aims to foster problem-solving, critical thinking and computational thinking skills.

EXPLANATION OF WHY THIS LESSON PLAN IS INCLUSIVE, WITH A SPECIFIC FOCUS ON MEETING THE NEEDS OF ACADEMICALLY GIFTED STUDENTS: Apart form including younger and older students, this lesson plan incorporates a variety of hands-on activities, eliciting interest to all students. It allows students to work both in groups and individually, fostering everyone's needs and particularities. Lastly, activities that involve coding and early programming skills, appeal to many students' interests.

2 ACTIVITIES

ACTIVITY 1 – INTRODUCTORY ACTIVITY "PLAYING IN KINDERGARTEN"	
Learning Outcomes, Skills, and Competencies What are the main objectives of this activity? Consider the Bloom's Taxonomy and write here the skills the learner will develop and demonstrate during this activity (e.g., communicative skills, computational thinking, problem solving, etc).	This introductory activity is mainly focusing on the lower levels of Bloom's Taxonomy (specifically, the revised version of Anderson & Krathwohl, 2000) which are *Remembering* and *Understanding.* Having said that, the children are expected to: ☐ Recognize and recall the concept of coding, ☐ understand that coding involves giving instructions to computers and devices, ☐ understand how interactive coding games and apps work and, ☐ demonstrate how characters in the coding game respond to their commands
Time	15 minutes

What's the estimated duration of this activity?	
Role of students What is the role of the students in this activity? Write here what the students will be doing during this activity and what is their specific role for it.	Students become familiar with the ICTs, engage in hands-on learning and start to build a foundational understanding of basic coding skills.
Role of the teacher What is the role of the students in this activity? Write here what the students will be doing during this activity and what is their specific role for it.	The teacher's role is to create engaging learning environment where students are able to explore the basic concepts of coding. His role is to also foster interest and curiosity and maintain their motivation to learn, by asking questions about childrens' experiences and beliefs.
ICT Tools and Resources required What ICT tools, resources or other technologies will be required? Choose the tool(s) and explain how you will use it.	The primary ICT tool that is used in this specific activity is the classroom's shared computer or tablet device. In the part where the teacher asks the children about their past experiences, opens up the educational app «Παίζω με το Νηπιαγωγείο» https://www.greekapps.info/2014/03/blog-post_3477.html (tailored for greek kindergarten students) and encourages students to use it.
Description of the activity Share here the description of the activity.	This is a warm-up activity where the teacher asks the children if they have ever played a game on a computer or a tablet. The teacher then encourages them to share their experiences. After the teacher has let all the children speak and share their ideas, proceeds to explain that today, they will be learning about something called "coding". The teacher notes that "coding" is a way to give instructions to computers to make them do what we want. The teacher then shows the students the classroom tablet with «Παίζω με το Νηπιαγωγείο». The teacher briefly demonstrates how it works, and asks if anyone wants to try.
ACTIVITY 2 – CODING GAME EXPLORATION	
Learning Outcomes, Skills, and Competencies What are the main objectives of this activity? Consider the Bloom's Taxonomy and write here the skills the learner will develop and demonstrate during this activity (e.g., communicative skills, computational thinking, problem solving, etc).	The second activity focuses on the *Application* and *Analysis* levels of Bloom's Taxonomy. Specifically, the children are expected to: ☐ Apply the basic knowledge of coding concepts that were acquired in the previous activity to interact and play the coding game, ☐ contemplate on the correct use of problem-solving skills to navigate and complete tasks of the game,

