Comparing
And
Measuring
Grade 1
Introduction
Unit: "Comparing and Measuring"

Grade: 1st

Class: Mainstream class with integrated ELL students

You might be particularly interested in how this teacher:

- How the teacher used functional/Notional charts (5, 20).
1. Title: “Comparing and Measuring”

2. Grade Level: Grade 1

3. Target Group: Mainstream class with integrated ELL students

4. Written Text: “The Very Big Umbrella” - Comparing and Measuring NSRC 1996 – Published by Carolina Biological Supply Company

5. Source: I developed these lessons on my own, using various ideas from the Comparing and Measuring book.

6. Goals: - I want my students to know the importance of using a standard unit of measurement.
   - I want my students to know how to measure various objects using both standard and nonstandard units of measurement.
   - I want my students to know the vocabulary to discuss and compare their results.
   - I want my students to the vocabulary to discuss the advantages and disadvantages of the different units used to measure objects.
<table>
<thead>
<tr>
<th>Knowledge</th>
<th>Language</th>
<th>Content</th>
<th>Learning Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1. Recognize the importance of using a standard unit of measurement.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Learn how to measure using both standard and nonstandard units.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Know the vocabulary needed to discuss and compare results.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. Know the advantages and disadvantages of the different units.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Skills</th>
<th>Language</th>
<th>Content</th>
<th>Learning Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Listen to a story and orally answer comprehension questions.</td>
<td>1. Measure using both standard and nonstandard units.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Learn the formulas to express ideas.</td>
<td>2. Make a graph to compare lengths.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Learn the vocabulary necessary for peer and group discussions.</td>
<td>3. Identify and illustrate objects.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Orally share ideas with the class to be recorded on a chart by the teacher.</td>
<td>4. Record results.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5. Discuss results and compare.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>6. Discuss the advantages and disadvantages of the different units.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Attitude</th>
<th>Language</th>
<th>Content</th>
<th>Learning Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1. Awareness of the importance of using a good standard unit of measurement.</td>
<td></td>
</tr>
</tbody>
</table>

1. Hands on activities (measuring)
2. Learning from listening to and comprehending a story.
3. Learning from peers in discussion.
Lesson 1
<table>
<thead>
<tr>
<th>Function</th>
<th>Situation</th>
<th>Formula</th>
<th>Grammar</th>
<th>Vocabulary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Predict</td>
<td>Ways to get the right sized rug.</td>
<td>To be sure I get the right size rug, I can ___ .</td>
<td>Modals</td>
<td>right size length</td>
</tr>
<tr>
<td>Demonstrate</td>
<td>Taking heel to toe steps and counting beginning with the first foot.</td>
<td>One, two, three, four, ____</td>
<td>Numerals</td>
<td>heel-to-toe steps</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>measuring tools</td>
</tr>
<tr>
<td>Measure</td>
<td>A strip of adding machine tape taking five steps.</td>
<td>One, two, three, four, five.</td>
<td>Numerals</td>
<td>measure</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>count</td>
</tr>
<tr>
<td>Graph and</td>
<td>Each student will put their tape on the graph and compare results.</td>
<td>____’s tape is the longest (shortest).</td>
<td>Adjectives</td>
<td>longer</td>
</tr>
<tr>
<td>Compare</td>
<td></td>
<td>____’s tape is longer (shorter) than ____’s.</td>
<td>(longest, shortest, longer, shorter)</td>
<td>shorter</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>longest shortest</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>graph</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>compare</td>
</tr>
<tr>
<td>Comprehend</td>
<td>A story read aloud.</td>
<td>The problem was ____ .</td>
<td>Past Tense</td>
<td>problem measured</td>
</tr>
<tr>
<td>And</td>
<td></td>
<td>Kate and Marcus measured by ____.</td>
<td></td>
<td>right size plan</td>
</tr>
<tr>
<td>Formulate Ideas</td>
<td>A better plan to measure.</td>
<td>To get the right size box, the children should ____ .</td>
<td>Modals</td>
<td>good unit</td>
</tr>
<tr>
<td>Conclude</td>
<td>Feet is not a good unit of measurement.</td>
<td>“When we used our feet ____”</td>
<td>Past tense</td>
<td>measurement</td>
</tr>
</tbody>
</table>
Lesson 1
Modified

Objectives: Students will learn how to measure using "feet" and conclude that this is not a good unit of measurement.

All students will:
- learn how to measure using a nonstandard unit (feet).
- make a graph to compare lengths.
- see that nonstandard units produce varied results.
- learn the vocabulary needed to share their ideas.

Some students will:
- predict ways to measure the rug.
- demonstrate how to measure using heel to toe steps and counting with the first step.
- demonstrate how characters in the story tried to solve the problem.
- share their ideas of a better plan/way to measure

Most students will:
- conclude that using feet is not a good unit of measurement.
- formulate a better plan to measure.
Materials:
chart paper, 3-4 pieces
adding machine tape
red markers, 1 for each pair of students
scissors, 1 for each pair of students
scotch tape
story – “The Very Big Umbrella” from Comparing and Measuring, NSRC 1996
umbrella
box smaller than umbrella
homework sheet

Strategies:
1. To assess prior knowledge, create a real life experience.
   - “I want to buy a new rug for our classroom. How can I figure out what size the rug needs to be? What can I do to be sure I buy the right size rug? To be sure I get the right size rug I can ____.”
     Be sure to use gestures (point to the rug, use arms to demonstrate big) and to repeat/paraphrase/frame the main idea.
   - On a chart write : To be sure I get the right size rug I can _____________.
     As students share their ideas I will repeat them using this formula and write their ideas on the chart.
2. Explain that long ago people didn’t have measuring tools and one way they determined length was by using their feet. They would take heel to toe steps and count each step.

- Model how to measure the rug, taking heel to toe steps and begin counting with the first foot.

- Have several students come up and demonstrate how to measure using heel to toe steps and counting with the first foot.

3. Students will work with a partner to measure five “foot steps/feet” of adding machine tape.

- The teacher should first model/demonstrate how this should be done.

- Tape one end of the adding machine tape on the floor. One student will take five steps on the tape while the other student unrolls the tape. At the end of the fifth foot, the partner will put a red mark on the ending point and cut the tape here. The students will switch places so that each student gets a chance to measure five steps.

- As students are working the teacher should be walking around and monitoring them. She should redirect/guide any students who are having difficulty. She should also praise the students who are successfully completing the task.

4. The class will come together and make a graph “Comparing Feet”.

- The teacher should draw a line at the top of the graph so that the students know where the end of the tape should be placed on this graph.

- Students will look at the graph and discuss why their pieces of tape were different lengths when they all took five steps.
- In discussion, the students will complete the following formulas/sentence structures, which the teacher should first model:

__________ had the longest tape.

__________ had the shortest tape.

_________ 's tape was longer than ________ 's.

_________'s tape was shorter than __________'s.

5. The teacher will orally read "The Very Big Umbrella" to the class. It may be helpful to give some students a copy of the story to follow along with the text/pictures.

- During reading, the teacher should stop to rephrase/simplify important parts of the text and to review key vocabulary points. The teacher may show visual pictures of what is happening in the story (example: a picture of the boy laying next to the umbrella showing that the umbrella is bigger than him).

- After reading, ask comprehension questions that will lead to discussion.

Begin the answer by providing the expected formula for the student to repeat and fill in the answer.

