Transcript - Science2 - Activity 1

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SUMMARY KEYWORDS

compound, element, atom, sprites, create, mixture, characterization, circles, statement, ready, block, ces, move, clicked, video, project, substances, add, teachers, matter

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Hi, and welcome to activity number one for atoms, elements and compounds with CS First with Google. So for today, we're going to be learning about what is matter made of. Matter is all around us. So let's learn about what makes up all these things that we're using day to day. For today's lesson, we have three different learning objectives. So first, you're going to be learning what an atom element compound and mixture are, you're going to learn how to describe the difference between them writing particular statements about them. And then you're going to be using the Looks block to describe them in Scratch for CS first. So let's get started. What is matter? I've sort of given you a hint at the beginning of this video. So now it's a time for you to come up with your own definition of what is matter. Teachers, this is a great time for you to take a pause and facilitate that student discussion. And once you're ready to go, you're free to come back to this video.

Okay, so how did you find it? What is your definition. If you mentioned something along the lines where matter is basically stuff and matter is made out of atoms, then you're on the right track. So essentially, matter, we want to think about two different things. Matter is something that has a mass, and it takes up space, which is volume, so mass, and volume, all describe matter. And matter is made out of all of these really tiny, tiny particles that are known as atoms. Matter can also be represented in different states. And I want you to pay attention to this because we're going to be talking about different states in other activities in this module, solid liquid as well as gas. So what is an element and what is a compound, so we kind of define what atom is. And I want you to take that extra step and see if you can arrange atoms in such a way to create an element and arrange the atoms in such a way to create a compound and see if you can find out a difference between them. Teachers, this is a good time for you to take a pause, review what element and compound is discuss that with your students. And then when they're ready to go, feel free to come back and play this video.

Okay, now, elements and compounds are relatively similar to each other in a sense, where they're chemically bonded together. Atoms are chemically bonded together. The main difference between an element and a compound is that an element only contains one type one kind of atom. So here I have sort of like created a color scheme. So if you take a look at the visual aspect of things, elements usually are made out of things that look similar. So an element here I have used circles. So I'm going to have two circles that are same colors, though to represent elements. If you don't like using circles, you can use squares, just make sure you're using the same type of visual element to represent an element. A compound is basically made out of two or more kinds of atoms. So again, visually, we're looking at this, it looks kind of different. We're using different colors, I'm still sticking to the circle theme here. So I'm using circles to represent different types of atoms, and they're chemically bonded.

So you can see that they're kind of attached to each other to create a new compound, so a new molecule, so that so we've learned atoms, we learned elements, and we learned what compounds are. So let's see if you can apply all of this with a true and false statement. So I'm going to be telling you three statements true or false. And I'm going to ask you to shout out the answer and teachers feel free to facilitate that. So our first statement here right now, all substances are made from atoms. True or false? And teachers feel free to pause this video if you'd like to kind of discuss the statement.

Now, if you have mentioned it is true then you are on the right track. That is correct. All substances, essentially matter, are made out of tiny little particles known as atoms. Very good. Okay. Statement number two. All compounds are composed of atoms of two or more elements, true or false. Teachers, I'm going to give you some time to take a pause if you want, and then come back to this video when you're ready.

And if you feel like it is a true statement, then you are also on the right track. Well done, thank you. Because compounds are two or more atoms that are chemically bonded together to create what's known as compound Perfect. Okay, this is statement number three, an element contains two or more types of atoms, true or false. Teachers, I'm going to give you the opportunity to take a pause, review, and come back to this video when you're ready.

Now, if something doesn't really sit right with you about this statement, and you say it is false, then it is correct. This statement is false. And element only contains one kind, one type of atom. Good. So now you have a really good understanding of what atoms, elements and compounds are and the relationship between one another, then we're going to get started with CS First. Now, obviously, there isn't a science module. So we're going to be using Looks or Costumes, if you will, to create this CS First project. So we're going to be using CS First characterization unit, because there are some things that the video has mentioned that I want you to pay attention to. So if you can go over to lesson number one in the characterization unit, and watch video number two, what is your character thinking and I want you to pay close attention to what that video is talking about. And then we're going to come back to this video and continue on. Okay, so take your time watch this video teachers feel free to pause this video and once your students are done with watching the video, feel free to come back.

