Lesson: U1 L1 Problem Solving Process: Intro to Problem Solving
Grade: 6-8

Objective:
-I can use a design process for generating ideas, testing theories, or solving authentic problems. (4.a.)

Standards:
-Students know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems. (4.a.) ISTE

Materials: Computer, mouse, keyboard, Code.org

Hook: Today we are going to learn how to use the computer program Code.org to practice something called Problem Solving and Computing. What is coding? (The process of designing and building a computer program for accomplishing a specific task.) What is problem solving? What is computing? Today we are going to use our problem solving to see how much something can hold before it sinks.

1. What are some programs you have used?
2. What did you do with those programs?
2. Why is coding important?
3. What jobs could we do with coding?
4. If you could create something on the computer, what would it be?
5. What did we do today? Why was it helpful?

6. **OVERALL ESSENTIAL QUESTIONS:**
   - **HOW DOES CODING IMPACT THE WORLD AROUND US?**
   - **WHY WOULD PROBLEM SOLVING SKILLS BE SO IMPORTANT WHEN LEARNING TO CODE?**

Instruction/Guided Practice:
Days 1

1. Go over rules and routines
2. Discuss Code.org and what it is used for
3. Model how to use the program
4. Model how to log-in
5. Ask what are some things you noticed looking at it so far?
6. Have them explore the website
7. Go over step by step instructions on how to enter “CSD - Unit 1: Problem Solving and Computing.
8. Model on projection what I would do as a student

9. Follow instructions: Lesson Overview, take survey
10. Click on Activitiy Guide and follow steps
11. Students partner up or work alone for 30 min. Following the guide to create aluminum boat to carry pennies without sinking.
12. Fill in questions on activity sheet
13. Clean Up

13. Discuss with class when done: Using these physical skills is the same as trying to solve the puzzle of coding to make it work. Sometimes it works and sometimes it doesn't but trial and error is important when learning coding.
14. Collect Sheets

Early finishers: Academic Choice, Try other objects on foil

Adaptions: Vocab on the board,cross out some questions, give advice

Closing:
1. Discuss what did

Assessment:
1. Checklist (Creating tin foil boat with pennies without sinking)
2. Complete Activity Sheet

Lesson: U1 L2 Problem Solving Process: Problem Solving Process
Grade: 6-8

Objective:
-I can use a design process for generating ideas, testing theories, or solving authentic problems. (4.a.)

Standards:
-Students know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems. (4.a.) ISTE

Materials: Computer, mouse, keyboard, Code.org

Hook: Today we are going to look deeper into the problem solving process. What problem did we solve yesterday? What problem are you good at solving? What problem would you like to solve? We will take what we learn today to gather information on what it takes to solve a problem and put it on a large poster to refer to.
1. What would you define as a problem?
2. What are other ways to solve a problem?
3. Why would this be a good way to solve a problem?

OVERALL ESSENTIAL QUESTIONS:

- HOW DOES CODING IMPACT THE WORLD AROUND US?

- WHY WOULD PROBLEM SOLVING SKILLS BE SO IMPORTANT WHEN LEARNING TO CODE?

Instruction/Guided Practice:

Days 2

1. Go over rules and routines
2. Review how to log-in
3. Go over step by step instructions on how to enter “CSD - Unit 1 lesson 2: Problem Solving Process.
4. Model on projection what I would do as a student
5. Follow instructions on Lesson Overview
6. Watch video on the process (individually without teacher)
7. Ask questions about what just watched
8. Click on Activity Guide and follow steps to solve a problem they know how to solve already
9. Generate a list of things people can solve
10. Students partner up or work alone for 30 min. Following the guide
11. Fill in questions on activity sheet
12. Clean Up
13. Discuss with class when done
14. Create poster with ways to solve a problem and post on wall to refer to later
15. Collect Sheets

Early finishers: Academic Choice

Adaptions: Vocab on the board,cross out some questions, give advice

Closing:

1. Discuss with class when done: Using these physical skills is the same as trying to solve the puzzle of coding to make it work. Sometimes it works and sometimes it doesn’t but trial and error is important when learning coding.

Assessment:

1. Checklist)
2. Complete Activity Sheet

Lesson: U1 L3 Problem Solving Process: Exploring Problem Solving

Grade: 6-8

Objective:

-I can use a design process for generating ideas, testing theories, or solving authentic problems. (4.a.)

Standards:
-Students know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems. (4.a.) ISTE

Materials: Computer, mouse, keyboard, Code.org

Hook: Today we are going to apply the problem solving process to three different problems: a word search, a seating arrangement for a birthday party, and planning a trip. The problems grow increasingly complex and poorly defined to highlight how the problem solving process is particularly helpful when tackling these types of problems.

1. Why do you think you would solve a (word search)? Why is this considered a problem?
2. What are other ways to solve this problem?
3. Why is the problem complex?
4. How did this process help you?