Examples:

What was the problem in the story?  "The problem is _____"

How did they measure the umbrella and the box?  "Kate and Marcus measured _______

How could they solve the problem?  "To get the right size box, the children should _______"
- The teacher should have a real umbrella and a smaller box similar to the story. The students can orally present their ideas/answers to the questions, or they may choose to come up and demonstrate with the real objects.

6. The students should share their ideas about using feet to measure.

- On a chart write:
  
  “When we used our feet ____________”

- The students will share their ideas about what happened when they (and also the characters in the story) used their feet to measure. The teacher will record their responses on the chart.

- The students should come to a conclusion that feet are not a good unit of measurement.

Homework: Be sure to model an example first so that all students know what they are expected to do at home.

Complete the worksheet on measuring with your feet.

Choose three things to measure at home “I measured a ___________.”

After measuring record your results “It was ___________feet long.”

Have an adult measure the same three things and see if they get the same results.

“________________________________ measured it and it was ___________ feet long.”
Homework

Measure three (3) things at home using your feet. Record your results. Have an adult measure the same three (3) things with his/her feet.

Example:

I measured a couch.

It was 10 feet long.

My mom measured it and it was 8 feet long.

Did you get the same answers? Yes/No

1. I measured a ____________________.

   It was __________ feet long.

   ______ measured it and it was ________ feet long.

   Did you get the same answers? Yes/No

2. I measured a ____________________.

   It was ________________ feet long.

   ________ measured it and it was __________ feet long.

   Did you get the same answers? Yes/No
3. I measured a ______________.

It was ________ feet long.

_______ measured it and it was _________ feet long.

Did you get the same answers?  Yes/No
The Very Big Umbrella

It was raining outside and Marcus was looking out the window. He was trying to think of a birthday present for his father. Suddenly, his father came running in the house. He was very wet. "I lost my umbrella and now I'm wet," said Mr. Hill. Marcus said to himself, "That's it! I'll get Poppa a big, new umbrella."

The next day, Marcus went to the store to look for a big umbrella. He found one that was just the right size, but it was too much money. Marcus felt sad. "What will I do now?" he thought. As he walked home, he had an idea. "I will make an umbrella for Poppa."

In the garage, Marcus found an old beach umbrella. It was very big, but it had many holes in it. Marcus put some tape on the holes. He found some paint and painted it. Marcus looked at the umbrella and smiled. "Poppa will really like this umbrella, and it is so big, he won't lose it."
“Now I will have to find a box to put it in,” he said. Marcus looked in the house and the garage but all the boxes were too small. Marcus had an idea. “I will call Kate and ask her for a box.”

Marcus called Kate on the telephone and told her about the umbrella. “I need a big box to put it in,” he said. “How big is the umbrella?” asked Kate. Marcus put the telephone down and ran to the garage. “Hmm,” he thought. “How can I measure this?” Marcus put the umbrella on the floor and lay down next to it. The umbrella was longer than Marcus. He ran back to the telephone.

“Kate, the umbrella is longer than me,” he said. “But Marcus,” said Kate. “I still don’t know how big the box should be.” Marcus put the telephone down and ran to the garage again. This time he used his feet to measure the big umbrella. He went heel to toe from the top of the umbrella to the end. As he walked, he counted each step. Marcus ran back to the telephone.
"Kate, this time I measured the umbrella with my feet and counted as I walked," said Marcus. "What did you get?" asked Kate. "Nine of my feet," he said. "Okay," said Kate. "I will look for a box that the umbrella will fit in."

Later, Kate brought the box over and they went into the garage. Marcus and Kate tried to put the umbrella into the box. It did not fit. The box was too small! "Oh, no," said Marcus. "This box is too small. How could that be? I told you it had to be nine of my feet long."

"It is," said Kate. "I measured just like you and counted each step I took until I counted to nine."

Marcus decided to measure the box with his feet. He counted each step as he measured. When he got to the end of the box, he had only counted eight steps. "Kate," said Marcus, "This box is not nine feet—it's only eight feet. The box is too short." Kate decided to measure the box again. She counted as she took each step. When Kate got to the end of the box, she counted nine steps and said, "Marcus, it is nine feet. I measured just the same as you."
Descriptive Narrative

Many modifications were made to the original lesson to help ELLs better comprehend both the context of the lesson and the vocabulary.

- Assessing prior knowledge with a real life situation – buying a new rug and needing to know the right size.
- Using gestures – pointing to the rug, using arms to demonstrate big, etc. so that the students could comprehend what was being said.
- Repeat/paraphrase/frame the main idea. Slower speech rate.
- Using a chart to record ideas so students see how the sentence is written and repeating the sentence formula so they can orally hear how the sentence should be said using the same formula over and over again.
- Modeling how to measure with your feet so students see the process and what they are expected to do.
- Have some students demonstrate so that they are able to practice the skill and so other students are also reinforced about the instructions.
- Students work with a partner so they can help one another with the tasks.
- Teacher walking around and monitoring the students and guiding them through the task.
- When making a graph the teacher draws the line at the starting point so all students visually see where their tape should be placed so that the graph is accurate.
- Teacher models formulas for the students to use when in a group discussion about the graph.
- When orally reading the story, the teacher gives some students a written copy of the text to follow along with the text or the pictures. The teacher stops reading at certain points to rephrase or simplify the important points. The teacher may show visual pictures of what is happening to aid in comprehension.

- When asking comprehension skills that may require higher level thinking skills, the teacher provides the formula, which the students should use to begin sharing their answers/responses.

- Teacher once again has realia- umbrella and a box – which the students may want to use to demonstrate their thoughts.

- When students share their ideas about what happened when they used their feet to measure, the teacher records their ideas on a chart for all to see and she once again repeats the ideas using the correct given formula.

Sheltered ELL Strategies Used in Lesson 1

1.1a Visuals

1.1b Model

1.2 Activate background knowledge

2.2 Develop vocabulary

2.3 Simplify written text

3.2 Frame main ideas

3.3 Pace teacher’s speech

4.1 Teacher questioning and response strategies

4.2 Small group work
4.3 Meaningful real life activities

5.1 Use questions appropriate for language levels

5.2 Assign appropriate tasks for varying levels

6.2 Real oral and written language
Lesson 2
<table>
<thead>
<tr>
<th>Function</th>
<th>Situation</th>
<th>Formula</th>
<th>Grammar</th>
<th>Vocabulary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Answer Questions/ Make Interpretations</td>
<td>Reviewing answers on a homework page</td>
<td>“I measured _____.”</td>
<td>Past tense</td>
<td>Measured</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“It was _____ feet long.”</td>
<td></td>
<td>Long</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“It measured it.”</td>
<td></td>
<td>Results/answers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“It was _____ feet long.”</td>
<td></td>
<td>Different</td>
</tr>
<tr>
<td></td>
<td></td>
<td>We did/didn’t get the same results.”</td>
<td></td>
<td>Same</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“Our answers were different/the same because _____.”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Identify</td>
<td>Lengths of lines</td>
<td>“_____ is the longest.”</td>
<td>Adjectives</td>
<td>Longer</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“_____ is the shortest.”</td>
<td></td>
<td>Longest</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“_____ is longer than _____.”</td>
<td></td>
<td>Shorter</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“_____ is shorter than _____.”</td>
<td></td>
<td>Shorter</td>
</tr>
<tr>
<td>Identify and Illustrate</td>
<td>Objects that you are measuring</td>
<td>“I measured a ______.”</td>
<td>Nouns</td>
<td>Name tag</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Counting units as you measure</td>
<td></td>
<td>Desk</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“One, two, __”</td>
<td>Numbers</td>
<td>Sentence strip</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Dry-erase board</td>
</tr>
<tr>
<td>Measure</td>
<td>4 different objects</td>
<td>Counting units as you measure</td>
<td>Numerals</td>
<td>Count</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“It was ______ long.”</td>
<td></td>
<td>Measure</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Numbers</td>
</tr>
<tr>
<td>Record and Label</td>
<td>Recording results</td>
<td>“It was ______ long.”</td>
<td>Numerals</td>
<td>Record</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Nouns</td>
<td>Results/answers</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(label)</td>
<td>Long</td>
</tr>
<tr>
<td></td>
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<td></td>
<td>-q-tips,</td>
<td>Q-tips</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>toothpicks,</td>
<td>Pencils</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>pencils</td>
<td>Toothpicks</td>
</tr>
<tr>
<td>Compare</td>
<td>Results in a group</td>
<td>“It was ______ long.”</td>
<td>Comparisons</td>
<td>More</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Less</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Longer</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Shorter</td>
</tr>
<tr>
<td>Summarize</td>
<td>Ideas about using the different standard units to measure</td>
<td>“When we used different standard units to measure ______:”</td>
<td>Past tense</td>
<td>Standard units</td>
</tr>
</tbody>
</table>
Lesson 2
Modified

