Lesson Plan #1	
Grade/Subject:	6th grade/Computer Science

Lesson Focus – What You Will Teach
Central Focus: Students will be exposed to what a computer is and the components that make one up.
Objective/Learning Target
Students will: Students will have individual time to explore different parts of a computer and familiarize themselves with the equipment. They will then design their own computer and rationalize their decisions.

Meaning	
UNDERSTANDINGS	ESSENTIAL QUESTIONS
Students will understand that… • A computer is a device used for storing and processing data. • Algorithms appear in our daily lives in simple forms, such as recipes and various schedules. • Technology and algorithms have different benefits and drawbacks, depending on the social situation. • Algorithms can present issues in certain circumstances that can have serious consequences.	• What is a computer? • How do we use algorithms in our lives? • Do humans create or discover algorithms? • How has the widespread use of computing technology & algorithms changed the way we work, play, and interact with other people? How much should we let technology do for us? • What social and legal issues have arisen due to the widespread use of computing technology & algorithms? What new issues are likely to arise in the future?

Standards
6-8.CD.4: Describe what distinguishes humans from machines focusing on ways we can communicate, as well as ways in which computers use models of intelligent behavior (e.g., robot motion, speech and language understanding, and computer vision).

Standard	*Objective/ Learning Target*	*Type of Assessment*	*Format of Assessment*
6-8.CD.4: Describe what distinguishes humans from machines focusing on ways we can communicate, as well as ways in which computers use models of intelligent behavior (e.g., robot motion, speech and language understanding, and computer vision).	Students will have individual time to explore different parts of a computer and familiarize themselves with the equipment. They will then design their own computer and rationalize their decisions.	Formative	Drawing

Learning Plan – What will I do? What will the students do?	
Materials and Resources	**Teacher:** cut-outs of computer parts, whiteboard, magnets, word bank, dry erase marker **Student:** NA

Summary of Key Learning Events and Instruction	**Hook/Motivation:** Today I am going to introduce you all to the world of computers. There are quite a few parts of computers, including pieces on the inside and the outside to make the machine function. A computer is a piece of technology used to store, gather, and process information/data. On the board behind me, I have put up pictures of different parts of computers. There are also words on the board to match each picture. As a class, I want you all to help me appropriately match the words to the pictures. Once you have agreed on the terms, I will go through them with you and let you know if they were correct and what the terms mean. **Guided Practice:** *Allow students to participate, discuss and move pieces. Respond appropriately and provide instruction/correction where needed* Now that you've had the chance to learn about the different components of computers, you will each open up your Chromebooks to do your own research and just discover a little bit more about the things that interest you. Remember to stay on topic and focus on things that are related to computers only! *Give students 10-15 minutes to explore. Walk around and monitor students as they do this. Provide instruction and ask questions to further prompt students* **Individual Practice:** Our last activity dealing with computers for the day is for each of you to spend some time designing what you think the best computer would be. You can add detail to the physical appearance of the computer, the inner-workings, and even what tasks the computer can be used for. Along with your design, you will need to label the different parts of a computer we discussed today and include one sentence for each of those parts about how it will benefit your computer.

Lesson Plan #2	
Grade/Subject:	6th grade/Computer Science

Lesson Focus – What You Will Teach
Central Focus: Students will be exposed to the subjects of computers and algorithms, touching on a few computing technologies.
Objective/Learning Target
Students will: Students will work individually to create a unique algorithm following the lesson and present their algorithm to their peers.

Meaning	
UNDERSTANDINGS	ESSENTIAL QUESTIONS
Students will understand that… • A computer is a device used for storing and processing data. • Algorithms appear in our daily lives in simple forms, such as recipes and various schedules. • Technology and algorithms have different benefits and drawbacks, depending on the social situation. • Algorithms can present issues in certain circumstances that can have serious consequences.	• What is a computer? • How do we use algorithms in our lives? • Do humans create or discover algorithms? • How has the widespread use of computing technology & algorithms changed the way we work, play, and interact with other people? How much should we let technology do for us? • What social and legal issues have arisen due to the widespread use of computing technology & algorithms? What new issues are likely to arise in the future?

Standards
6-8.DI.5: Create visuals such as flowcharts, diagrams, pseudocode to represent complex problems as algorithms. 6-8.CD.4: Describe what distinguishes humans from machines focusing on ways we can communicate, as well as ways in which computers use models of intelligent behavior (e.g., robot motion, speech and language understanding, and computer vision). 6-8.IC.1: Exhibit legal and ethical behaviors when using technology and information and discuss the consequences of misuse. 6-8.IC.4: Describe tradeoffs between allowing information to be public and keeping information private and secure.

Standard	*Objective/ Learning Target*	*Type of Assessment*	*Format of Assessment*
6-8.DI.5: Create visuals such as flowcharts, diagrams, pseudocode to represent complex problems as algorithms	Students will work individually to create a unique algorithm following the lesson and present their algorithm to their peers.	Formative	Students will provide a written or typed algorithm they created on their own.

