**Lesson Plan Template
ETAP 524**

**Spring 2013**

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| Name: Lauren Beaulieu | Module: 4 |
| **Lesson Plan Title** |
| Introduction to Solid Figures |
| **Discipline and Topic** |
| This lesson is an introduction to solid geometric figures for 7th grade mathematics. We will build upon this topic in future lessons. |
| **Target Population** |
| This lesson will be presented to students in regular 7th grade math. The classes are inclusive and have at least one student with an IEP per class. * General Characteristics: The students are in seventh grade and range in age from 12-13. Each class has about 20 students.
* Entry Competencies: Students have previously covered identifying polygons and calculating their areas.
* The students in this class learn best by doing hands-on activities where they are able to discover and construct their own learning. They also benefit from collaboration with their classmates.
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| **Curriculum Alignment and Standards** |
| This lesson satisfies the NYS standard **7.G.6.** for seventh grade geometry. Students will solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms. The students will be introduced to the solid figures in this lesson so that they will be able to solve real-world problems involving volume and surface area in future lessons. We will continue to build upon this topic and this will appear on their Regents exam.**7.G.6.** Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms. |
| **ISTE NETS Standards** |
| **Students**1. Students demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology.

a. Apply existing knowledge to generate new ideas, products, or processes1. Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources.

**Teacher**1. Teachers use their knowledge of subject matter, teaching and learning, and technology to facilitate experiences that advance student learning, creativity, and innovation in both face-to-face and virtual environments.
2. Promote, support, and model creative and innovative thinking and inventiveness
3. Engage students in exploring real-world issues and solving authentic problems using digital tools and resources
4. Teachers design, develop, and evaluate authentic learning experiences and assessment incorporating contemporary tools and resources to maximize content learning in context and to develop the knowledge, skills, and attitudes identified in the NETS·S.
5. Design or adapt relevant learning experiences that incorporate digital tools and resources to promote student learning and creativity
6. Provide students with multiple and varied formative and summative assessments aligned with content and technology standards and use resulting data to inform learning and teaching
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| **Goals** |
| Students will become familiar with solid figures and their mathematically accurate names through real world and mathematical examples.  |
| **Objectives**  |
| 1. Students will be able to classify solid figures with the correct mathematical terminology based on the appearance and description of the figure with 90% accuracy.
2. Students will be able to identify solids given the number of faces, vertices, and edges the solid contains with 80% accuracy.
3. Students will be able to categorize solid figures, such as prisms and pyramids with 75% accuracy.
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| **Underlying Educational Theory** |
| This lesson draws upon constructivist theory of learning in that it asks students to build upon their prior knowledge to learn a new topic. Students have prior knowledge of two-dimensional figures which will help their understanding of three-dimensional figures known as solids. Students will be able to connect this new topic to their own experiences in the real-world |
| **Materials Description and Timing** |
| * **Computer**- this lesson can be done in a 1-computer classroom. The computer is used so that the lesson can be presented using PowerPoint.
* **SMARTboard**- this lesson is designed using an interactive whiteboard, specifically a SMARTboard. The SMARTboard is used so that the teacher and the students can write directly onto and interact with the PowerPoint presentation.
* **PowerPoint**- the PowerPoint presentation will be used for the entire period. The lesson will be presented using PowerPoint; practice problems, the table, discussion questions, and exit slip problems will all be slides on the PowerPoint (selection rubric included for this software).
* **Note packets**- will be given to students so that they can follow along with the PowerPoint and fill in appropriate information. The note packets are the slides of the PowerPoint printed out for the students. The practice problems, notes, table, discussion questions, exit slip, and homework will all be included in the note packet.
* **Table**- will be presented on the PowerPoint and also be provided to students as part of the note packet (selection rubric included for this visual).
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| **Supplemental Materials/Links** |
| This is the link to the worksheet that will be assigned for homework. The answer key, with the answers that I expect the students to produce, is also included. <http://www.superteacherworksheets.com/geometry/solid-figures2_TZNDZ.pdf> |
| **Lesson** |
| **Introductory Activity**- Students will be given the note packet for the day and are expected to start the “Review” and “Practice” questions right away. The review/practice section is used to activate the students’ prior knowledge and ensure that they are prepared for the new lesson. We will go over the review/practice questions once the students have had a couple minutes to work on them (5 minutes).**Developmental Activity**- We will begin the new lesson which is introducing solids. We will fill in the “New Concept” notes as a class. I will present each solid shape to the class using solid shape manipulatives. We will discuss each solid, its name, its characteristics (using the “important vocabulary”), and examples of where we see each solid in our lives. i.e., a basketball is a sphere (12 minutes)- Objectives 1 and 2. **Discovery Activity**- Students will work in small groups of about 3. They will be instructed to pass around the manipulatives so that each group has one solid at a time. They will work together to fill in their table based on the manipulative. Once each group has recorded the information for all 8 solids, I will assign each group a specific solid. Each group will have a turn to come to the SMARTboard and fill in the information for their assigned solid. I will make sure that the information is accurate and instruct each student to make sure that the information in their table is correct so that they can use their table as a reference in the future (15 minutes)- Objectives 1, 2, and 3. **Concluding Activity**- Once each student has a completed an accurate table, we will have a class discussion about what they have learned. Students will be encouraged to ask questions and then they will be asked to complete the “Exit Slip” questions and turn them in before they leave class. Homework will be assigned (8 minutes) – Objectives 1, 2, and 3.  |
| **Assessment of Students** |
| **Pre-assesment**: Students will be assessed informally based on the “Review” and “Practice” questions that determine their prior knowledge. We will not begin the lesson until 100% of the students have the correct answers to these questions.**Mid-assessment**: Students will again be assessed informally based on classwork, participation and their responses to the discussion questions. I will use the manipulatives to practice the correct terms for each solid during the developmental activity. If 9 out of 10 solids are identified correctly using the proper terminology, then we will proceed. During the discovery activity, students are expected to correctly fill in 80% of their table with their group. After we go over the table together, the students will have 100% accurate information.**Post-assesment**: Students will be assessed formally based on their exit slip questions. Out of the 4 questions, students should correctly answer at least 3. Students will also be assessed on their homework. |
| **Evaluation of Students and Lesson**  |
| Overall, this lesson was a success because all of the learning objectives were met and students were able to perform to the specified level of achievement. This lesson will act as a basis for future lessons that involve calculating the volume and surface area of several of the solids the students learned about in this lesson. If the degree of achievement was not met, then we would have to spend more time on this lesson, but the students work did not indicate that this was necessary. * Students were able to classify solid figures with the correct mathematical terminology based on the appearance and description of the figure with 90% accuracy. This was determined by classwork, participation, and also the homework assignment.
* Students were able to identify solids given the number of faces, vertices, and edges the solid contains with 80% accuracy. This was determined by their participation and completion of the chart during class.
* Students were able to categorize solid figures, such as prisms and pyramids with 75% accuracy. This was determined by their responses to the discussion questions, and also their responses to the exit slip questions.
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| **Low Tech Modification** |
| If the lesson is stripped of technology then the students will still be given a note packet, but the notes will be presented on the black or white board. The students will still receive the chart as a handout and be able to complete the activity using the manipulatives. I would go around and check that each student had the correct information on their charts because they would not be able to view it on the SMARTboard. The lesson would be less visually interesting for the students, but all of the objectives would still be met.  |
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