Objectives: Students will learn how to use different sets of standard units to measure.

All students will:
- Use different sets of standard units to measure.
- Record their results.
- Label the unit used to measure.
- Compare results in group discussions.

Most students will:
- Begin to see why it is important to label the unit used when measuring.
- Share their ideas and reasoning about using different standard units of measurement.

Some students will:
- Be prompted with specific questions to get them involved in the discussions.

Materials:
Worksheet “Comparing Lengths”
3 different units to measure with (pencils, toothpicks, q-tips)
4 different objects to measure (desk, nametag, dry-erase board, sentence strip)
Recording sheet “Measuring Different Objects”

Markers

Chart paper

**Strategies:**

1. To assess background knowledge, review what the students learned yesterday.
   - Have the students look at their homework sheets and share some of their answers. Some students will read the sentences off the paper. Ask the students a higher level question such as “Why did you get different results?” The students should be able to tell you that the results were different because of the different size feet. When looking at their papers, some students may need prompting to give short answers. Example: “What did you measure?” “I measured a ________.”
   
   “How long was it?” “It was ________ feet long.”
   
   “Who else measured it?” “_________ measured it too.”
   
   “How long was it then?” “It was ________ feet long.”
   
   “Did you get the same results/answers?” “Yes/No”

2. To review some of the vocabulary, have students complete worksheet “Comparing Lengths”. For some students, highlight the key words and write the color words using that color ink.

   Example: Color the shortest line blue.

   Color the longest line red.

   Which line is longer, A or B?

   Which line is shorter, D or F?
2. Tell the students that today they will be measuring four different objects (desk, nametag, dry-erase board, sentence strip).

   - As you say each object, write the word on a piece of chart paper and draw a picture of the object next to the word. Also use realia – point to the desk, hold up the nametag, hold up the sentence strip, hold up or point to the dry erase board.

3. Tell the students that instead of using their feet, they will be using different units to measure these objects. They will use pencils (hold up the pencil), toothpicks (hold up a toothpick), and q-tips (hold up a q-tip).

4. Demonstrate how to use each unit to measure, starting at the very end and placing the units right next to each other. Through modeling the students can see what is expected and how to use the measuring tools.

5. Give each pair of students a different unit of measurement. The students will measure all four objects using that single unit.

   Example: Students 1 and 2 use toothpicks
            Students 3 and 4 use pencils
            Students 5 and 6 use q-tips.
            Students 7 and 8 use toothpicks
            ETC.

6. Students will each have their own paper “Measuring Different Objects”, but they will work with their partner to do the measuring.

   - Complete the sentence to identify what is being measured. Example “I measured a desk.”
- Draw a picture of the object you are measuring. (This will serve as a visual representation).

- Measure with your partner (Peer work will enable students to help one another.)

- Record results being sure to write the unit you used to measure. Example: “It was 4 toothpicks long.”

  ****Be sure to model an example first.

  **** As students are working with their partner, be sure to observe each group and guide the students.

7. Students will work in groups of 6 to discuss/compare their results. The group of six should have three pairs of students who used different measuring tools so they can see the difference of using toothpicks, pencils, and q-tips as units of measurement. The teacher should listen to each group’s discussion and prompt them with questions.

- The teacher should model some ideas that she wants to hear in discussion. “I used more toothpicks than you used pencils to measure the sentence strip.” The desk is longer than the name tag.” “You used less q-tips than I used pencils to measure the desk.”

- If the students are having trouble discussing and comparing on their own the teacher should prompt them with questions. Example: “What unit did you need more of to measure the desk, pencils or q-tips?”

8. As a whole class make a chart “Using Different Standard Units of Measurement”

- Students can share their ideas and the teacher should record their responses on the chart paper. The teacher should write on the first line “When we used different
standard units to measure _______________" so that the students know how to begin their responses.

- For some students ask questions to get them to respond. "What is longer a pencil or a toothpick?" "Can this be why you got a different answer than ______?"
Comparing Lengths

A
B
C
D
E
F

1. Color the shortest line blue.
2. Color the longest line red.
3. Which line is longer A or B? _________
4. Which line is longer D or F? _________
5. Which line is shorter D or E? _________
6. Which line is shorter A or C? _________
7. Which line is the longest A, B, or C? _________
8. Which line is the shortest D, E, or F? _________
Measuring Different Objects

The unit I used to measure is a ____________________.

1. I measured a ____________________.

   Picture:

   It was ____________________ long.

2. I measured a ____________________.

   Picture:

   It was ____________________ long.
3. I measured a _______________________.
   Picture:

   It was _______________________ long.

4. I measured a _______________________.
   Picture:

   It was _______________________ long.
Descriptive Narrative

In order to contextualize this lesson, the teacher activated background knowledge by reviewing the homework assignment from the previous lesson. The teacher used visuals—the manipulatives or units that they were going to use to measure. She wrote the word on a chart and drew a picture of the unit. She also held up or pointed to an example of the real object. The teacher modeled instruction so the students knew what to do and what was expected of them.

In order to make written text comprehensible, the teacher drew the pictures to go along with the words and also had the students draw the pictures of the objects to be measured (desk, sentence strip, dry-erase board, nametag). The teacher highlighted certain key words and used color ink to represent color words. The teacher developed vocabulary with a review exercise using the terms from the previous lesson (longer, shorter, longest, shortest).

To make talk more comprehensible the teacher talked at a slower pace, repeated important ideas, and framed main ideas by writing on chart paper.