	☐ analyze the coding's game challenges and features, e.g. how game elements respond to commands and interact with each other and, ☐ identify patterns and causational relationships within the coding game.
Time What's the estimated duration of this activity?	25 minutes
Role of students What is the role of the students in this activity? Write here what the students will be doing during this activity and what is their specific role for it.	Students actively engage in the coding game, apply coding concepts, solve problems, collaborate in groups or individually, and explore the digital environment. Additionally, they deepen their understanding of coding skills.
Role of the teacher What is the role of the students in this activity? Write here what the students will be doing during this activity and what is their specific role for it.	The teacher guides and supports students as they explore and implement problem-solving skills. The teacher's role is to facilitate them and enhance their understanding of basic coding concepts while actively engaging with ICT.
ICT Tools and Resources required What ICT tools, resources or other technologies will be required? Choose the tool(s) and explain how you will use it.	☐ Tablets (depending on the number of groups formed) ☐ *«Dodoo Adventure: Kids Coding»* https://www.commonsensemedia.org/app-reviews/dodoo-adventure-kids-coding ☐ *«Think & Learn Code-a-pillar»* https://www.commonsensemedia.org/app-reviews/think-learn-code-a-pillar ☐ *«Tynker Junior : Coding for Kids»* https://www.commonsensemedia.org/app-reviews/tynker-junior-coding-for-kids
Description of the activity Share here the description of the activity.	The children are divided into small groups. Each group is provided with a tablet and the selected apps (mentioned in the previous box). They are then allowed to explore and play each one taking their own turn while using the tablet, while the teacher supervises them. During this task, the teacher asks the following questions: ☐ *«What impresses you the most» ?* ☐ *«What do the characters/objects do when you give commands»?* ☐ *«How do you make the character/object move in a specific direction»?* These questions help the stimulation of the student's thinking. The teacher then, asks the students to rotate

	groups so that all students have a chance to explore all of the provided coding games.
ACTIVITY 3 – FELT SHAPES CODING	
Learning Outcomes, Skills, and Competencies What are the main objectives of this activity? Consider the Bloom's Taxonomy and write here the skills the learner will develop and demonstrate during this activity (e.g., communicative skills, computational thinking, problem solving, etc).	The third activity focuses on the *Application* and *Analysis* levels of Bloom's Taxonomy. Specifically, the children are expected to: ☐ Apply the foundational knowledge of coding concepts acquired from the two previous activities (Introductory and Coding Game Exploration) to create coding sequencies using felt shapes on a flat surface, e.g. student's desk, ☐ Translate their understanding of coding into a hands-on experience with the felt shapes, ☐ Analyze the order and arrangement of the felt shapes to create coding sequencies and, ☐ Identify causational relationships between the placement of felt shapes and the movement of the character or object.
Time What's the estimated duration of this activity?	25-30 minutes
Role of students What is the role of the students in this activity? Write here what the students will be doing during this activity and what is their specific role for it.	Students' role is to **create** while designing coding sequencies, **resolve** problems that come up with the task, **think critically** when it comes to making important decisions, all while acquiring new knowledge **independently**.
Role of the teacher What is the role of the students in this activity? Write here what the students will be doing during this activity and what is their specific role for it.	The teacher is **facilitating** the procedure guiding the students through the task, **encourages** and **motivates** the students to engage and continue adding their valuable insight to the activity and **gives feedback** to the students by answering students' questions.
ICT Tools and Resources required What ICT tools, resources or other technologies will be required? Choose the tool(s) and explain how you will use it.	There are no ICT resources or tools required, except for the felt materials (shapes and/or board).
Description of the activity	Students gather around a large felt or paper board. The teacher explains to them that they will be doing a coding activity (unplugged coding activity) with felt shapes. This

Share here the description of the activity.	activity introduces the students to the concept of sequencing, which is a fundamental coding skill. This starts with a simple task, e.g. navigating a character through the edges of the felt board. Students have to place felt shapes in a sequence. The students take turns and guide the character from the start point to the finish point. The students decide what each felt shape represents, e.g. circle = loop, triangle = obstacle/stop, square = right turn, etc. The teacher encourages the children to take turns creating sequences and guiding the character. After all students have participated, they discuss the importance of the order of the shapes and their impact on the resulting direction of the character.
ACTIVITY 4 – STORYTIME "THE KISSING HAND"	
Learning Outcomes, Skills, and Competencies What are the main objectives of this activity? Consider the Bloom's Taxonomy and write here the skills the learner will develop and demonstrate during this activity (e.g., communicative skills, computational thinking, problem solving, etc).	The fourth activity focuses on the *Understanding, Applying* and *Analysis* levels of Bloom's Taxonomy (Anderson & Krathwohl, 2000). Specifically, the children are expected to: ☐ Understand the narrative structure of a story and the role of coding in storytelling, ☐ Comprehend how coding is a cause of events in a story, ☐ Apply coding skills to create a simple and interactive story, ☐ Use coding to control characters within the story, ☐ Analyze how coding influences the narrative progression and, ☐ Identify problems that arise in the process of creating the interactive story.
Time What's the estimated duration of this activity?	20-25 minutes
Role of students What is the role of the students in this activity? Write here what the students will be doing during this activity and what is their specific role for it.	Students become **storytellers** as they conceive and design interactive stories. They are also **creators** and **problem-solvers** while trying to come up with new ideas involving coding previous knowledge. They take part in a **collaborative** activity which enhances their role as active **listeners** and **reviewers**.
Role of the teacher What is the role of the students in this activity? Write here what the students will be doing during this activity and what is their specific role for it.	The teacher is a **facilitator** that guides the students through this task via **modelling** the desirable behaviour. The teacher is also an **observer** by allowing students to participate in a collaborative task and express their ideas/opinons, all while **promoting inclusive values**.