Okay, so we have finished watching this video. And then we learned that that we can use the looks block. So perfect. So remember, we are going to be using the Lux block to describe our atom element and compound. So stay in my lesson number one, we're going to use that starter project. Now because we are kind of using the Looks blocks but not necessarily the content from this unit, we're going to remove all pre existing sprites and create new sprites that represent atom, element and compound. So you can do the same thing as what I've done here. This is an example. That's going to be my project. So I have I'm using different colors to represent different types of atom. And then I'm going to connect them by creating elements or compounds. So I'm going to give you some time, use your startup project, remove existing sprites and create new ones that represent atoms, elements as well as compounds teachers feel free to pause this video and give your students time to create their CS First project.

Okay, I can't wait to see what you have created and what you have added in. If you don't want to use circles, that's perfectly fine. You can use other types of shapes to create your element, atom and compound. So over here as you can see, I've created an atom, element and compound and I'm going to go in to my sprites. So as you can see I have three different sprites, and each of them represent a different thing. So one is the atom sprite and the other one is my element Sprite. And then the final one is my compounds, right. And essentially how I've created it is just using the costumes section. Two, just sort of add my circles, I might created those three different ones, and I've resized them and placed them in my scratch for CS for First project here. So then I'm arranging them in a proper ways. So if you're ready to go, if you didn't use circles, that's okay, if you use squares, that's amazing. So right now we're gonna hop on over and for the optional piece is to personify that atom element and compound just kind of like connecting back to that characterization piece. So if you want, you can add little smiley faces. I've done so already and again, you're just going back to the costume section. So this is just optional. Feel free to personify your atom, element and compound by adding facial expressions to those add an element and compounds. Feel free to take a pause teachers of this video, give your students that time give them that creative outlet so feel free to add facial expressions to add a hat, add little arms to the atom, element and compound. And once they were ready to proceed, come back to this video.

Okay, so if you have personified your atom element and compounds, I hope it is they're all happy little molecules hug compounds and atoms. So I've drawn smiley little faces on all of them. Then if you're ready to go, then we're going to continue on to our next steps. So right now, learning from what we have learned from that video, what is your character thinking video, we're going to program our atom element and compounds thoughts by using the Thinking Blocks. Now, I know they're inanimate objects. So what are they really thinking about? I've sort of given you some hints previously with the true and false statement. Essentially, I want you to use the Thinking Blocks to create truth statements about atom, element and compound. You can make as many true statements as possible, but I want you to make sure that you have one statement, at least for an atom, element and compound. Okay, so teachers, I'm going to give you some time, take a pause in this video, once your students are ready to go feel free to come back.

Now if you have programmed that properly, then your Scratch program for each of the sprites looks something like this, where if the green flag is clicked, then it's thinking. And now I have added three different statements for each of my sprite. And in order for me to test it out, I'm going to just click on the green flag to see if all those things are being overlapped. And I can tell that they're being overlap right now. But at least I know that my thinking thoughts are working properly. So I'm just going to rearrange the three sprites, maybe vertically to see if they are overlap. Yep, so right now I can see that all my atom elements as well as my compound are all thinking properly. And they are not overlapping one another so I can read the statements perfectly. So if everything here is ready to go, and if you want to change the time, feel free to do that, because some statements might be longer than others might take some time to read all of them. That's also okay.

Thank you- well done for using the characterization video to apply that to our atom element and compound. Now, with the characterization unit. If you scroll down to the bottom of the page, you'll see that there is the choose an add on menu. Now we're gonna want to make sure that these particles are moving right because even though we have these inanimate objects, truth is these particles are constantly moving, they're constantly kind of like, you know, bumping into each other

and they're kind of vibrating on its own and the rearranging themselves when there's a reaction. So we're going to be watching the make your character move. And again, just paying attention to the programming there to the code there and applying back to our video. So make sure you watch the make your character move video and make sure that you are making all of your sprites, so the atom element as well as compound sprites move. Teachers, I'm going to give you some time, feel free to pause this video and come back whenever your students are ready.

