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Lesson Plan Template

Learning Segment Focus: Finding the Best Solution to a Given Problem

Lesson 1 of 1 **Topic: Coding** **Date: 5/1/21** **Grade: 4**

Student Outcomes

Specific learning **objectives** for this lesson.	Students will test various solutions to determine which one works best. Students will use coding to practice logical thinking.
Justify how learning tasks are appropriate using examples of **students' prior academic learning**.	Students have learned about the scientific method and problem-solving thinking previously.
Justify how learning tasks are appropriate using examples of **students' personal, cultural, linguistic, or community assets**.	This is a common practice of children of all ages at home. They use problem solving skills to determine what toy to play with, how to build with blocks, etc.

State Academic Content Standards

List the **state academic content standards** with which this lesson is aligned. Include abbreviation, number & text of the standard(s).	ETS1.C: Optimizing the Design Solution ♣ Different solutions need to be tested in order to determine which of them best solves the problem, given the criteria and the constraints. (4-ETS1-3) 4-ETS1-3 Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

Key Vocabulary

What **vocabulary terms/content specific terminology** must be addressed for students to master the content?	**Sequence, Solution, Trial**

Academic Language Support

What are the **Academic Language Function(s)** (the content and language focus of the learning task represented by the active verbs within the learning objectives/outcomes) and explain how they are utilized in the lesson plan? What planned **Academic Language Supports** will you use to assist students in their understanding of key academic language to express and develop their content learning and to provide varying supports for students at different levels of Academic Language development? How do these supports address all three **Academic Language Demands (vocabulary, syntax, and discourse)?**	Students will conduct a lab in order to test possible solutions. The coding aspect will allow students to practice problem-solving skills, which they have been expanding on throughout the course of their school years. We have previously discussed all of the key vocabulary when talking about how to conduct an experiment and the scientific method.

Materials

Materials needed by the teacher for this lesson. (such as books, writing materials, computers, models, colored paper, etc.)	Obstacle Course (pvc pipe, wooden boards, a big rock, etc.), iPads, Daisy the Dinosaur app, lab sheet, beebot, timer

Materials needed by **students** for this lesson. (computers, journals, textbook, etc.)	

Lesson Timeline with Instructional Strategies & Learning Tasks

Amount of Time	**Teaching & Learning Activities (This should be a BULLETED LIST)**	**Describe what YOU (teacher) will be doing and/or what STUDENTS will be doing during this part of the lesson. (This should be VERY DETAILED)**
Day 1 20 minutes	**Introduction**: • **Play on coding app**	The students will practice coding on the Daisy the Dinosaur app on their ipads. They will work on the challenge mode. This will introduce them to how coding works to get them ready for the lab.
Day 1 30 minutes Day 2 1 hr	**Instruction:** • Lab explanation • Lab preparation • Testing	I will unveil the obstacle course to the students. Then, I will break them into groups of 5. The groups will come up with a code that they think will get Beebot through the course. They will record this as initial attempt. We will test out and time each group's sequence. They will record whether they were successful and the time on their lab sheet. Students will modify their code under attempt 2. The goal if they were not successful is to get Beebot through the course. If they were successful, their goal is to improve their time. We will test this attempt as before and repeat 1 more time.

Day 2 10 minutes	**Closure:** • Discuss Results	All of the groups will share the times and whether each attempt was successful. We will discuss how many groups got improved results after trying again. We will discuss the importance of modifying your plan and testing multiple times to achieve the best results.

Technology Integration

Provide your **rationale** for your technology choices that accurately reflects those choices within your teaching context. **Identify** what technology(s) you are using as part of your lesson plan. **Describe** how the use of technology aligns to your learning objectives, content standards, and central focus. **Explain** how technology-based instructional strategies are essential to students accomplishing the learning objectives (beyond what could be accomplished without using the technology). **Specify** how the technology selections meet or exceed the needs/strengths of all students**. Justify the "fit"** of chosen technologies, showing how the content, instructional strategies, and technology "fit" together.	**The technology in this lesson includes a popular free coding app and beebot. The Daisy the Dinosaur app is a good resource for introducing students to coding. The levels start out really easily to get the user used to how coding works. Then, as you progress, the levels get more difficult and require you to use problem solving skills. It is a great precursor for this lesson because it introduces students to what type of thinking is required in science experiments. Beebot is a good way to integrate coding and problem-solving skills with a hands on activity. I believe that having a physical little robot that you control through coding will engage students better than if they had to code something that they see on a computer.**

Accommodations/Modifications

How might I **modify** instruction for: *Remediation?* *Intervention?* *IEP/504?* *LEP/ESL?* (All students who have plans mandated by federal and state law.)	Because the students are working in groups, there is peer support. Also, I will be available for assistance to any group that may need it.

Differentiation

How might you provide a variety of techniques (enhanced scaffolding, explicit instruction, contextualized materials, highlighters/color coding, etc.) **to ensure all student needs are met?** (All students who are not on specific plans mandated by federal and state law.)	The step by step and drawn-out organization of the coding app makes the instruction explicit. The hands on lab activity is a more implicit assignment that will work well for kinesthetic learners.

Assessments: Formative and/or Summative

Describe the **tools/procedures** that will be used in this lesson to monitor students' learning of the lesson objective(s) (include	☐ Formative /☐ Summative	Class discussion about the lab will determine the student's understanding.
	☐ Formative /☐ Summative	The students will turn in their lab sheet for

type of assessment & what is assessed).		grading.
	☐ Formative /☐ Summative	

Research/Theory

Explain **connections to theories and/or researc**h (as well as experts in the field or national organization positions) that support the approach you chose and justify your choices using **principles of the connected theories and/or research.**	"Children can learn mathematics and sciences effectively even before being exposed to formal school curriculum if basic Mathematics and Sciences concepts are communicated to them early using activity oriented (Hands-on) method of teaching. Mathematics and Science are practical and activity oriented and can best be learnt through inquiry (Okebukola in Mandor, 2002) and through intelligent manipulation of objects and symbols (Ekwueme, 2007)" https://files.eric.ed.gov/fulltext/EJ1086006.pdf

Lesson Reflection/Evaluation

What went **well**? What **changes** should be made? How will I **use assessment data** for next steps?	*TO BE FILLED IN AFTER TEACHING*

Include supporting material such as slides, pictures, copy of textbook, and handouts for any activities students will be using as part of your lesson.

*adapted from: http://webcache.googleusercontent.com/search?q=cache:EsQcNWuG1ZoJ:web.mnstate.edu/harms/StudentTeachers/edTPA-LessonPlan.doc+&cd=2&hl=en&ct=clnk&gl=us; http://www.moreheadstate.edu/getmedia/cd3fd026-939f-4a47-a938-29c06d74ca01/Lesson-Plan-and-Reflections.aspx; http://www.mcneese.edu/f/c/9cb690d2/Lesson%20Plan%20Rubric%20Aligned%20with%20InTASC.docx;https://www.uwsp.edu/education/Documents/edTPA/Resource12.pdf; https://www.uwsp.edu/education/Documents/edTPA/Resource11.pdf; https://www.uwsp.edu/education/Documents/edTPA/Resource11a.pdf; https://www.uwsp.edu/education/Documents/edTPA/LessonPlanTemplateSOE.docx; https://www.uwsp.edu/education/Documents/edTPA/SpecEdLessonPlanGuide.docx; https://www.uwsp.edu/education/Documents/edTPA/SpecEdLessonPlanTemplate.docx