To engage the students, the teacher had them actively participating throughout the lesson. They used the previous homework assignment as a means of discussion, they completed a worksheet to review previous vocabulary, they were involved in hands-on activities which required them to measure real objects, they worked with a partner and had small group discussions, and they concluded by sharing their ideas about the task of using different standard units to measure. Throughout the lesson and discussions the teacher was always prompting them with some questions.
Sheltered ELL Strategies used in Lesson 2

1.1 a Visuals

1.1 b Model

1.2 Activate background knowledge

2.2 Develop Vocabulary

2.3 Simplify Written Text

3.2 Frame main ideas

3.3 Pace teacher’s speech

4.1 Teacher questioning and response strategies

4.2 Small group work

4.3 Meaningful real-life activities

5.1 Use questions appropriate for varying levels

5.2 Real oral and written language
Lesson 3
<table>
<thead>
<tr>
<th>Function</th>
<th>Situation</th>
<th>Formula</th>
<th>Grammar</th>
<th>Vocabulary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recall</td>
<td>What was previously learned.</td>
<td>When we measure __________. When we measured __________. We needed __________.</td>
<td>Present tense</td>
<td>Measure</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Yesterday I measured using __________.</td>
<td>Past tense</td>
<td>Left</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Right</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Units</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Close together</td>
</tr>
<tr>
<td></td>
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<td></td>
<td>Far apart</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Same results</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Different results</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Shorter</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Longer</td>
</tr>
<tr>
<td>Predict</td>
<td>How linking cubes are different from previously used units.</td>
<td>The linking cubes are different because __________.</td>
<td>Present tense</td>
<td>Linking cubes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Different</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Link/Snap together</td>
</tr>
<tr>
<td>Identify/</td>
<td>4 objects being measured</td>
<td>I measured a __________.</td>
<td>Nouns</td>
<td>Desk</td>
</tr>
<tr>
<td>Illustrate</td>
<td></td>
<td></td>
<td></td>
<td>Nametag</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Sentence strip</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Dry-erase board</td>
</tr>
<tr>
<td>Measure</td>
<td>4 objects</td>
<td>Counting units as you measure “one, two, __________.”</td>
<td>Numerals</td>
<td>Numbers</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Count</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Measure</td>
</tr>
<tr>
<td>Record and</td>
<td>Recording results</td>
<td>“It was __________ long.”</td>
<td>Numerals</td>
<td>Record</td>
</tr>
<tr>
<td>Label</td>
<td></td>
<td></td>
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<td>Label</td>
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<td>Results</td>
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<td></td>
<td>Long</td>
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<td></td>
<td></td>
<td></td>
<td>Linking cubes</td>
</tr>
<tr>
<td>Compare</td>
<td>Results in groups</td>
<td>“It was __________ long.” “I used __________ linking cubes to measure it.” “Our answers were the same/different because __________.” “My desk was the same/different size as Bob’s.”</td>
<td>Past tense</td>
<td>Numbers</td>
</tr>
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<td></td>
<td>Long</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Linking cubes</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td>Measure</td>
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<td>Same</td>
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<td></td>
<td>Size</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Answers</td>
</tr>
<tr>
<td>Summarize</td>
<td>Ideas about using a standard unit.</td>
<td>When we all used the same standard unit</td>
<td>Past tense</td>
<td>Standard unit</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Linking cubes</td>
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<tr>
<td></td>
<td></td>
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<td>Results</td>
</tr>
</tbody>
</table>
Lesson 3

Modified

Objectives: The students will enhance their understanding of measurement with the use of a class standard unit to quantify lengths of objects.

All students will:
- Learn how to measure using a standard unit (linking cubes).
- Record their results.
- Label the unit used to measure (linking cubes).
- Compare results in group discussion.

Most students will:
- Recognize that measurements are more similar when the same standard unit is used by all.
- Learn more about the factors that effect measurement.

Some students will:
- Predict why the linking cubes are different from the other units previously used and why this is good.
- Demonstrate how to measure an object using the linking cubes.

Materials:

Worksheet “Measuring”
Linking cubes (about 40 for each pair of students)

Worksheet "Measuring with Linking Cubes"

4 different objects to measure (desk, nametag, dry-erase board, sentence strip)

Chart paper

Markers

**Strategies:**

1. To activate prior knowledge, review what has been previously learned with worksheet "Measuring".
   - Give the students the worksheet so they can follow along and read with you. The teacher must read the questions orally so that the ELLs can hear what is being asked. She can use gestures (example: point to the left and right) or draw pictures to go along with the written text (example: draw an arrow pointing to the left next to the word “left” or draw units close together and far apart to demonstrate this concept).
   - Example:
     a. When we measure we start on the _________.
        - left <
        - right >
     b. When we measure the units should be _____________.
        - far apart - - - -
        - close together ____________

2. Tell students that today they will be measuring the same four objects as yesterday (desk, nametag, sentence strip, dry-erase board).
- Point to the word with related picture on the chart from yesterday.
- Repeat the four words pointing to or holding up the real objects.
- Be sure that you do use the same four objects so that ELLs are becoming more familiar with them and can recognize them.

3. Review the units that the students used to measure with yesterday.

- "Yesterday we used different units to measure with." "Each pair of students used a different unit." "What were the different units you used?" (Speech is simplified with the repetition of key words.)

- Start off the sentence with the proper formula and write this formula on the board for students to see and refer to. "Yesterday I measured using _________________."

- Go around the room and have everyone share what they used yesterday.

4. Tell the students that today they will be measuring using linking cubes.

- Hold up the cubes for the students to see and write the word "Linking Cubes" on the board or chart paper.

- Give each pair of students about 40 cubes to look at, touch, and hold.

- Ask the students "How are the linking cubes different from the units we used yesterday?" "What can we do with the cubes that we could not do yesterday?"

Try to elicit the response that the cubes could be linked/snapped together so that the units are placed close together. Demonstrate how to snap the cubes together and have the students practice snapping the cubes.

- Model how to measure an object using the linking cubes so that the students see what is expected of them. You may have some students come up and demonstrate how to measure something using the cubes to reinforce/clarify expectations.
5. Giving each student a worksheet “Measuring with Linking Cubes.” Students will each get their own worksheet, but they will be working with a partner to measure (the students will work with the same partner as yesterday). As students are working the teacher should walk around and act as a monitor/guide.

- Once again show the students the four objects they will be measuring (pointing to the object and repeating the word).

- Students will once again complete a sentence to identify what is being measured. Example: “I measured a _________.”

- Students will draw a picture of this object to serve as a visual.

- Students will measure the objects with their partner (Students will work with a partner so they can help each other and learn from each other).

- Students will record their results being sure to label the unit they used to measure “linking cubes”. Example: “It was 8 linking cubes long.”

6. The students will work in groups of 6 (the same groups as yesterday) to compare their results and discuss the similarities/differences in their answers.

- The teacher should listen to discussions and prompt students with questions.

Example: “Why do you think your answers were the same today when they were different yesterday?” or at a lower level “Is you desk measurement (point to desk) the same as Bob’s (point to Bob)’?”

If the students answers are different have them remeasure the objects, showing you how they got the answers. Guide them to correctly measure the objects so that they do get the same answers.
7. The students will come together for a whole class discussion and share their ideas about using a single standard unit of measurement.

- On a chart paper write the heading “Using a Single Standard Unit of Measurement” - Draw a linking cube next to this heading so that there is a visual representation.

- Ask the students “What happened when we all used the same unit to measure?” What happened when we all used linking cubes to measure?” “Were are results the same or different when we all used the same unit?” “Did we get the same answers when we all used linking cubes?” (These questions are similar, being repeated in various ways but stressing key vocabulary).

- Students will share their responses with the formula (written under the heading)

  “When we used the same standard unit to measure ____________.”
Measuring

1. When we measure we start on the ____________.
   left
   right

2. When we measure the units should be ________________.
   far apart
   close together

3. When we measured with different units we _____________.
   got the same results
   got different results

4. We needed to use more toothpicks than pencils to measure the desk
   because ____________________________.
   toothpicks are shorter
   toothpicks are longer

5. We needed to use less pencils than q-tips to measure the nametag
   because ________________________.
   pencils are shorter
   pencils are longer
Measuring with Linking Cubes

The unit I used to measure is a ____________________.