Learning Plan – What will I do? What will the students do?

Materials and Resources:	**Teacher:** sub bun, sliced turkey, sliced cheese, lettuce, mayonnaise, salt, pepper, pickles **Student:** paper, writing utensil

Summary of Key Learning Events and Instruction	**Hook/Motivation:** Today we are going to be spending some time diving into the world of algorithms. Some of you may know what an algorithm is, and some of you may not, which is okay. Before we get into it, we're going to start with an activity where you all will work together as a class to help me put together a sandwich. I have all my materials in front of me: a sub bun, sliced turkey, sliced cheese, mayonnaise, lettuce, pickles, salt and pepper. From the very beginning, I want you all to walk me through how to put together this sandwich. There is no specific order for the ingredients. *Allow students to begin giving instructions* You have probably noticed that your instructions need to be very specific and detailed for me to do the correct motion! This is exactly how an algorithm works. **Modeling:** Now I am going to demonstrate how I would create my own algorithm for someone who is watching my daughter. Algorithms can be steps, schedules, recipes, etc. I am choosing to make mine a schedule for someone who would take care of my daughter during the day. 7:00 AM—Wake up Emersyn and change diaper 7:10 AM—Feed 5 oz bottle -3 oz of breast milk mixed with 2 oz of formula. -Formula gets 2 oz of water and one scoop of formula. -Mix the powder and water, then add 3 oz of breastmilk. -Fill a mug halfway with hot water, place bottle in hot water for 2-3 minutes. -Shake bottle and feed. 7:45 AM—Tummy Time -Place Emersyn on her back on her play mat. Let her look at and reach for the toys above her. -Once she seems bored, roll her over onto her tummy. Prop her elbows beneath her for support. -Place objects and toys in front of her. Sit in front of her and encourage her. 8:15 AM—Read a book -Choose a book from the nursery to read to Emersyn 8:30 AM—Go for a walk -Place Emersyn in her car seat, attach the car seat to the stroller and go for a walk for about 20-30 minutes. 9:00 AM—Put down for a nap

	-She can nap in her crib, in her swing, or in our bed. She will like a pacifier to help her fall asleep. 11:30 AM—Wake from nap if she is still sleeping 11:30 AM—Change Diaper 11:40 AM—Feed 5 oz bottle -3 oz of breast milk mixed with 2 oz of formula. -Formula gets 2 oz of water and one scoop of formula. -Mix the powder and water, then add 3 oz of breastmilk. -Fill a mug halfway with hot water, place bottle in hot water for 2-3 minutes. -Shake bottle and feed. 12:00 PM—Play time -Anything you want to do to entertain her -Sing, peek-a-boo, read a book, etc. 12:30 PM—Change outfit -She has a lot of drool so I change her outfit a couple times a day 12:45 PM—Sit outside to get some fresh air and let the dogs out -If in direct sunlight, make sure she has her hat on 1:15 PM—More tummy time -Place Emersyn on her back on her play mat. Let her look at and reach for the toys above her. -Once she seems bored, roll her over onto her tummy. Prop her elbows beneath her for support. -Place objects and toys in front of her. Sit in front of her and encourage her. 1:45 PM—Put down for a nap -She can nap in her crib, in her swing, or in our bed. She will like a pacifier to help her fall asleep. 3-3:30 PM—Wake from nap 3:30 PM—Change diaper 3:40 PM—Feed 5 oz bottle -3 oz of breast milk mixed with 2 oz of formula. -Formula gets 2 oz of water and one scoop of formula. -Mix the powder and water, then add 3 oz of breastmilk. -Fill a mug halfway with hot water, place bottle in hot water for 2-3 minutes. -Shake bottle and feed. 4:30 PM—Mom returns

	Guided Practice: You will now have the opportunity to practice in your groups. I want each of you to create an algorithm on how to do a load of laundry. After your group is finished, give your algorithm to another group and have them provide any feedback for you. **Individual Practice:** Now that you've had the chance to practice with your peers and receive feedback, I want each of you to make your own algorithm. It can be a recipe, a schedule of your day, or anything that you relate to. Once you're done creating your own, we will share them tomorrow for the class.

Lesson Plan #3	
Grade/Subject:	6th grade/Computer Science

Lesson Focus – What You Will Teach
Central Focus: Students will reflect on the last two lessons related to computer science and discuss with their peers.
Objective/Learning Target
Students will: Students will utilize individual thinking to contribute to a classroom discussion that focuses on the final 3 essential questions.

