**Science Report - Learning Story**

*“come into my classroom during play based learning and you will see the students….”*

Students in my Intermediate General Learning Disabilities Class are involved in creating their own slime product as a play base for developing their inquiry design and communication skills. This is the second time around for making slime. Students previously used the materials ready made from a kit and their focus was on precision in measurement, careful counting and meticulous adherence to steps in an outlined procedure. As the materials in the kit are easily duplicated by using white glue and borax the investigation can be easily repeated many times in order to explore the concept of variables in an investigation. The class consensus was to use a student made borax solution instead of the solution provided in the kit. The solution is a cross linker that transforms glue and water into a slimy polymer substance. “We want to find out if our own solution will work as well as the one in the kit,” and, “We want to know if we can make up and mix our own choice of colours into our slime.” At this point, I interjected that these were examples of variables and suggested that we test one at a time and find out what happens.

The first step is to try slime with student made cross linker. Students were closely supervised while measuring the borax into the distilled water, as it is a powder. Soon each investigative group is absorbed with measuring and stirring glue and water. They work together, counting out the drops of cross linker that they now add to their mixture.

“I’m counting the drops. I’ve now added 20 and it looks like this, Jomai, right that down! We’re going to try it now to see if it bounces, then we’ll add more drops.” Moving onto another group, “Look, look! When I add more drops look what it does! It makes a ball but then it breaks apart. I’m going to add more cross linker!” “Don’t forget to count and record the number of drops that you add,” I remind them. Yet another group, one with very serious and procedure oriented girls, “We used this spoon and we measured carefully. We tested it at 10 and now we are at 20 drops. We’re going to see what happens. The more drops we use, the drier it gets.” I now have five groups of students measuring, mixing, testing and playing with their product. My job is to circulate and ask questions, take notes. There are no behavioural incidents. The students are highly involved in the play and discovery aspect of the experience. So I ask, “What materials did you use? What was your procedure-what did you do when you made this? What are your observations?-what’s happening?” I also take notes for assessment and group debriefing purposes. The students want to know when we can try it again and experiment with the colour variable.

**Lesson Plan – Slime as a Variable**

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**Instructional Focus** – Grades Four, Five, Six, Seven and Eight

**Subject Integration**:

Language: writing, purpose, research and form integrated with Science development of skills of inquiry

**Learning Goal**:

By the end of the learning block students should collaborate with their classmates and write an investigative report based on their experimental design and procedure.

**Assessment:**

Anecdotal notes, group work, written report worksheet, Learning Skills Rubric

**Resources:**

This activity can be used with other investigative choices. If making slime you will need, white Elmer’s Glue, distilled water, borax, containers and spoons and droppers to measure and mix, slime recipe, food colouring or old nontoxic markers for using colour change in the inquiry process

**Anticipatory Set**:

Find examples of videos, YouTube clips, websites that show the investigative procedure. Highlight and discuss steps in scientific inquiry design models as you show video clips. Introduce this in a whole group format, so students can become familiar with outline the investigative process and role of a variable and hypothesis in an investigative procedure. Discuss the purpose of recording observations and results of investigations. Have students take notes and record information when applicable. Prior to introducing and highlighting the concept of a variable, explore safe lab techniques with class by allowing them to engage in one or two simple, high interest investigations. Allow students, in small groups, to play and become comfortable with the steps of science procedure and investigative design. Finally, pick one investigation that will be conducted and later be repeated with a change in a class determined variable.

Select groupings of students who can work effectively together, based on personalities, skills, etc.

**Guided Practice/Whole Group**:

As a whole group, review the inquiry design models that students have used in their small groups. Highlight the words hypothesis and variable during the review. Encourage students to explain in their own words what a hypothesis and variable is in a scientific inquiry model. Using one of the simple experiments that was previously explored (or the basic slime experiment), isolate, as a whole group, one small aspect of the investigation they could change in order to find out, “if things are different in the experiment when they change it.

**Students Engage/Group Focus**:

Once the variable has been chosen, have students return to their previously selected small groups and make a prediction of what they think will happen with the change they are making in their experiment.

Each group now repeats the experiment with the change and plays with the outcomes.

Encouraged them to notice what happens with the change. Take anecdotal notes and ask guiding questions. Have students discuss what they discovered.

**Debrief/Whole Group**:

Review and discuss student discoveries and record them for large group viewing, using a projector or chart paper. Model the inquiry design model while recording student input.

**Independent Focus**:

Students work on their own writing an investigative inquiry report.

**Accommodation**:

Group students so that strengths are balanced and that those individuals requiring direct support are grouped with responsible and independent workers. Circulate and assist as needed. Provide scaffolding, e.g., a fill in the blanks type sheet when needed, for final written report. Accept oral feedback and alternate modes of presenting inquiry feedback.

**For Tomorrow Student**:

Come prepared with ideas for other variable changes that could be safely used with this particular investigation. Suggest what materials could be used and where they could be located.

**For Tomorrow Teacher:**

Come prepared with another variable that could be explored in order to provide an extension to this assignment. Collect necessary supplies.