1. I measured a ____________________.

Picture:

It was ____________________ long.

2. I measured a ____________________.

Picture:

It was ____________________ long.
3. I measured a ____________________.

Picture:

It was ____________________ long.

4. I measured a ____________________.

Picture:

It was ____________________ long.
Descriptive Narrative

I order to contextualize this lesson, the teacher once again activated background knowledge by reviewing what was previously learned. The teacher used visuals. (Realia—the actual objects were pointed to in addition to a picture being drawn of them. Manipulatives—hands on experimenting using the linking cubes to measure. And gestures—pointing to objects using hands to demonstrate concepts). The teacher also modeled expectations in addition to given oral instruction. This was a way for the students to see what was expected in addition to hearing the oral language.

To make text comprehensible, the teacher simplified the text using pictures to demonstrate a word or idea. She also developed vocabulary by using the same sentence formulas repeatedly.

To make talk more comprehensible, the teacher talked at a slower pace, giving the students a chance to process information. She repeated ideas, enforcing key vocabulary. She framed the main ideas by writing them on chart paper and also by writing expected formulas on the chart.

The teacher engaged the students at all times. They actively participated in discussions with a partner, in small groups, and as a whole class. The students were actively involved doing a hands-on, real-life activity when measuring. The teacher asked questions and elicited responses from the students.

The teacher engaged the students at appropriate language levels using varied forms of questions to involve all students in the discussion. Although all students completed the same tasks, the tasks were easy for the students to follow along, especially since they had a partner to work with.
There was both literacy and academic development with lots of real oral and written language. The students were allowed, as always, to use their native language to help them grasp ideas and share their thoughts.

Sheltered ELL Strategies used in Lesson 3

1.1a Visuals

1.1b Model

1.2 Activate background knowledge

2.2 Develop vocabulary

2.3 Simplify written text

3.2 Frame main ideas

3.3 Pace teacher’s speech

4.1 Teacher questioning and response strategies

4.2 Small group work

4.3 Meaningful real-life activities

5.1 Questions appropriate for language levels

5.1 Allow use of L1

5.2 Lots of real oral and written language
Lesson 4
<table>
<thead>
<tr>
<th>Function</th>
<th>Situation</th>
<th>Formula</th>
<th>Grammar</th>
<th>Vocabulary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discuss</td>
<td>Advantages and disadvantages of units</td>
<td>“An advantage of measuring with your feet is ______.”</td>
<td>Present Tense</td>
<td>Advantage Disadvantage</td>
</tr>
<tr>
<td>List</td>
<td>On a graphic organizer</td>
<td>Advantages Disadvantages</td>
<td>Present Tense</td>
<td>Advantages Disadvantages Feet Pencils Toothpicks Q-tips Linking Cubes</td>
</tr>
<tr>
<td>Identify and Illustrate</td>
<td>Objects that you are measuring</td>
<td>“I measured a ______.”</td>
<td>Past Tense Nouns</td>
<td>Measured Crayon box Popsicle stick Book New pencil</td>
</tr>
<tr>
<td>Record and Label</td>
<td>Recording results</td>
<td>“It was ______ long.”</td>
<td>Numerals Noun (label – cubes)</td>
<td>Record Results Cubes Long</td>
</tr>
<tr>
<td>Compare/</td>
<td>Results in a group Advantages and Disadvantages</td>
<td>“It was _____ long.”</td>
<td>Comparisons</td>
<td>Numbers Longer Shorter Advantages Disadvantages Easier Harder</td>
</tr>
<tr>
<td>Discuss</td>
<td>The best unit to measure in real life</td>
<td>“Using a ______ to measure is the best because ______.”</td>
<td>Present tense</td>
<td>Using Measure Best Easy</td>
</tr>
</tbody>
</table>
Lesson 4

Modified

Objectives: Students will make a measuring strip and experiment measuring with it.

All students will:
- Review units of measurement previously used and make a graphic organizer.
- Make their own measuring strip.
- Measure objects using the measuring strip.
- Record and label results.
- Compare results in group discussions.

Most students will:
- Recognize the advantages and disadvantages of previously used units.
- Share their thoughts about using a measuring strip.

Some students will:
- Demonstrate how to measure using the measuring strip.
- Link this experience to a real life situation and draw a conclusion about the best unit to measure.

Materials:
Chart paper
Markers
Graphic Organizer "Advantages and Disadvantages of Measuring Units"

Overhead projector

Paper measuring strip – one per student

Crayons

Four short objects – new pencil, crayon box, popsicle stick, small book (Rigby book)
- one of each object per pair of students

Worksheet "Using a Measuring Strip"

Homework sheet "Measuring Things In My House"

Strategies:

1. To activate background knowledge discuss the advantages and disadvantages of each of the previously used measuring units.

   - "What are some of the units we used to measure with?" List responses on the board and draw a picture next to each word. Once all five units are listed, point to each one and have the students repeat the word.

   - Tell the students that there are some advantages and disadvantages to using the different units. Make talk comprehensible by repeating important words to express the ideas of advantages and disadvantages.

   Example: "There are some advantages or positive things about using the unit. There are some disadvantages or negative things about using the units. There are some good things about using the units, these good things are the advantages (gesture with thumbs up or showing a picture of a happy face). There are also some bad things about using the units, these bad things are the disadvantages (gesture with a thumbs down or showing a picture of a sad face)."
- Ask the students “What are some of the advantages or good things about using your feet to measure?” (show thumbs up and point to the word and picture of feet on the board.) Provide the formula for an oral response “An advantage for measuring with your feet is __________________.”

- Use the same strategies for finding the advantages and disadvantages of each object.

- Once all ideas have been shared orally, pass out a graphic organizer to each student “Advantages and Disadvantages of Measuring Units”. The teacher should have the same page shown on an overhead. Go back and repeat some of the good points made about the advantages and disadvantages and write them on the graphic organizer. The student can copy what you write onto their papers/

****You may modify the graphic organizer by having a picture under each main word.

Example: Under the word feet have a picture of feet, under the word pencil have a picture of a pencils, under the word advantages have a picture of a happy face, etc. These visuals will help the students to gain a better understanding. Also, you may want to give some students a copy of the organizer already filled out, or partially filled out.

2. Show the students a paper measuring strip. Tell the students that today they will be using a measuring strip to measure four different objects. Write the word “Measuring Strip” on the board and draw a picture of one. Also hold up the strip and have the students repeat the word after you.

3. Each student will make a measuring strip, coloring it in an AB pattern – Example: red, blue, red, blue, etc. Model how this should be done – Students should color one square at a time as you color them in.
4. Tell the students that today they will be using the measuring strip to measure four different objects - a pencil, crayon box, popsicle stick, and a book.
   - Write these new objects on the board and draw a picture next to each one. Have the students repeat the word. Also use realia by holding up each object and repeating the word again.

5. Model how to measure using the measuring strip. Since the strip looks similar to linking cubes, the students will label their answers using “cubes.” Have some students come up and demonstrate how to measure using the strip.

6. Give each student a worksheet “Using a Measuring Strip”. Students will once again work with the same partner (unless you see the need for change) to measure the four new objects.
   - Students will once again complete the sentence to identify what is being measured.
     “I measured a ______________.” The words with pictures should be on the board for them to refer to.
   - Students will draw a picture of the object to serve as a visual.
   - Students will work with their partner to measure.
   - Students will record results being sure to label the unit they used “cubes.”
     “It was 5 cubes long.”