Meaning	
UNDERSTANDINGS	ESSENTIAL QUESTIONS
Students will understand that… • A computer is a device used for storing and processing data. • Algorithms appear in our daily lives in simple forms, such as recipes and various schedules. • Technology and algorithms have different benefits and drawbacks, depending on the social situation. • Algorithms can present issues in certain circumstances that can have serious consequences.	• What is a computer? • How do we use algorithms in our lives? • Do humans create or discover algorithms? • How has the widespread use of computing technology & algorithms changed the way we work, play, and interact with other people? How much should we let technology do for us? • What social and legal issues have arisen due to the widespread use of computing technology & algorithms? What new issues are likely to arise in the future?

Standards
6-8.CD.4: Describe what distinguishes humans from machines focusing on ways we can communicate, as well as ways in which computers use models of intelligent behavior (e.g., robot motion, speech and language understanding, and computer vision). 6-8.IC.1: Exhibit legal and ethical behaviors when using technology and information and discuss the consequences of misuse. 6-8.IC.4: Describe tradeoffs between allowing information to be public and keeping information private and secure.

Standard	*Objective/ Learning Target*	*Type of Assessment*	*Format of Assessment*
6-8.CD.4: Describe what distinguishes humans from machines focusing on ways we can communicate, as well as ways in which computers use models of intelligent behavior (e.g., robot motion, speech and language understanding, and computer vision). 6-8.IC.1: Exhibit legal and ethical behaviors when using technology and information and discuss the consequences of misuse. 6-8.IC.4: Describe tradeoffs between allowing information to be public and keeping information private and secure.	Students will utilize individual thinking to contribute to a classroom discussion that focuses on the final 3 essential questions.	Formative	I will keep track of how many responses each student contributes to the seminar and how well they reflected on the lesson in their responses. I will also keep track of students who ask questions and prompt their classmates to further the discussions.

Learning Plan – What will I do? What will the students do?	
Materials and Resources	**Teacher:** class list, writing utensil **Student:** scratch paper, writing utensil *Students will not be required to use these materials, but they will have them in case they want to take notes or write down thoughts for later.

Summary of Key Learning Events and Instruction	**Hook/Motivation:** After spending two lessons on computers and algorithms, we are going to spend out final day participating in a Socratic seminar. As an entire class, you all will discuss the 3 following questions: Do humans create or discover algorithms? How has the widespread use of computing technology & algorithms changed the way we work, play, and interact with other people? How much should we let technology do for us? What social and legal issues have arisen due to the widespread use of computing technology & algorithms? What new issues are likely to arise in the future? They do not need to be answered in any specific order. However, I do suggest answering one question at a time to keep track of what questions have been answered. I expect each of you to contribute something to the discussion. You are welcome to ask your peers questions if you want to know more or disagree with their thinking. However, each of you will need to be respectful of your peers and their own ideas. I will be here to guide the discussion if there is too much down time, but I am hoping you all can take over and lead this discussion. These are some interesting questions that will provoke a variety of opinions. There are no right or wrong answers to these questions, I just want you all to think back on what we have discussed and use that information to justify your thinking and your answers.

**This lesson plan template is adapted from Bowen, R. S. (2017). Understanding by Design. Vanderbilt University Center for Teaching. Retrieved April 29, 2021 from https://cft.vanderbilt.edu/understanding-by-design. Also, information about the Department of Elementary Education's mission can be found here.

-What is a computer? (Lesson #1)

A computer is a piece of technology used to store, gather, and process information/data.

-How do we use algorithms in our lives? (Lesson #2)

Algorithms are used in recipes, doing daily tasks, making schedules, etc. They are not only used within computers and programming systems.

- Do humans create or discover algorithms? (Lesson #3)

Humans create algorithms. We have to come up with the steps and the different pieces in order for the algorithm to be successful, so we cannot discover an entire algorithm. There may be components of an algorithm that can be discovered in another, but an algorithm as a whole cannot be discovered.

-How has the widespread use of computing technology and algorithms changed the way we work, play, and interact with other people? How much should we let technology do for us? (Lesson #3)

These things have changed work in terms of how we hire people for jobs. Algorithms are used to sort through applicants and get rid of those who cannot pass a certain test or complete a certain task. These two things change our interactions because they make communication much faster with the use of technology, but they have also made in-person communication much more difficult for those who rely on computers and cell phones. We should let technology help us when it is needed, but it should not be completing tasks or jobs for us that humans are capable of doing. This only adds to troubles with unemployment, productivity, laziness, etc.

-What social and legal issues have arisen due to the widespread use of computing technology and algorithms? What new issues are likely to arise in the future? (Lesson #3)

Social issues come into play because people are having a harder time socializing in person because they are so used to communication through a device. It is also much easier for that type of communication to be misconstrued, so there can be social conflict between people as well. Legally, some people think the screenings for jobs can be unfair to those with disabilities. Some say that these computers have too much of our personal information and are invasive, sometimes in ways we are unaware of. I think those issues will continue to arise in the future, along with issues in the workplace if technology is going to continue to be relied on so heavily.