ICT Tools and Resources required What ICT tools, resources or other technologies will be required? Choose the tool(s) and explain how you will use it.	This activity involves no ICT tools, just the book that is going to be read to the students, which in this case is "The Kissing Hand (or "Το Μαγικό Φιλάκι).
Description of the activity Share here the description of the activity.	The teacher reads a simple storybook like "The Kissing Hand" ("Το μαγικό φιλάκι", in Greek language). Then the teacher proceeds to read the story as if the main characters' actions and decisions were 'coding' to complete their tasks, e.g. Chester the Raccoon's mother kissed his Chester's hand two times. Afterwards the teacher asks questions related to the story, such as: ☐ *"What did Chester have to do to solve the problem"?* ☐ *"How did Chester's mom help him overcome his sadness"?* ☐ *"How did Chester make it to the end of the story"?* After having read the whole story once, the teacher encourages the students to take part in storytelling and make up new sequencies when it comes to important decisions that the character have to make.
ACTIVITY 5 – DRAW YOUR STORY "THE KISSING HAND"	
Learning Outcomes, Skills, and Competencies What are the main objectives of this activity? Consider the Bloom's Taxonomy and write here the skills the learner will develop and demonstrate during this activity (e.g., communicative skills, computational thinking, problem solving, etc).	The fifth activity focuses on the *Creating, Evaluating* and *Applying* levels of Bloom's Taxonomy (revised; Anderson & Krathwohl, 2000). Specifically, the children are expected to: ☐ Design and create a unique picture that incorporates coding concepts, ☐ Foster creativity and originality, ☐ Assess their own work and that of their classmates considering factors as functionality, design and effectiveness, ☐ Apply coding skills to implement their creative projects and, ☐ Utilize their knowledge of coding to make informed decisions
Time What's the estimated duration of this activity?	15-20 minutes
Role of students What is the role of the students in this activity?	Students are **creators** (they bring their ideas to life), **evaluators** (assess their own and their peers' work), **presenters** (share their creations and ideas) and **active audience members** (pay attention and give feedback).

Write here what the students will be doing during this activity and what is their specific role for it.	
Role of the teacher What is the role of the students in this activity? Write here what the students will be doing during this activity and what is their specific role for it.	The teacher **motivates** the students by celebrating students' achievements and persistence. He/She **assesses** and **documents** the learning progress and outcomes if the activity. Again, the teacher **provides feedback** by giving examples, materials or references.
ICT Tools and Resources required What ICT tools, resources or other technologies will be required? Choose the tool(s) and explain how you will use it.	This activity involves no ICT tools, just the materials used by the students, such as paper and colours. An alternative that incorporates ICT tools to this activity could be that instead of physical objects, the students could use digital apps to draw and design their ideas.
Description of the activity Share here the description of the activity.	The teacher provides arts supplies and invites the children to draw a picture related to the story they just heard. The teacher then encourages them to incorporate some coding elements into their drawings, like arrows or instructions. Afterwards, the teacher encourages them to share their drawings with the class, explaining how their characters solved a problem or completed a task.

3 ASSESSMENT

How will students be assessed on their learning?

- **Through a Q&A discussion**: The teacher asks the students to gather around the discussion area that is set up in the kindergarten. They then recap what they have learned about coding. They discuss how coding can be like giving instructions or solving problems, just like the characters did in the book they read.
- **Through a Rubric:** This is a helpful tool for the teacher in order to screen quickly for students who need extra support (such as a gifted student or a student that faces some difficulties in keeping up with the activities).
- **Through formative assessment:** This is a fundamental procedure in differentiated instruction and also allows timely adjustments to instruction.
- **Through Parent or Caregiver Feedback:** The teacher can perform informal interviews with the parents or caregivers of the students to ensure whether the student engaged or felt disengaged while participating in the activity. Teacher and parent-caregiver collaboration can provide valuable feedback both for the teacher's practice and student's needs.

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