**Comparing Solid Figures**

**(Integrative Model)**

**Content:** This lesson is on geometry.

**Time:** The duration of the lesson will be approximately 45 minutes.

**Common Core Objectives:**

Analyze and compare two- and three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, parts and other attributes. [K-G4]

**Learning Objectives:**

* Students will be able to identify similarities and differences in solid figures.
* Student will be able to show which figures roll, stack, and/or slide on a flat surface.

**Materials:**

* Smartboard and computer (provided in classroom)
* *Stack slide or roll 3D shape song* Youtube video (researched on Internet)

Colquhoun, D. (2013, May 10). Stack slide or roll 3D shape song. *YouTube*. Retrieved October 18, 2014, from http://www.youtube.com/watch?v=9PqZbOYakJk

* Wooden solid figures (provided in classroom)
* Class set of solid figures (provided in classroom)
* Worksheet- matrix from Makes Sense (Makes Sense CD-ROM)
* Crayons (provided in classroom)
* Classroom examples of solid figures and 2-D figures ( glue stick, ball, book, tissue box, party hat) (provided in classroom and/or brought)

**Hook (Anticipatory):**

Lesson will open with an exciting video that introduces rolling, stacking, and sliding of solid figures. After the video, students will be reminded that they have gone over solid figures previously in the year and they will further explore the intriguing qualities of solid figures in this lesson.

**Procedures:**

**Phase 1:**

1. Call all students to the carpet for group instruction.
2. Students will watch the video introducing rolling, stacking, and sliding.
3. The teachers will have the students reflect on the video by reviewing solid figures and asking them to recall the names of the solid figures they saw in the video.
4. After the students have named the solid figures, the teachers will inform the students that this lesson will only focus on the four basic solid figures (cone, sphere, cylinder, and cube).
5. Students will then be introduced to the vocabulary that will be used within the lesson (roll, stack, and slide). The teachers will use demonstrations to help students visualize the actions of the vocabulary words and the characteristics that solid figures must have in order to roll, stack or slide.
6. The teachers will then transition from the review and the vocabulary into introducing the new lesson.
7. The teachers will give instructions on the group activity that students will complete once they are dismissed to go back to their seats.
8. Students will have a box at their seats that contains small figures to play with. They will use them to test which actions each solid figure can do through trial and error.
9. As the teachers monitor the students in their groups, students will be asked to identify similarities and differences between solid figures.
10. Once characteristics have been identified, students will come to the conclusion that each solid figure has certain actions it can perform.

**Phase 2:**

1. While students are still in their seats, they will be asked to explain why certain solid figures behave as they do on flat surfaces. Ex: Why can a sphere roll? Why can’t cubes roll?

**Phase 3:**

1. Students will be told to put the small figures away and transition back to the carpet for a whole group discussion.
2. Students will then be asked to answer hypothetical questions about the figures. For example, “What would happen if we tried to stack two spheres?”

**Phase 4:**

1. After the students make hypotheses, the teachers will show a series of objects found in the classroom and the students will be asked to identify which objects are solid figures and which actions they perform.
2. Through questioning, the teachers will recap the lesson by guiding the students in summarizing the major concepts that were introduced.
3. The teachers conclude by telling the students they are dismissed to their seats to complete a worksheet.

**Assessment:**

1. Once the students are seated, the teachers will distribute the worksheets.
2. Students will apply their understanding of solid figures by completing a worksheet-activity. The worksheet will ask them to identify which solid figures roll, stack and slide using a matrix. This activity will assess how well students identify similarities and differences in solid figures and if they can determine which figures roll, stack, and/or slide on a flat surface.

**Accommodations:**

To accommodate the English language learners in class, the teachers will speak slowly and use multiple visual aids in order to limit confusion and facilitate learning.

**Review and Closure:**

Through questioning, the teachers will recap the lesson by guiding the students in summarizing the major concepts that were introduced.

**Assessment:**

Students will apply their understanding of solid figures by completing a worksheet-activity. The worksheet will ask them to identify which solid figures roll, stack and slide using a matrix. This activity will assess how well students identify similarities and differences in solid figures and if they can determine which figures roll, stack, and/or slide on a flat surface.

**Statement of Relativity:**

This lesson plan reflects the Integrative model because it incorporates all four phases of implementation. This lesson also helps students to organize and understand a large body of knowledge. Finally, this lesson plan encourages students to use critical thinking by allowing them to identify solid figures they may see in the classroom or at home.