7. In a group of 6, have the students compare/share their results. Provide them with some formulas to use in discussion. Prompt them with discussion as needed.
   “The popsicle stick was ____________ long.”
   “The crayon box was ____________ long.”
   “The book was ____________ long.”
"The new pencil was __________ long."
"The pencil was longer/shorter than the book."
"The popsicle stick was longer/shorter than the crayon box." ETC

8. The students will share their thoughts/conclusions about using a measuring strip. On top of a chart write "Using a Measuring Strip."
- Guide the students with some questions.
- Example: "What are some of the advantages or good things about using the strip?"
  "What are some of disadvantage or bad things about using the strip?"
  "Which is easier to use, the strip or the linking cubes?"
  "It is easier to use __________ because ________________.

Relate to the real world: Only some higher level students will be able to understand this and try to solve the problem. You may work with them in a small group to discuss their ideas.

"I am going to need a new rug. I will measure the size I need and then have to go to the store and measure the piece myself. Which unit will be the best to use? Which unit will give me the most correct results? Which unit is the easiest to carry with me to the store? Why do you think so?"
Homework:

Students will complete worksheet “Measuring Things In My House”

Students will take home their measuring strip home and measure the four items listed.

For some students draw a picture to go along with the item to be measured. For example

“A fork is _______________ cubes long.” Draw a fork under the word “fork”.

Also, model an example for the students so they know what to do at home.
<table>
<thead>
<tr>
<th></th>
<th>Feet</th>
<th>Pencils</th>
<th>Toothpicks</th>
<th>Q-tips</th>
<th>Linking Cubes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Advantages</strong></td>
<td></td>
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<td></td>
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<tr>
<td><strong>Disadvantages</strong></td>
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</tr>
</tbody>
</table>
Measuring Strip
Using a Measuring Strip

The unit I used to measure is a ____________________.

1. I measured a ____________________.

Picture:

It was ____________________ long.

2. I measured a ____________________.

Picture:

It was ____________________ long.
3. I measured a ____________________________.

Picture:

It was ____________________________ long.

4. I measured a ____________________________.

Picture:

It was ____________________________ long.
Measuring Things In My House

Measure the four objects using your measuring strip and record your results.

1. A fork is ____________ cubes long.

2. A pen is ____________ cubes long.

3. A telephone is ____________ cubes long.

4. A picture frame is ____________ cubes long.

*We label with the word “cubes” because our measuring strip looks like linking cubes.
Descriptive Narrative

In order to contextualize this lesson, the teacher used visuals. She wrote key words on the board and drew a picture to match the word. She also used realia and pointed to real objects. The teacher modeled what was expected before the students engaged in an activity. She also had some students demonstrate to present the expectations more clearly. The teacher activated background knowledge in discussing the advantages and disadvantages of the units previously used to measure with.

The teacher made text comprehensible in various ways. She developed key vocabulary by writing various concepts on the board or on chart paper. She simplified some written text by drawing pictures next to key or important words.

The teacher made talk comprehensible by framing main ideas on chart paper. She also had the students create a graphic organizer stating the advantages and disadvantages of the units. The teacher at all times adjusted the rate of her speech and used repetition to highlight important ideas. She also used simpler vocabulary to get the ideas across.

The students were once again actively engaged in this lesson. The teacher asked questions and used strategies to elicit responses. She listened to the students' ideas and also repeated the good or correct ideas. The students worked in pairs and in small group discussions. The teacher served as a monitor and prompted them with questions to guide their discussions. The students participated in a real life activity of measuring and recording their results.

The teacher engaged appropriate language levels in varying the questions she asked of individual students. She also tapped into higher level skills with the students who need to be challenged.
The teacher promoted literacy development with lots of real oral and written language. The students were allowed to use their L1 when needed as is almost always the case in this class.

Sheltered ELL Strategies Used in Lesson 4

1.1a Visuals
1.1b Model
1.2 Activate background knowledge
2.2 Develop vocabulary
2.3 Simplify written text
3.1 Graphic organizer
3.2 Frame main ideas
3.3 Pace teacher’s speech
4.1 Teacher questioning and response strategies
4.2 Small group work
4.3 Meaningful real-life activities
5.1 Use questions appropriate for language levels
5.1 Allow use of L1
5.2 Lots of real oral and written language
Lesson 5
<table>
<thead>
<tr>
<th><strong>Function</strong></th>
<th><strong>Situation</strong></th>
<th><strong>Formula</strong></th>
<th><strong>Grammar</strong></th>
<th><strong>Vocabulary</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Recall</td>
<td>Ideas they had in lesson one for ways to measure</td>
<td>“I can measure with a ____.”</td>
<td>Present Tense</td>
<td>Measure</td>
</tr>
<tr>
<td>Recognize</td>
<td>A ruler and what is on a ruler.</td>
<td>“On the ruler I see ____”</td>
<td>Present Tense</td>
<td>Ruler</td>
</tr>
<tr>
<td>Count</td>
<td>Pointing to numbers on the ruler</td>
<td>“One inch, two inches, three inches, _____”</td>
<td>Numerals Plural</td>
<td>Numbers</td>
</tr>
<tr>
<td>Identify and Illustrate</td>
<td>Objects being measured</td>
<td>“I measured a ______.”</td>
<td>Past Tense Nouns</td>
<td>Measured</td>
</tr>
<tr>
<td>Measure</td>
<td>4 objects using a ruler</td>
<td>“One inch, two inches, three inches, ....”</td>
<td>Counting Numerals</td>
<td>Numbers</td>
</tr>
<tr>
<td>Record and Label</td>
<td>Recording Results</td>
<td>“It was _____ inches long.”</td>
<td>Numerals Noun (label – inches)</td>
<td>Record Results</td>
</tr>
<tr>
<td>Discuss/Compare</td>
<td>Comparing results in a group</td>
<td>“It was _____ long.” “The pencil was longer/shorter than the book.”</td>
<td>Comparisons</td>
<td>Numbers Longer</td>
</tr>
<tr>
<td>Summarize</td>
<td>Ideas about using a ruler</td>
<td>“When I used the ruler ____”</td>
<td>Past tense</td>
<td>Easy Same results</td>
</tr>
<tr>
<td>Conclude</td>
<td>A solution for the characters in the story</td>
<td>“Kate and Marcus could ______”</td>
<td>Modals -could</td>
<td>Could Solution</td>
</tr>
</tbody>
</table>

Lesson 5

Modified

Objectives: Students will learn how to measure in inches using a ruler.

All students will:
- Be introduced to a standard measuring tool – the ruler
- Measure objects using the ruler
- Record their results
- Label the unit used to measure “inches”
- Compare results in a group

Most students will:
- See the importance of using a standard unit of measurement
- Recognize the importance of using a ruler

Some students will:
- Demonstrate how to measure using the ruler
- Make a conclusion to solve the characters’ problem in “The Very Big Umbrella”

Materials:
Chart paper
Markers
Worksheet – “Measuring in inches”
4 objects to measure – new pencil, crayon box, popsicle stick, small book (one per each pair of students)

Story – “The Very Big Umbrella” (in lesson 1)

Strategies:

1. To activate background knowledge, have the students refer to the list of ideas they created in lesson one. “I can measure with a ________.”

   - If the idea of using a “ruler” is on that chart circle it. If nobody mentioned it before, add the word to the chart and draw a picture of a ruler. Tell the students, using simplified speech, gestures, and repetitions that today that will be using the ruler to measure objects.

