Puzzlets | Strand: Coding + Computer Science | Skill: Beginner

STRAND:
Coding + Computer Science

FUTURE READY SKILLS:
- Critical Thinking
- Persistence
- Problem-Solving

CREATED: 4/2019 | REVIEWED: 4/2020
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Implementation shown: **EARLY CHILDHOOD**

RESOURCE LIBRARY TOOL(S): Puzzlets

OVERVIEW: Students will be able to create a basic algorithm and apply it to programming Puzzlets.

ADAPTATION: Depending on the students' prior knowledge, certain parts of the lesson can be adjusted to their ability level. Collaborative groups can help with student strengths and weaknesses by providing additional support for struggling students.

RATIONALE:
Introduce students to coding concepts, vocabulary, and apply them to Puzzlets.

OTHER:
Essential Questions:
- How can I use computer programming to complete a task?
- How can I design an algorithm?
- How do I identify and fix errors in an algorithm?

PATHWAY FOLDER OF RESOURCES :

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1) READ BOOK, 20 mins

The students and teacher will discuss sequencing and will listen to *If You Give a Mouse a Cookie*.

2) SEQUENCE STORY, 10 mins

Group discussion: Students will be able to create a sequence of the book *If You Give a Mouse a Cookie* as a class.

3) ALGORITHMS MADE EASY, 20 mins

The teacher will lead a discussion on what an algorithm is by having the class explain how to make a PB&J sandwich. They will then watch an intro video on algorithms.

4) PARTNER PAIRING, 15 mins

Students will put a series of pictures in order to show the correct sequence to make cookies.

5) DEBUGGING WORK, 15 min

Students will be able to identify a bug in an algorithm and learn how to debug that algorithm.

6) INTRO TO PUZZLETS, 45 mins

Students will be able to break down the steps needed to solve a problem into a precise sequence of instructions using Puzzlets.

7) DEBUG SEQUENCE, 45 mins

The students will be able create their own algorithms using characters from the book *If You Give a Mouse a Cookie* and begin using Puzzlets.

ABC CREATE Learning Pathways | abccreate.org/pathways

ACTIVITY 1: READ BOOK

	MATERIALS or RESOURCES:	LEARNING GOALS:
20 MINS **OFFLINE**	● Book: *If You Give a Mouse a Cookie* by Laura Numeroff	**Students will be able to...** ● Discuss sequencing ● Read the book

ACTIVITIES:

1. The students and the teacher will have a group discussion on sequencing.
2. Questions for discussion:
   ○ *What is a sequence?*
   ○ *What would happen if you took out one step from a sequence?*
3. The teacher will read the book *If You Give a Mouse a Cookie* to the students.
4. The teacher will discuss what would happen if we took out one step the mouse took.
5. Example: What if you take out him asking for a glass of milk?

ACTIVITY 2: SEQUENCE STORY

10 MINS	MATERIALS or RESOURCES:	LEARNING GOALS:
	● Book: *If You Give a Mouse a Cookie* by Laura Numeroff ● Sequencing Cards	**Students will be able to...** ● Develop an understanding about sequencing

ACTIVITIES:

1. Teacher will use the sequencing activity, **Mouse Around the House-2019-1st.pdf**, located in the Resource Folder. You can use the small, circular events or larger, one page events for this activity.
2. As a group, the teacher will use a pocket chart to organize the sequence of the story.
3. Whole Group Activity—The teacher will ask the students:
   - In the book, *If You Give a Mouse a Cookie*, what happened first in the book?
   - What happened after that?
4. Continue until all of the cards are in order with the book.
5. Once the cards are in order, ask the students:
   - What do you notice about the cards that we placed?
   - Start to talk about how the cards are in an order and if they are out of order then they won't be in the right sequence.
6. Define sequence: *An order in which things should be completed.*

ACTIVITY 3: ALGORITHMS MADE EASY

	MATERIALS or RESOURCES:	LEARNING GOALS:
20 MINS **ONLINE**	• Peanut Butter, Jelly, Bread, Knife • Algorithm video	**Students will be able to...** ● Discuss algorithms and step-by-step of a process

ACTIVITIES:
1. The teacher will remind the class of the mouse activity from Activity One.
   ● Why was it important to not skip a step?
2. The teacher will explain that there are other activities that require a step by step process.
   ● It is called an algorithm. (Examples of everyday algorithms: brushing your teeth, tying your shoes, etc.)
3. The teacher will have the materials to make a peanut butter and jelly sandwich.
4. The teacher will have the students tell him or her how to make it.
5. As the students are describing the steps, the teacher will do just what the students are saying.
6. If the step doesn't make sense the teacher will ask, "how would you say it so that the steps make sense?"
7. The teacher will show the video (linked below).