OVERALL ESSENTIAL QUESTIONS:

- **HOW DOES CODING IMPACT THE WORLD AROUND US?**
- **WHY WOULD PROBLEM SOLVING SKILLS BE SO IMPORTANT WHEN LEARNING TO CODE?**

Instruction/Guided Practice:
Days 3

1. Go over rules and routines
2. Log-in
3. Go over step by step instructions on how to enter “CSD - Unit 1 lesson 3: ExploringProblem Solving.
4. Model on projection what I would do as a student
5. Follow instructions on Lesson Overview
6. Click on Activity Guide and follow steps to solve a problem they know how to solve already
7. Students partner up or work alone for 30 min. Following the guide
8. Fill in questions on activity sheet
9. Clean Up
10. Discuss with class when done
11. Add to poster with ways to solve a problem and post on wall to refer to later
12. Collect Sheets

Early finishers: Academic Choice

Adaptions: Vocab on the board,cross out some questions, give advice

Closing:
1. Discuss what did

Assessment:
1. Checklist)
2. Complete Activity Sheet

Lesson: U1 L4 Computers and Problem Solving: What is a Computer?
Grade: 6-8

Objective:
-I can use a design process for generating ideas, testing theories, or solving authentic problems. (4.a.)

Standards:
-Students know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems. (4.a.) ISTE

Materials: Computer, mouse, keyboard, Code.org

Hook: Today we are going to develop a preliminary definition of a computer. We will brainstorm the possible definitions for a computer, and work in groups to sort pictures into “is a computer” or “is not a computer” on poster paper and explain their motivations for choosing some of the most difficult categorizations.
1. What do you think a computer is? Why?
2. How is this a computer? How is it not? Why?
3. Was this easy to do? Why or why not?
4. How did this process help you?

OVERALL ESSENTIAL QUESTIONS:
- **HOW DOES CODING IMPACT THE WORLD AROUND US?**
- **WHY WOULD PROBLEM SOLVING SKILLS BE SO IMPORTANT WHEN LEARNING TO CODE?**

Instruction/Guided Practice:
Days 4
1. Go over rules and routines
2. Log-in

3. Go over step by step instructions on how to enter “CSD - Unit 1 lesson 4:
4. Model on projection what I would do as a student
5. Follow instructions on Lesson Overview
6. Click on Activity Guide and follow steps to solve a problem they know how to solve already
7. Have students watch video individually
8. Students partner up or work alone for 30 min. Following the guide to create poster without gluing.
9. Stop Class and give definition: See if students change up their posters after definition.
10. Give time to complete
11. Clean Up
12. Discuss with class when done
13. Add to poster with ways to solve a problem and post on wall to refer to later
14. Collect posters of what is or is not a computer

Early finishers: Academic Choice

Adaptions: Vocab on the board,cross out some questions, give advice

Closing:
1. Discuss what did

Assessment:
1. Checklist)
2. Complete poster

Lesson: U1 L5 Computers and Problem Solving: Input and Output
Grade: 6-8

Objective:
-I can use a design process for generating ideas, testing theories, or solving authentic problems. (4.a.)

Standards:
-Students know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems. (4.a.) ISTE

Materials: Computer, mouse, keyboard, Code.org

Hook: Today we are going to consider a number of computing devices to determine what types of inputs and outputs they use. As Groups we will be assigned to a computing device and list the inputs and outputs of their device. To conclude we will examine common activities they do on a computing device and select the inputs and outputs used for that activity from the chart.

1. What is input? Output?
2. What is a computing device?
3. What are the inputs or outputs of the device?

OVERALL ESSENTIAL QUESTIONS:

- HOW DOES CODING IMPACT THE WORLD AROUND US?
- WHY WOULD PROBLEM SOLVING SKILLS BE SO IMPORTANT WHEN LEARNING TO CODE?

Instruction/Guided Practice:

Days 5

1. Go over rules and routines
2. Log-in
3. Go over step by step instructions on how to enter “CSD - Unit 1 lesson 5:
4. Model on projection what I would do as a student
5. Follow instructions on Lesson Overview
6. Click on Activity Guide and follow steps to solve a problem they know how to solve already
7. Assign certain sheets to certain groups and assign to do some of the input outputs to each group so that we can complete a list on a big chart
8. Students group up or work alone for 30 min. Following the guide to create the chart
9. Clean Up
10. Discuss with class when done and discuss what are the common activities we do with these devices on the chart.
11. Add to poster with ways to solve a problem and post on wall to refer to later
12. Collect charts of input output

Early finishers: Academic Choice

Adaptations: Vocab on the board,cross out some questions, give advice

Closing:

1. Discuss what did

Assessment:

1. Checklist)
2. Complete chart

Lesson: U1 L6 Computers and Problem Solving: Processing

Grade: 6-8

Objective:

-I can use a design process for generating ideas, testing theories, or solving authentic problems. (4.a.)

Standards:
-Students know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems. (4.a.) ISTE

Materials: Computer, mouse, keyboard, Code.org

Hook: Today we are going to dive deeper into the concept of processing that was introduced as part of the definition of a computer. Pairs will work together to put a deck of cards in order, a form of processing information. In the end, we will discuss what processing means within the context of solving information problems

1. What is processing?
2. How can we solve information problems?
3. What is algorithm?
4. How do you think it pertains to computing?