   Example: “Today we will use a ruler to measure some objects.” (Point to the word and the picture) “Repeat after me ‘ruler’”. (Students will say the word). Use realia – hold up the ruler and say “This is a ruler. We can use the ruler to measure.”

2. Give each student a ruler (inches only) to look at. “What do you see on the ruler (point to your eyes and then the ruler). “On the ruler I see __________.” Write students responses on a chart paper using this formula. You may draw symbols next to their responses. Example: “On the ruler I see numbers.” 1, 2, 3,

   “On the ruler I see lines.” _______ _______

   “On the ruler I see letters.” Inch

   - Remind the students that when we measure we start on the left, we count the units, and we label our answers. Again use gestures – point to the left and use fingers to demonstrate counting. Give examples of labeling answers “It is 4 ‘feet’ long.” “Is it 8
Tell the students that when they use the ruler to measure (hold up the ruler) they label the units using “inches.” Write the word “inches” on the board and have the students repeat it after you.

Tell the students that each number is one inch. Demonstrate pointing to the numbers on the ruler and saying “one inch, two inches, three inches, four inches, five inches” etc. Have the students point to their ruler and say the same thing so they are practicing counting and using the new unit “inches.”

3. Tell the students that today they will be measuring the same four objects as yesterday. Example: “Today you will use your ruler (hold up the ruler) to measure a new pencil, a popsicle stick, a book, and a crayon box. (Point to the words and pictures on the board or chart.) Repeat holding up each object as the word is said - realia. “You will measure a new pencil, a popsicle stick, a book, and a crayon box.”

4. Model how to measure using the ruler so that the students see what is expected. “It is 4 inches long.” Also, have some students come up and demonstrate how to measure using the ruler and saying the formula “It is 6 inches long.”

5. Give each student a worksheet “Measuring in Inches.” Students will once again work with a partner to measure the four objects, but they will each have their own recording sheet. The teacher will walk around the room as monitor the students at work. She may guide the students who need assistance and praise the students who are successfully completing the task.
- Students will identify what is being measured "I measured a __________." The words and pictures should still be on the board as a reference.
- Students will draw a picture of the object to serve as visual.
- Students will work with a partner to measure.
- Students will record their results being sure to label the unit used "inches"
  "It is 9 inches long."

6. In a group of six, the students will compare/discuss their results. The teacher should provide them with some formulas to use in discussion.
  "The crayon box was __________ long."
  "The popsicle stick was longer/shorter than the book."
- As the students are discussing, the teacher should prompt them using vocabulary that is sensitive to individual levels.

7. The students will come together for a class discussion. They will share their ideas about using a ruler to measure. The teacher should frame the main idea by writing, "Using a Ruler" on the top of chart paper. She should start with the formula "When I used the ruler __________" and record the students' ideas/responses on the chart paper.

8. Reread "The Very Big Umbrella." The students already listened to this story and should be familiar with the main idea. Still give some students a copy of the text with important ideas/words highlighted and with the pictures for them to look at.
- To tap into higher level thinking skills, ask the students "What could Kate and Marcus have used to measure the box and umbrella instead of using their feet." What would have been a better unit of measurement." "Which unit did we use that might
be helpful to Kate and Marcus.” Elicit a conversation that guides the students to conclude that the ruler is a good unit of measurement.

- Have some students come up and measure the umbrella using the ruler (because the umbrella is bigger than the ruler and the students have not yet learned the process of iteration you may have to help them when moving the ruler).

“The umbrella is ___ inches long.”

Have several students do this to show that when we use a standard unit (ruler) we get the same results.

Again challenge some higher level student, “If the umbrella is ___ inches long, how long does the box need to be?”

**Homework:**

Students are to complete the worksheet “Measuring with a Ruler at Home.”

Give students a ruler to take home and borrow. Model an example for the students so they know what is expected of them. For some students you may need to draw a picture of the objects to be measured under the words so they have a visual to help them. You may also wish to highlight key words.

Example “A frame is ___________ long.”

“A frame is ___________ than a pen.”   Longer   Shorter
Measuring in Inches

The unit I used to measure is a ____________________.

1. I measured a ____________________.

Picture:

It was ____________________ long.

2. I measured a ____________________.

Picture:

It was ____________________ long.
3. I measured a __________________________.

Picture:

It was __________________________ long.

4. I measured a __________________________.

Picture:

It was __________________________ long.
Measuring with a Ruler at Home

Measure the four objects using your measuring strip and record your results.

1. A fork is ______________ inches long.

2. A pen is ______________ inches long.

3. A telephone is ______________ inches long.

4. A picture frame is ______________ inches long.

*We label with the word “inches” because we are using a ruler with a unit of “inches”.*
Descriptive Narrative

The teacher contextualized the lesson by activating background knowledge – referring to the ideas the students presented in the first lesson of this unit. The teacher used visuals – holding up objects including the ruler, used pictures to represent words, gestured by pointing to objects, using her fingers to demonstrate counting, pointing to her eyes to represent “see”. The teacher also modeled expectation to the students and had other students also demonstrate how to measure using the ruler.

Text was made comprehensible by using pictures to represent words and highlighting key words. The teacher developed vocabulary in providing the students with examples and formulas to begin their sentences.

Talk was made comprehensible by the way the teacher paced her speech. She used repetition, slow speech rate, and simplified vocabulary. The teacher framed the main ideas by writing them on the board or on chart paper.

The students were actively engaged at all times. They participated in discussions prompted by the teacher’s questions. The students worked with partners and in small groups. They participated in a real-life hands-on activity. Higher level students were challenged to think and make conclusions to further their understanding.

Appropriate language proficiencies were addressed. The teacher asked questions at levels that were comprehensible to individual students. Literacy and academic development were fostered with lots of real oral and written language. The students were once again allowed to use L1 when needed to express their thoughts and understanding.
Sheltered ELL Strategies Used in Lesson 5

1.1a Visuals

1.1b Model

1.2 Activate background knowledge

2.2 Develop Vocabulary

2.3 Simplify written text

3.2 Frame main ideas

3.3 Pace teacher’s speech

4.1 Teacher questioning and response strategies

4.2 Small group work

4.3 Meaningful real-life activities

5.1 Use questions appropriate for language levels

6.1 Allow use of L1

6.2 Lots of real oral and written language
Original Lessons
Lesson 1

Original (before modifications)

- Students will learn how to measure using a nonstandard unit.
- They will make a graph to compare the lengths.
- They will begin to see that nonstandard units produce varied results.

STRATEGIES

1. Explain that long ago people didn’t have measuring tools so they used their feet.
2. Students will work with a partner to measure five feet of adding machine tape.
3. Students will make a graph using their pieces of tape and we will compare the results.
4. Read “The Very Big Umbrella”. Ask comprehension questions, which lead the students to conclude that using feet is not a good unit of measurement.
Lesson 2

(Original – before modifications)

- Students will use different sets of standard units to measure.
- Students will see the importance of labeling the unit used for measuring.
- Students will record their results and compare them in small group discussions.

STRATEGIES

1. Review what students have learned.

2. Students will be measuring four different objects (desk, nametag, dry erase board, and sentence strip).

3. Students will measure the objects using pencils, spools, or toothpicks as a unit of measurement.

4. Students first make a prediction and then measure the objects and record their results.

5. Students once again compare their results and discuss similarities/differences.

6. Students will share their ideas about using different units to measure.
Lesson 3

(Original – before modifications)

- Students will enhance their understanding of measurement with the use of a class standard unit to quantify lengths of objects.