https://youtu.be/Da5TOXCwLSg

ACTIVITY 4: PARTNER PAIRING

	MATERIALS or RESOURCES:	LEARNING GOALS:
15 MINS **OFFLINE**	• How to Make Cookies Picture Cards	**Students will be able to...** • Define sequencing • Sequence task events • Explain the importance of correct sequencing when completing tasks

ACTIVITIES:
1. Review the sequence activity and discuss the events from the story *If You Give a Mouse a Cookie*.
2. Think/pair/share: Give the students the sheet of pictures that show how to make cookies. Page 4 of **pre_k_theme_for_a_day_cookies.pdf** located in the Resource Folder.
3. Discuss the events in each picture based on grade level and ability of the students.
4. Have the students number the steps in order with their partner.
5. Then discuss the order as a whole group. Clarify and discuss why it is important to follow this sequence of events precisely.

ACTIVITY 5: DEBUGGING WORK

	MATERIALS or RESOURCES:	LEARNING GOALS:
10-15 MINS **ONLINE**	● code.org worksheet	**Students will be able to...** ● Develop an understanding of a bug in an algorithm ● Debug an algorithm

ACTIVITIES:

1. Introduce Puzzlets to students as a game that they will be playing once they learn some details about coding.

2. Introduce Russ and the golden puzzle piece from the Puzzlet webpage
   https://cdn2.hubspot.net/hubfs/2655554/Digital_Dream_Labs_June2018/Docs/PuzzletsCurriculumCOMPLETE-ForViewing.pdf
   ● Print out pages 19-21 to use for an entire class activity.

3. Using Russ, arrows, the golden puzzle piece, and either your board or floor tiles, create a class algorithm to get Russ safely to the puzzle piece (switch around Russ and the puzzle piece to allow multiple students to assist you in moving around the board).

4. When students seem like they understand moving Russ around the board, try the different activities that are provided through the Coding Curriculum link listed in step 2 of this offline activity.
   ● Start with pages 16-18 for beginning lessons.
   ● Pages 16-18 are best done as a partner activity. Have the students work together to figure out the basic algorithms.

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ACTIVITY 6: INTRO TO PUZZLETS

45 MINS

ONLINE

MATERIALS or RESOURCES:

- Pages 19-21 Russ and the Golden Puzzle Piece (see link to Puzzlet website)

LEARNING GOALS:

Students will be able to
- Test and debug the unplugged Puzzlets task to ensure it moves as intended.

ACTIVITIES:

1. Introduce Puzzlets to the students as a game that they will be playing once they learn some details about coding.

2. Introduce Russ and the golden puzzle piece from the Puzzlet webpage
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4. When students seem like they understand moving Russ around the board, start to try the different activities that are provided through the Coding Curriculum link listed in step 2 of this offline activity. Start with pages 16-18 for beginning lessons. Pages 16-18 would be best done as a partner activity. Have the students work together to figure out the basic algorithms.

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ACTIVITY 7: DEBUG SEQUENCE

⏱ 30MINS 💻 ONLINE	MATERIALS or RESOURCES: ● Mouse and Cookie Cutouts	LEARNING GOALS: **Students will be able to** ● Apply coding and use debugging skills to correctly complete an algorithm using Puzzlets

ACTIVITIES:
1. The student will review the debugging skills from offline Activity 4 by using the practice pages after page 36 on the Puzzlet website, titled *Debug Russ*.
   - https://cdn2.hubspot.net/hubfs/2655554/Digital_Dream_Labs_June2018/Docs/PuzzletsCurriculumCOMPLETE-ForViewing.pdf
2. The student and a partner will be given the Re-Write My Wrong Game Board and arrows (pages 42-42 on the Puzzlet site) and the **mouse and cookie cut outs** (located in the resource folder below).
3. With a partner, students will create an algorithm of their own, where the mouse will need to get to the cookie.
4. Once the students feel successful they can create an account in https://code.org and can begin to use the online practice to improve their understanding of coding.
5. As students excel at this, they can be introduced to Puzzlets in small or large group settings.

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Feel free to contact us with any questions or suggestions, or to share your students' creations. We would love to see them!

PUZZLETS WEBSITE:
https://www.digitaldreamlabs.com/

PUZZLETS CURRICULUM:
https://cdn2.hubspot.net/hubfs/2655554/Digital_Dream_Labs_June2018/Docs/PuzzletsCurriculumCOMPLETE-ForViewing.pdf

GREAT RESOURCE VIDEO AND EXTRA WORK FOR TEACHER AND STUDENTS:
https://studio.code.org/s/course1/stage/6/puzzle/1

CODING EXTRA PRACTICE AND ENRICHMENT:
https://code.org

PATHWAY FOLDER OF RESOURCES :	📁

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