
Student Drawings of Their Own Observations

Assignment 4

Background information: The students did an activity where they observed how many layers of cardboard it would take for a magnet to no longer be able to attract a paper clip on the bottom of the cardboard. The drawings shown demonstrate what they took away from that activity.

The student includes a drawing of her observation from a naked eye standpoint, and also using the zoom in method. From the naked eye standpoint, she is simply showing that it took several layers of paper to block the force of the magnet from attracting the paper clip. When she uses the zoom in method, she shows zig zag lines to represent the magnetic force that cannot be seen, which she has labeled as “ligeting” (lightning.) She most likely got this idea from the science talk on that day, which concerned what invisible forces are going on that cannot be seen. One student brought up the idea that electricity/lightning is what attracts metal to a magnet.

This student’s drawing shows that they understand that although nothing can be seen between a magnet and a piece of metal, there is something going on between the two objects that causes one to attract the other. The student does not know the word for this force, and simply labels it as lightning, showing that she did make a connection to the science talk earlier.

If I had the opportunity, I would ask this student to expand on what they mean by lightning, and how the lightning works. My guess is that this student may have had some experience with static electricity attracting objects, such as hair against a balloon, and may believe that the magnet holds electricity in the same manner. I would also ask what the lightning zig zags that she drew would look like if the magnet were farther away from the paper clip.

This student, like the previous one, is showing what they observed from a naked eye standpoint, and zoom in standpoint. From the naked eye standpoint, it is very similar to the previous student. He shows the magnet on top, cardboard in the middle, and the paper clip on bottom. However, he does show a circle that joins the magnet and paper clip between the cardboard layers. He does not label this, but it could have important implications for his understanding of the phenomena. The zoom in portion of his drawing is more difficult to make sense of. Between the magnet and paper clip, he is showing dots, but does not label what the dots are intended to show. This could indicate two things. The first being that he redrew his other picture, and the dots merely show the cardboard layers from a microscopic standpoint. The second possibility is that he is trying to represent the invisible force from the magnet. He does show two lines to distinguish the dots in the middle from the ones on the edges. A closer look also shows that some of the dots in the middle appear to be in V shapes. This leads me to believe that the second interpretation of his drawing is more correct. However, due to him not labeling the dots, it is difficult to be sure. My guess is that he is going off of another idea that a student had during the science talk. A student suggested that there may be invisible particles that attract metal to a magnet. This student may be trying to represent the particles by using dots and V shapes. For the most part, these V shapes are also pointing towards the magnet as if they were an arrow.

If the second interpretation of the drawing is correct, then it indicates that the student does understand that although nothing can be seen between the magnet and paper clip, there is some sort of force that is taking place. The lack of labeling however, shows that he is unsure what to call this force. Although vocabulary was not a focus of the lesson, some sort of label for the force would have shown that he made a connection between the science talk and the activities.

If I had the opportunity, I would ask the student why he drew small V shapes, and if the direction they are pointing has any significance. I would also ask him what these V shapes might look like if the magnet were farther away from the paper clip. Lastly, I would like to know what the circle on his naked eye drawing is supposed to represent.

This student's drawing includes only a naked eye standpoint. He does not include any detail in his drawing that would indicate an invisible force. He simply shows a magnet on top of paper layers, and a paper clip underneath. To add to the confusion, beneath the paper clip, he also shows cardboard and more paper. This could indicate that he may have misinterpreted how to do the activity, or was drawing what it might have looked like as he was messing around. If memory serves me correctly, during the activity, I may have seen him adding extra layers of material underneath the paper clip. However, I either did not think anything of it at the moment, or was preoccupied helping another student, and forgot to check in on this student.

This drawing indicates that the student has little to no understanding of an invisible force being present between the magnet and paper clip. However, I am hasty to make that conclusion off of this drawing alone. During the activity, I did ask this student why he thought adding more layers of material between the magnet and paper clip made a difference, and he said something along the lines of, "More distance means that the magnet won't work as strong." However, this would still indicate little comprehension of an invisible force being present. My guess as to why the drawing shows little detail or effort is that the kid was simply tired or bored near the end of the lesson, and did not want to exert more effort than what he thought necessary. To go solely off of the drawing however, it does not show any understanding of a force being present, or any connections to the science talk.

If I had the opportunity, I would ask the student what is happening between the magnet and the paper clip. I would ask him to think back to what he heard during the science talk, and if he could make a connection, I would then ask him to draw and label that idea in his picture. I would also ask him why he drew the extra layers of material underneath the paper clip, and what significance that has on how the magnet attracts the paper clip.

Given what I have seen from the student drawings, I would have the students discuss what the students saw in the activity more. Specifically, I would call on the students from the partially correct and mostly incorrect groups, to determine what their confusions are, and see if some of the mostly correct students could explain the phenomena in a way that they might understand.

Another potential way to help the students gain an understanding of what was observed, would be to engage the students in creating a class model of what was seen. This could simply be done on the board, and students could give their input as to what should be included, and what should not be included. I would then call on some of the students who did not understand the first time, and see if they could explain what is happening in the model, and how it relates to the activity. Alternatively, I could also draw my own model of the activity, and use that as a way to

explain what was happening in the activity.

eduzaurus.com