

## Instructional Unit Plan- An Introduction

My Utopian classroom would consist of the idea of unlimited time. In school districts today every content area has a list of state standards that are required to be taught within a school year. My district in California takes each standard and aligns it with our adopted text book to create a “pacing guide.” This pacing guide breaks down the amount of weeks spent on a chapter and the amount of hours allotted for each section of that chapter. Sound constricting? It is this issue of pacing that creates the race against time to which I based my instructional dream.

My Instructional dream is throwing the “pacing guide” out of the window because the teachers can never accomplish it effectively. Instead, my standards are limited to 4 power standards a semester totaling 8 power standards a year. Normally, an average of 20 standards are taught a year. These power standards are based on the eight important concepts students must master and be proficient in to succeed in the next course. This shorter list of standards gives me approximately one month per standard. This month allows me to use web resources, technology, manipulatives, class texts, and projects to help students build a deep understanding and connection to the standard. What if we did not teach a mile wide and an inch deep? What if our students/children had the time to be creative, learn to discover, and enjoy math? My instructional dream is based primarily on those beliefs.

My instructional unit plan in the following pages makes the following assumptions in my Utopian classroom. First, all students are willing and enthusiastic participants. Classroom behavior is perfect and students participate 100% of the time. Second, all students have the necessary pre-requisite skills to be successful. This means students are not struggling on basic

facts such as their multiplication tables. Third, all students have a computer at their desk with active internet connection. Issues such as troubleshooting, infrastructure, and budget do not exist. With all of these factors included in my Utopian classroom I am able to present my instructional unit plan.

My instructional unit plan is based on my current district guidelines using the *Understanding by Design* template. I chose this template because I believe that this breakdown and structure are necessary for promoting student understanding. *Understanding by Design* has eight components: the big idea, understandings, essential questions, students will know, students will be able to do, performance tasks, assessments, and learning activities. Based on the readings of this class and the goal of my master's program I added a ninth component: online resources. Below you will see a completed template listing my unit information for each component. Following the template will be my integration of my online resources for each component.

### Understanding by Design Template

<b>Math 7 PLC</b>
<b>Chapter 8: Measurement and Geometry 2.1</b>
<b>Stage 1 – Desired Results</b>
<p><b>Standards and Big Ideas:</b></p> <p><u>Big Idea:</u> Students are able to determine the area and perimeter of common 2-D shapes.</p> <p><u>Standard:</u> MG 2.1: Use formulas routinely for finding the perimeter and area of basic 2-D figures <del>and the surface area and volume of 3-D figures</del> including rectangles, parallelograms, trapezoids, squares, circles, <del>prisms and cylinders.</del></p>

<p><b>Understanding(s):</b></p> <p><i>Students will understand that...</i></p> <ul style="list-style-type: none"> <li>• Perimeter is the distance around a shape</li> <li>• Area is the measurement within a shape</li> <li>• Area is multiplication because of the combination of both width and length</li> <li>• A triangle is doubled to create a rectangle which is why the formula is half the area of a rectangle</li> <li>• Many shapes share the same attributes</li> </ul>	<p><b>Essential Question(s):</b></p> <p><i>Students will be able to answer...</i></p> <ul style="list-style-type: none"> <li>• How is each shape related?</li> <li>• Why do we need Pi?</li> <li>• If two shapes have the same area, will they have the same perimeter?</li> <li>• How can different shapes have the same perimeter?</li> </ul>
<p><i>Student will know...</i></p> <ul style="list-style-type: none"> <li>• Properties of shapes</li> <li>• Area formulas</li> <li>• Perimeter formulas</li> </ul>	<p><i>Students will be able to...</i></p> <ul style="list-style-type: none"> <li>• Compare shapes</li> <li>• Find the area of a shape</li> <li>• Find the perimeter of a shape</li> <li>• List the dimensions of a shape</li> </ul>
<p><b>Stage 2 – Assessment Evidence</b></p>	
<p><b>Performance Task(s):</b></p> <ul style="list-style-type: none"> <li>• Web discussions and postings</li> <li>• Architect/Design Project</li> <li>• WebQuest assignments</li> </ul>	<p><b>Other Evidence:</b></p> <ul style="list-style-type: none"> <li>• Chapter tests</li> <li>• Quizzes</li> <li>• Exit tickets</li> <li>• Essential question writings</li> </ul>
<p><b>Stage 3 – Learning Plan</b></p>	
<p><b>Learning Activities:</b></p> <ul style="list-style-type: none"> <li>• WebQuest module for each shape: attributes, area formula, and perimeter formula</li> <li>• Web research on the use and functionality of shapes</li> <li>• National Library of Virtual Manipulatives: 2-D virtual manipulations</li> </ul>	
<p><b>Stage 4 – Online Resources (Free)</b></p>	
<ul style="list-style-type: none"> <li>• Digital Drop box: assignment submission (email required)</li> <li>• Weblog: class website with announcements, assignment postings, and blog discussions</li> <li>• WebQuest: modules for learning shapes (created through Weebly)</li> <li>• Survey Monkey: inputting of math answers to check for understanding</li> <li>• Engrade: free grading system</li> <li>• National Library of Virtual Manipulatives: <a href="http://www.nlvm.usu.edu">www.nlvm.usu.edu</a> 2-D virtual manipulates</li> <li>• Math websites for resources <ul style="list-style-type: none"> <li>○ <a href="http://www.ilovemath.org">www.ilovemath.org</a></li> <li>○ <a href="http://www.kutasoftware.org/free">www.kutasoftware.org/free</a></li> </ul> </li> </ul>	

## The Standard and Big Idea

Majority of the time students are unaware of what a state standard is or which one they are learning. The concept of the big idea is to break down the standard into student-friendly language so that it can be internalized. As administrators would say, “they need to know their learning target.” Given the convenience of time, our big idea will be expanded into a class discussion on a Weblog, our class website. Students will login and generate their own version of the big idea. “What exactly are you going to be learning this month,” would be an example of the discussion prompt. With everyone’s big idea posted we can compare student responses and begin replying to others. This type of dialogue is the math communication that is imperative to the classroom environment. Being able to discuss what they are going to learn provides them with clear expectations of their goals and begins the understanding process.

