How do the 5 E's help teachers to plan lessons that engage children in scientific discourse?

According to the BSCS 5E Instructional Model, the key strategies to think about when planning a scientific lesson are: engagement, exploration, explanation, elaboration, and evaluation. These 5 items, known as the "5 E's" are essential to engage children in scientific discourse. As we experienced in class, during the magnet lesson, the 5 E's help students to first become excited about the lesson, then engage themselves in hands-on activities, create wonderings, test the wonderings further, and discuss the lesson at the end, allowing for sharing and assessment. The students will gain a lot of information and conclusions during the lesson as well as new wonderings, and this allows for the students to engage in scientific discourse from the intrinsic motivation the lesson gives.

**Engagement**  
The first of the 5 E's, engagement, is the first step to introducing the lesson. Engagement involves activating students' prior knowledge about the subject of study. In order to activate prior knowledge, the teacher must hook the students in and make them become interested in the lesson. There are many ways to hook the students, but one great way is through a sort. This allows for a hands-on activity while helping the students to start thinking about what they already know with the items they are sorting. In class, Kimber gave us each a bag full of items and instructed us to sort the items by whether it is magnetic or not. This allowed for each of us to use our prior knowledge and experiences with magnet in order to help us sort. Another great way to get the students interested in the lesson is by setting up an interesting situation in the classroom and allowing the students to observe and discuss the situation. We saw an example of this in class when Carla set of the magnet experiment and made the paper clip appear to float. All of us discussed what we thought might happen if an item passed through the magnetic field, and these predictions were based solely on prior knowledge.

**Exploration**  
The next of the 5 E's, exploration, involves performing an experiment to help answer questions and provide further wonderings. While performing the experiment, the student scientists must collect evidence in order to back up any claims made about the experiment. Exploration allows the students to create and test their own experiments with given materials. This process allows for better understanding of the initial concept, and in turn, will help to improve the students' understanding for making claims. We experience exploration in class when each group was given a magnet in order to test the piles created from the previous sort.

**Explanation**  
Explanation is one of the most critical components of the 5 E's model. This part of the lesson facilitates students' discourse and helps the students' focus on the goal of the lesson. From the exploration portion, students will have a few central claims about the topic, and explanation is the opportunity for the students to make these claims public. Once the claims are made public, other classmates can either prove or disprove claims.

http://scied458pds08.wikispaces.com/Planning+Science+Lessons+using+the+5+E's?f=print
through their own evidence collection. The students transition from small group to whole
group instruction, bringing materials and questions they have with them to the discussion.
Explanation gives the teacher an opportunity to listen to the students' findings and guide
the students towards the lesson's goal.

-Emily Goettler

**Elaboration**
The fourth of the 5 E's is elaboration. Elaboration occurs when the teacher implements
strategies to challenge the student's teaching. These strategies often include providing
new experiences for the learners. These experiences should stem from the learner's
wonderings and should supplement the instruction of the big idea. Elaboration builds on
the knowledge and the discourse gained and gives the learner the opportunity to apply
understanding to a new experience. Through the new experience a review of old concepts
leads the learner to a discover of new knowledge. Our science class observed elaboration
when we used our basic knowledge of magnets (from prior knowledge and from the
sorting activity) to make a prediction about what objects will affect the magnetic field in
the paper clip and magnet experiment.

**Evaluation**
Evaluation is the last of the 5 E's. The teacher must create a quality assessment to gauge
the learner's understanding of the topic. The students must also be able to reflect on their
own understanding and progress. Evaluations should be made before activities to assess
prior knowledge, after activities to assess progress, and after the completion of units to
assess comprehension. We discussed some ways a teacher could evaluate the learner's
during the magnet lesson. This included the teacher or peers review the records in the
science notebooks. Also, the what we know, what we learned, and what was our evidence
components of the KLEW chart would give the teacher a general assessment of the
learner's as a group.

**Additional Resources**
-This is a great link that helps give examples of the process and implementation of the 5
  E's [Constructivism and the 5 E's Model Science Lesson](http://scied458pds08.wikispaces.com/Planning+Science+Lessons+using+the+5+E%27s?f=print)
-This is website that helps gives people a way to bring science to after school programs.
  In their after school program they use the 5 E's model [Afterschool Training Toolkit](http://scied458pds08.wikispaces.com/Planning+Science+Lessons+using+the+5+E%27s?f=print)
-This website primary goal is to connect literacy to science. One way they do that is by
  using the 5 E's model [Primary Connections](http://scied458pds08.wikispaces.com/Planning+Science+Lessons+using+the+5+E%27s?f=print)
-This site shows the 5 E's in a slide show format. There is a lot of information about using
  the 5 E's and inquiry in science lessons [BioEd Online](http://scied458pds08.wikispaces.com/Planning+Science+Lessons+using+the+5+E%27s?f=print)
-This website is created by a teacher who uses the 5 E's model in her teaching. This
  website includes how she actually uses the model in the classroom. The site also includes
  sample science lessons that she uses in her classroom. [How To: Science Lessons](http://scied458pds08.wikispaces.com/Planning+Science+Lessons+using+the+5+E%27s?f=print)