All righty, so if you have managed to make all of your sprites move them, it should look something like this. And it doesn't matter how you want it to move. It can move up, it can move down, it can move horizontally. So I'm going to click on this again. So they're moving in such a way so they're kind of like being more animated than before. And that's how it looks. So we're going to be using that movement block to apply it even further. So if you recall our in our lesson objective, we have four terms that we have to learn atom, elements compound and mixture. So what is a mixture? So let's go back to the fourth definition here, what is a mixture? I'm sure a lot of you already know what a mixture is. So feel free to come up with your own definition, share that to the class, teachers, this is a great time for you to take a pause and facilitate that discussion, and then come back whenever you're ready.

Okay, so if you have mentioned something along the lines, where a mixture is essentially, where you have a combination of elements and compounds, or combination of various things in a particular space, then you're on the right track. Essentially, it is a substance that's made by mixing all the different substances together. Now we have three different substances right now. And in our Scratch project, if I can show you right now, it is all separated right now. So all three of my substances here are all separated. So how am I going to use the movement blocks to make sure that they're all mixed in together. I'm going to give you some time to think so we already applied all of it, all of these things you've already learned, we're just going to be applying all that. So right now, I want you to use the motion block, using the movement, create a mixture by placing all the different sprites together when the space key is pressed. Okay, so I'm giving you an extra piece of information here, when the space key is pressed, then they would all mixed them together. So teachers, I'm going to give you some time, feel free to pause this video, rewind this video if you want to revisit some of the instructions there. Otherwise, whenever they're ready, feel free to play this video.

Okay, now, that was a challenge, wasn't it, to create movement with all the different blocks and then also when the space key is pressed. So I'm going to show you what I have created. So I still have my movement blocks. One extra thing that I have created is a starting position. So when my green flag is clicked, there is a starting position. So they will all be separated right now. So when the green flag is clicked, the same thing is happening with all my statements. And then my space key is clicked, I'm just basically using the glide movement to move everything together. And then I'm going to use a different statement to say now we're a mixture. So I've kind of added everything that we've been learning throughout this lesson, using the motion block, using the thinking block the saying block, and using the trigger when Space key is pressed. So I'm going to demonstrate this again. So using the green flag, having a starting position, have all my substances, say what they have to say introduce themselves. And when the space key is hit, they would travel all together to become a mixture and tell you that that they're now a mixture. So this is a huge application pieces, it's a little bit of a challenging thing, because we're putting everything together. So feel free to take your time to revisit this if you want.

But we also have an extension. So if you're able to follow along, and you got it you're like you know what I know what I'm doing, and I'm ready for a challenge. So this is a little bit of a challenge. Look at real elements and compounds examples like water, like oxygen gas, like carbon dioxide gas, or carbon monoxide gas, and replace your sprites. And remember how we use the Text Block to just simply state atom or simply state element now you can actually use those text blocks to tell me exactly what those elements are. Okay, so I'm going to give you some time and feel free to take a pause if your classes ready for the extension teachers if they are ready to go to look up some real elements and compounds and and replace them accordingly. And then once they're ready to go and continue on, feel free to play this video again.

Now I don't know about you, I've basically kind of taken an easy way out by so for an atom, I just sort of made a very generic looking atom, I just continued to use my purple circle with the smiley face for my element because I've already have two different circles, mix them together, I just looked up real elements. And I know that gas elements like nitrogen gas, as well as oxygen gas required to have the same elements. So I have my nitrogen gas here, I also have my oxygen gas here, I also looked up some compounds, which is water, which is made out of two hydrogen and one oxygen. And I saw compounds like sodium chloride, which is made out of one sodium atom and one chlorine atom. So I essentially just sort of changed the colors of the circles, you don't have to erase it all and then change it up. Now, because you already have your code in the code section, whatever you do to the sprite is not going to change the code. We're simply just changing how it looks in the costume section. So have fun with it. Feel free to add more elements if you want add more compounds if you want. And I want to know how did you represent your atom element and compound? Did you also use circles like I did? Or did you use squares? Or did you use stars what? Or maybe you use the pre existing sprite and scratch for CS First. So this is a great time for you to share that with your class teachers feel free to facilitate that have your students share with your class and come back whenever they're ready.

Okay, so students, thank you so much for sharing that piece. I am hopeful that you are more creative than I am. Instead of using circles, you use other shapes and other colors as well. So thank you so much. It's been a blast having me join you in your classroom with activity number one, Adams elements and compounds with CS First with Google. I can't wait to see you and other activities where we're going to continue to dive deep into the world of chemistry. See ya!