## Understandings

Understandings of a unit are ongoing discoveries and reflections of knowledge. Thus, two components are necessary for web resources. Discoveries will be made through the use of WebQuests and internet searches, “Google”. More details will be provided on this aspect of the unit in the following components. However, the reflections of knowledge can be done through an open discussion blog on the class website. Having a blog titled “Discoveries” is a brilliant way to share ideas among peers. The general title opens the door for both minor and major discoveries by the students. Having the opportunity to read other discoveries can open the minds of both me and my students to consider things we may have missed. As the

teacher/facilitator, I can gauge and check for understanding with the discovery blog. Maybe a major discovery is missing. My efforts as a facilitator are to find any holes in their knowledge and guide them to these discoveries.

### **Essential Questions**

Essential questions are what teachers hope the students can answer by the end of the unit. Since these questions are important for understanding it is necessary for me to know my student's answers. Since my Utopian classroom does not include perfect handwriting, student responses must be typed and submitted by the end of the unit. The resource I plan to use is called digital drop box. Digital Drop box is a free resource requiring only an email address. Students will type up their one paragraph response to each essential question and submit it online. With each new registered student additional space is added to my teacher drop box. Thus, the issue of file space is obsolete. A digital file cabinet assists me by keeping the papers on the computer and off my desk. At the same time students are improving their word processing skills and working on their English composition.

### **Students Will Know...**

This component identifies what the students will know or take away from the standard - essentially the breakdown of the big idea. In order for me to ensure that the students receive the correct information in the plethora of search results, I am guiding their initial learning through the creation of WebQuests. Since Weebly is a free website creator, I can create multipage WebQuests that my students can access. This WebQuest will have a page for each shape. For example, if they are on the triangle page there will be links provided taking them to

approved and valid sites about the properties of the shape and the correct formulas for area and perimeter. The sites accessible will include academic videos, virtual manipulative sites, and factual sites. The beauty of a WebQuest is to guide the student's learning online so that they can learn at their own pace using a wide range of approved resources. To go a step further, students will finish their knowledge quest by performing student driven "Google" searches of shapes. The goal is to open their mind for the possibility of uses and applications of the content they are learning.

### **Students Will Be Able To...**

This component is where the math calculations finally come into place. When students are working on their WebQuests the end of each page will ask them to open an uploaded worksheet. This practice is considered their self assessment of what they learned. It is important for both me and the student to know whether or not they are internalizing the information correctly. It is at this point where the teacher can intervene and work individually with a student who is not able to produce the correct results. This component is the most important part of the math lesson. It is necessary to understand but essential to apply that understanding to situations. These practice sheets can be graded using survey monkey. Students input their answers into the question slots and their score can be given back to them instantly.

### **Performance Tasks**

Performance tasks are what the students will be producing for me to assess their abilities and understandings of the concept. The performance tasks included in this unit include the web

discussions, WebQuest assignments, and the final architectural project. The reasoning for performance tasks is to provide students with alternative means to assess their learning. Since not all students are effective test takers, it is important for me to gauge their learning process in multiple forms. The final architectural project asks students to create a 2-D model of a bedroom that includes all the shapes that were taught. The dimensions, area, and perimeter of each shape must be provided with the model. The point of this task is to see if they can apply their learning to a real life situation. The final projects will be submitted via Digital Drop box and posted on the online website for discussion and reflection.

### **Other Evidence**

Other evidence is the traditional in class assessments such as tests, quizzes, and exit slips. However, based on my new integration of technology I can also include the submission responses to the essential questions. While many of the forms of other evidence are not provided online it does not mean that web resources cannot be integrated. Engrade is a website provided for teachers to upload and share grades to parents and students. The grades of these assessments will be posted via Engrade to keep students informed of their grade. This is also an excellent tool for communicating with parents about the progress of their child's learning before the end of a semester.

### **Learning Activities**

The learning activities are the summary of what the students will be involved in to accomplish their tasks, understandings, and applications. Each learning activity in my unit is associated with an online resource. First are the WebQuest modules including websites, digital drop box, and

survey monkey. Second is the web research done with Google to go more in depth about each shape, especially focused on the attributes and properties of a shape. Lastly, the architectural project is submitted online and posted on the website for class discussion and reflection. While more resources are used throughout the unit the primary learning activities are the basis of the understanding.

## Resources

The following are the resources integrated for creating my instructional unit design.

- [Digital Drop box](#):
- Weblog: created through [Weebly](#)
- WebQuest: created through [Weebly](#)
- [Survey Monkey](#):
- [Engrade](#):
- [National Library of Virtual Manipulatives](#):
- Math websites for resources
  - [www.ilovemath.org](http://www.ilovemath.org)
  - [www.kutasoftware.org/free](http://www.kutasoftware.org/free)