OVERALL ESSENTIAL QUESTIONS:

- HOW DOES CODING IMPACT THE WORLD AROUND US?
- WHY WOULD PROBLEM SOLVING SKILLS BE SO IMPORTANT WHEN LEARNING TO CODE?

Instruction/Guided Practice:
Days 6

1. Go over rules and routines
2. Log-in
3. Go over step by step instructions on how to enter “CSD - Unit 1 lesson 6
4. Model on projection what I would do as a student
5. Follow instructions on Lesson Overview
6. Click on Activity Guide and follow steps to solve a problem
7. Model with a student how to work with the deck of cards
8. Students partner up for 30 min. Following the guide to create the sheet
9. Clean Up
10. Discuss with class when done and discuss what processing means when it comes to solving information problems.
11. Add to poster with ways to solve a problem and post on wall to refer to later
12. Collect activity guides

Early finishers: Academic Choice

Adaptations: Vocab on the board,cross out some questions, give advice

Closing:
1. Discuss what did

Assessment:

1. Checklist)
2. Complete activity guides

Lesson: U1 L7 Computers and Problem Solving: Apps and Storage

Grade: 6-8

Objective:

-I can use a design process for generating ideas, testing theories, or solving authentic problems. (4.a.)

Standards:

-Students know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems. (4.a.) ISTE

Materials: Computer, mouse, keyboard, Code.org

Hook: Today we are going to cover the input and output aspects of computers in a context that is relevant and familiar to students: apps. We will evaluate various web applications to analyze the specific problems that they were designed to solve, the inputs that they need to work, and the outputs they provide to users.

1. What are apps?
2. How do we use them? Why?
3. What is the problem?
4. How can we solve it?
5. What inputs do we need to make it work?
6. What outputs would we need?
7. How do apps impact our society?

OVERALL ESSENTIAL QUESTIONS:

- **HOW DOES CODING IMPACT THE WORLD AROUND US?**
- **WHY WOULD PROBLEM SOLVING SKILLS BE SO IMPORTANT WHEN LEARNING TO CODE?**

Instruction/Guided Practice:

Days 7

1. Go over rules and routines
2. Log-in
3. Go over step by step instructions on how to enter “CSD - Unit 1 lesson 7
4. Model on projection what I would do as a student
5. Follow instructions on Lesson Overview
6. Click on Activity Guide and follow steps to solve a problem

7. Model with a student how to do activity sheet
8. Students partner up for 30 min. Following the guide to create sheet
9. When done students can try challenge problem: Movie Recommendation Challenge
9. Clean Up
10. Discuss with class when done and discuss apps and how they came up with the answers to activity sheets
11. Add to poster with ways to solve a problem and post on wall to refer to later
12. Collect activity guides

Early finishers: Academic Choice

Adaptations: Vocab on the board,cross out some questions, give advice

Closing:
1. Discuss what did

Assessment:
1. Checklist)
2. Complete activity guides

Lesson: U1 L8 Computers and Problem Solving: Project-Propose an App
Grade: 6-8

Objective:
-I can use a design process for generating ideas, testing theories, or solving authentic problems. (4.a.)

Standards:
-Students know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems. (4.a.) ISTE

Materials: Computer, mouse, keyboard, Code.org

Hook: Today we are going to conclude the study of the problem solving process and the input/output/store/process model of a computer. We proposed apps designed to solve real world problems. This project will be completed across multiple days and culminates in a poster presentation highlighting the features of each app. The project is designed to be completed in pairs though it can be completed individually.
1. What have we learned so far?
2. How could we use this in the real world?

3. Why is it important to create new apps?

OVERALL ESSENTIAL QUESTIONS:

- **HOW DOES CODING IMPACT THE WORLD AROUND US?**
- **WHY WOULD PROBLEM SOLVING SKILLS BE SO IMPORTANT WHEN LEARNING TO CODE?**

Instruction/Guided Practice:

Days 8-10

1. Go over rules and routines
2. Log-in
3. Go over step by step instructions on how to enter “CSD - Unit 1 lesson 8
4. Model on projection what I would do as a student
5. Follow instructions on Lesson Overview
6. Click on Activity Guide and follow steps to solve a problem
7. Model with a student how to do activity sheet
8. Students partner up. Following the guide to create app
9. Show rubric and go over it
10. Discuss that they will trade their work with another group and create a peer review
11. Model how to do it and students complete it and fix up their own work when done.
12. Discuss reflection sheet, model, and students complete when done with project
13. Clean Up
14. Discuss with class when done and discuss apps and how they came up with the answers to activity sheets
15. Collect activity guides
16. Students click on survey and complete it individually

Early finishers: Academic Choice

Adaptations: Vocab on the board,cross out some questions, give advice

Closing:

1. Discuss what did

Assessment:

1. Checklist)
2. Complete activity guides
3. Survey

Created By:

Tim Kampa
Stonebridge World School
Technology Teacher K - 8
kampatim@hotmail.com personal
tkampa@sbwschool.org work