

# CAST's UDL LESSON BUILDER

## TEACHING MATH WITH TECHNOLOGY

### Lesson Overview

Title:	<b>For Teacher:</b> Teaching Math with Technology – Day 1 <b>For Student:</b> Probabilities and Statistics
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Subject:	Technology/Math
Grade Level(s):	<b>Teacher:</b> Professional Development <b>Student:</b> Grade 7
Duration:	<b>For Teacher:</b> 2 Days <b>For Student:</b> 1 Day
Subject Area:	Technology/Math
Unit Description:	<b>For Teacher:</b> This two day lesson will guide the teacher through preparing a math lesson using state standards, goals, methods, assessments and materials necessary to present the materials to diverse learners.  <b>For Student:</b> In this lesson the student will find the probability of independent events.
Lesson Description for Day:	<b>For Teacher:</b> In this lesson, the teacher will learn how to determine the standards that will be addressed, to determine the goals methods, assessment determinations, and materials to be used in the lessons.  <b>For Student:</b> In this lesson, the student will select and use an appropriate representation for presenting and displaying relationships among collected data, including line plot, line graph, bar graph, stem and leaf plot, circle graph, and Venn diagrams, and justify the selection; and make inferences and convincing arguments based on an analysis of given or collected data.  Students can use spreadsheet software, graph paper and pencil, or white board and markers to create their representation.
State Standards:	<b>For Teacher:</b> Teachers will understand and uses probability and statistics, their applications, and technology appropriate to teach the statewide curriculum (Texas Essential Knowledge and Skills [TEKS]) in order to prepare students to use mathematics.  <b>For Student:</b> Students will understand that mathematics is the science of patterns, relationships, and functions.

	The student understands that the way a set of data is displayed influences its interpretation.
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## Goals

<b>Unit Goals:</b>	<p><b>For Teacher:</b> The teacher researches and determines various tools and materials available to the students to achieve their goal.</p> <p><b>For Student:</b> The student recognizes that a physical or mathematical model (including geometric) can be used to describe the experimental and theoretical probability of real-life events.</p>
<b>Lesson Goals:</b>	<p><b>For Teacher:</b> The teacher successfully guides the students through the lesson by providing technologies, materials, and probing questions and scenarios for the students.</p> <p><b>For Student:</b> The student realizes the diverse methods of reaching a conclusion to the probabilities of real-life events</p>

## Methods

<b>Anticipatory Set:</b>	<p><b>For Teacher:</b> Create interactive, web-based module to engage teacher with the use of technologies that can be used by students in class. Teach the teacher using the same tools in order to familiarize them with the tool as well as how to incorporate the tool into lessons.</p> <p>Provide periodical quizzes throughout the module with instantaneous feedback to allow correction to incorrect answers as well as explanations to assist in a greater understanding of the materials.</p> <p><b>For Student:</b> In a large group, engage children in what they already know about probabilities and statistics, using everyday experiences.</p> <p>~What are the probabilities of snow falling in the Houston area before December 1<sup>st</sup>?</p> <p>~What are the probabilities of two people being absent in each class of your school on any given day?</p>
<div style="background-color: #90EE90; padding: 5px; display: inline-block;">Recognition Network</div>	<p>Break out students into smaller groups, assuring an equal knowledge/capability level in each group. Provide students with scenarios to determine probabilities and statistics.</p> <p>Provide groups with necessary materials to carry out the project. Returning to large group, discuss smaller group solutions, asking students from other groups to provide feedback and comments.</p>
<div style="background-color: #ADD8E6; padding: 5px; display: inline-block;">Strategic Network</div>	<p>Access a website that will provide additional probability lessons,</p>
<div style="background-color: #F08080; padding: 5px; display: inline-block;">Affective Network</div>	

	and work through some lessons together. (see Materials)
Introduce and Model New Knowledge:  <div style="text-align: center;">Strategic Network</div>	<p><b>For Teacher:</b> Provide a list of technologies that can be used by students to accomplish math lessons, making sure they are accompanied by available tutorial links.</p> <p><b>For Student:</b> Provide students with new technologies that can be used to accomplish math lessons. These can include software and/or websites. Assure students that help will be available while learning the new tools.</p>
Provide Guided Practice:  <div style="text-align: center;">Affective Network</div>	<p><b>For Teacher:</b> Throughout training module, provide guided feedback and explanations to assure the teacher is thoroughly proficient before presenting the technologies to his/her class.</p> <p><b>For Student:</b> Using new technologies, guide the students through the use and opportunities to use them to accomplish their lessons.</p>
Provide Independent Practice:  <div style="text-align: center;">Affective Network</div>	<p><b>For Teacher:</b> Provide web sites available for the teacher to practice using the tools suggested for instruction.</p> <p><b>For Student:</b> After making the technologies and tools available, and thoroughly explaining each, allow time for students to work independently on various probability and statistical scenarios. During this time, the teacher will travel around the classroom to assist those who need help, and assure those who are not asking for help indeed understand the work.</p>

## Assessment

Formative/Ongoing Assessment:	<p><b>For Teacher:</b> When creating training module, allow multiple retakes of quizzes and unlimited access to materials to assure teacher can review lessons until mastered.</p> <p><b>For Student:</b> Provide ongoing encouragement with continuous discussion, Q &amp; A sessions, and occasional quizzes. Provide direction and reward successes.</p>
Summative/End Of Lesson Assessment:  <div style="text-align: center;">Strategic Network</div>	<p><b>For Teacher:</b> A measurable quiz should be included in the training module to demonstrate the strengths and weaknesses of the teacher. This will determine what lessons the teacher should revisit before attempting to utilize the new methods and technologies learned.</p> <p><b>For Student:</b> Upon completion of lesson, student groups should be required to present a scenario along with its solution. Students should be</p>

allowed to use whatever means they wish to present their material. Every student should participate in the presentation, either as compiler or speaker. The presentation should include a list of who performed each task.

## Materials

### Websites:

Mrs. Glosser's Math Goodies

[http://www.mathgoodies.com/LESSONS/VOL6/intro\\_probability.html](http://www.mathgoodies.com/LESSONS/VOL6/intro_probability.html)

Probabilities in the Game of Monopoly

<http://www.tkcs-collins.com/truman/monopoly/monopoly.shtml>

How to Calculate Simple Probabilities

[http://www.ehow.com/how\\_5706135\\_calculate-simply-probabilities.html](http://www.ehow.com/how_5706135_calculate-simply-probabilities.html)

My Math Lab/My Stats Lab

<http://www.mymathlab.com/>

### Software:

Scientific Software: Mathematics, statistics, probability, combinatorics, odds, algorithms

Available free at: <http://saliu.com/free-science.html>

Other free software downloads available at:

<http://www.freedownloadscenter.com/free/732166/>

Microsoft Excel