- Students will use a standard unit and learn more about the factors that affect measurement.

- Students will recognize that measurements are more similar when the same standard unit is used by all and that it is easier to compare results.

STRATEGIES

1. Review important concepts.

2. Show students lining cubes and discuss how they are different from other units they have used.

3. Students will predict and measure using the linking cubes.

4. Students will discuss and compare results.

5. Students will share their ideas about using a single standard unit to measure.
Lesson 4

(Original – before modifications)

- Students will discuss the advantages/disadvantages of the different measuring tools they have previously explored with.
- Students will make a measuring strip and experiment measuring with it.
- Students will discuss their thoughts about using the strip.

STRATEGIES

1. Review units of measurement previously used.
2. Students will make their own measuring strips.
3. Students will predict and measure four objects using the strip.
4. Students will discuss and compare their results in small groups.
5. Students will share their ideas about using the measuring strip.
Lesson 5

(Original – before modifications)

- Students will be introduced to a ruler.
- Students will measure objects using a ruler in inches.
- Students will discuss their thoughts about using a ruler.
- Students will recognize the importance of having a standard unit to measure and the advantages of using a ruler.

STRATEGIES

1. Students will review what they have learned.
2. Students will be introduced to the ruler.
3. Students will predict and measure lengths of lines using a ruler.
4. Students will discuss and compare results.
5. Students will share ideas about the importance of a ruler and its advantages.
6. Reread “The Very Big Umbrella”. Students will see how the ruler would have been helpful from the beginning.
Checklists
FLA 518: TAT Sheltered ELL Strategies Checklist

Write the PAGE NUMBERS and any other identifying features to identify those parts of your lessons that employ the following strategies.

<table>
<thead>
<tr>
<th>Lesson</th>
<th>Lesson</th>
<th>Lesson</th>
<th>Lesson</th>
<th>Lesson</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Contextualize Lesson</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.1.a Visuals (Realia, Manipulatives, Gestures)</td>
<td>7, 9, 10</td>
<td>23, 24</td>
<td>34, 35, 36, 37</td>
<td>44, 47</td>
</tr>
<tr>
<td>1.1.b Model (Instructions, Processes)</td>
<td>8, 9, 10</td>
<td>23</td>
<td>35</td>
<td>47, 48</td>
</tr>
<tr>
<td>I. 2. Activate Background Knowledge</td>
<td>7</td>
<td>22</td>
<td>34</td>
<td>40</td>
</tr>
</tbody>
</table>

| II. Make Text Comprehensible | | | | |
| II.1. Graphic Organizers | | | | |
| II.2. Develop Vocabulary | 9, 10 | 22, 23, 24 | 35, 37 | 40, 47 | 48 | 63, 64 |
| II. 3. Simplify Written Text | 9 | 22, 34 | 47, 50 | 63, 64 |

| III. Make Talk Comprehensible | | | | |
| III.1. Graphic Organizers; Listening Guides (checklists, etc.) | | | | 47 |
| III. 2. Frame Main Ideas | 7, 10 | 24, 35, 36, 37 | 40, 47 | 48, 49 | 61, 62, 63 |
| III. 3. Pace Teacher’s speech | 7 | 22, 35, 37 | 47, 48 | 61, 62 |

| IV. Engage: Opportunities for Output | | | | |
| IV.1. Teacher Questioning and Response Strategies; Instructional Conversations | 9 | 22, 24, 25 | 36 | 48, 49 | 63, 64 |
| IV.2. Small Group Work (including Information gap activities) | 8 | 23, 24, 35 | 48 | 62, 63 |
| IV.3. Meaningful, real-life activities; Students as researchers | 8 | 24 | 36 | 48 | 62, 63, 64 |

| V. Engage at Appropriate Language Proficiency Levels | | | | |
| V.1. Use questions appropriate for language levels | 9 | 22, 24, 25 | 36 | 48, 49 | 63, 64 |
| V.2. Assign appropriate tasks for varying levels | 10 | 25 | 48 | 62 |

| VI. Literacy/Academic Development | | | | |
| VI. 1. Allow use of L1 for planning and conceptualizing | | | | |
| VI. 2. Lots of real oral and written language | | | | |

* See the next page for details
<table>
<thead>
<tr>
<th>Function</th>
<th>Lesson</th>
</tr>
</thead>
<tbody>
<tr>
<td>Predict</td>
<td>1,3</td>
</tr>
<tr>
<td>Demonstrate</td>
<td>1</td>
</tr>
<tr>
<td>Measure</td>
<td>1,2,3,4,5</td>
</tr>
<tr>
<td>Graph</td>
<td>1</td>
</tr>
<tr>
<td>Compare/Discuss</td>
<td>1,2,3,4,5</td>
</tr>
<tr>
<td>Comprehend</td>
<td>1</td>
</tr>
<tr>
<td>Formulate Ideas</td>
<td>1</td>
</tr>
<tr>
<td>Summarize/Conclude</td>
<td>1,2,3,4,5</td>
</tr>
<tr>
<td>Answer Questions</td>
<td>2</td>
</tr>
<tr>
<td>Make Interpretations</td>
<td>2</td>
</tr>
<tr>
<td>Identify</td>
<td>2,3,4,5</td>
</tr>
<tr>
<td>Illustrate</td>
<td>2,3,4,5</td>
</tr>
<tr>
<td>Record and Label</td>
<td>2,3,4,5</td>
</tr>
<tr>
<td>Recognize</td>
<td>5</td>
</tr>
<tr>
<td>Recall</td>
<td>3,5</td>
</tr>
<tr>
<td>List</td>
<td>4</td>
</tr>
<tr>
<td>Count</td>
<td>1,2,3,4,5</td>
</tr>
<tr>
<td>Category</td>
<td>Numbers</td>
</tr>
<tr>
<td>---------------</td>
<td>-----------</td>
</tr>
<tr>
<td>Modals</td>
<td>1,5</td>
</tr>
<tr>
<td>Numerals</td>
<td>1,2,3,4,5</td>
</tr>
<tr>
<td>Adjectives</td>
<td>1,2</td>
</tr>
<tr>
<td>Past Tense</td>
<td>1,2,3,4</td>
</tr>
<tr>
<td>Nouns</td>
<td>2,3,4,5</td>
</tr>
<tr>
<td>Comparisons</td>
<td>2,4,5</td>
</tr>
<tr>
<td>Present Tense</td>
<td>3,4,5</td>
</tr>
<tr>
<td>Plural</td>
<td>5</td>
</tr>
</tbody>
</table>
Appendix
If you look throughout the pages of each lesson, you will see that the teacher is always developing vocabulary. She is talking, framing ideas/words on the board or chart paper, and providing the students with formulas to use when speaking.

Only some examples are given to show that the teacher paces her speech. Please be aware that at all times the teacher uses natural but slower speech, and she is sure to enunciate her words clearly. The teacher pauses in between phrases to allow the students an opportunity to process information. The teacher is constantly repeating herself and using vocabulary to get the main ideas across to the students.

Although it is not stated in the plans, the teacher does allow the students to use L1 when needed. They can use L1 to express their ideas and thoughts. In allowing the students to use L1, the teacher gets some sense of if they comprehend or not.

As you see throughout the lessons, the teacher uses lots of real oral and written language throughout each lesson. The teacher uses language in hopes that all the students will eventually begin to use the language as well.