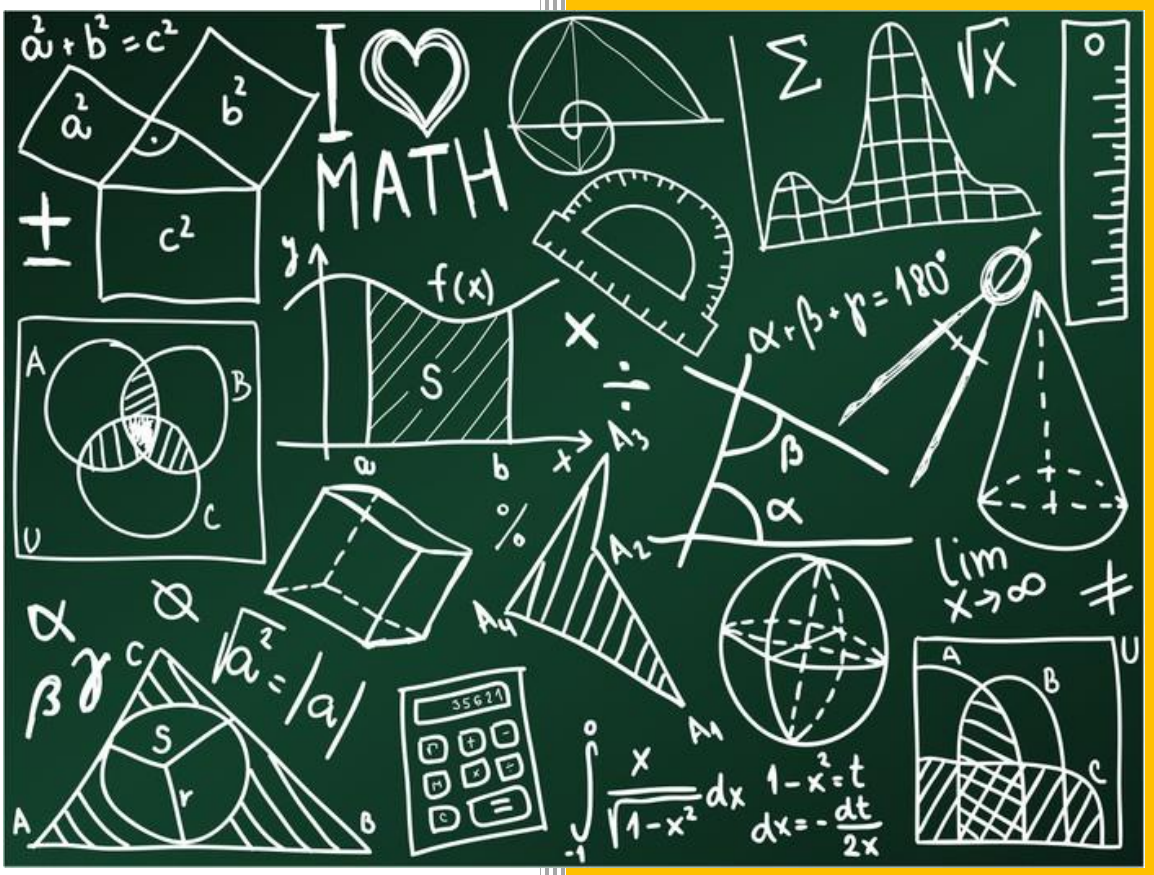
2018

TAT2 Task 3: Technology Integration Product



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Program Mentor: Adrianne Todd

Assessment Code: TAT2 Task 3

December 5, 2018

TAT Task 3: Technology Integration Product

Instructor's Manual

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Table of Contents

Unit Overview

This is a mathematical unit to meet the standards of measurements and data on using graphing to represent and interpret data. This is a seven to ten-day unit that students will identify different graphs, create graphs, analyze graphs, and complete a technology-based product of graphs.

Instructional Goal

Second grade students will be able to create different kinds of graphs by gathering data, creating class graphs, conducting surveys, using manipulatives to build bar graphs, and use a technology based online bulletin board to post their developed graphs while demonstrating a 25% growth measured in NWEA Growth MAP Data.

Audience

The unique characteristics about the learners is that they attend a Charter School that is Math, Science, and Technology based instruction. The charter school is a free public school that the students are chosen by a lottery system to attend. The primary grade campus is specifically for kindergarten, first, second, and third graders only. Each classroom is a small classroom size of about twenty students. Each grade level has an advanced class and an enrichment class. The advanced classes teach at a grade higher than the assigned grade level continuedly all year. The enrichment classes begin teaching at a higher-grade level at mid-year. The school is unique in that it is a diverse culture. Students come from many countries and backgrounds. Ten percent of the students that attend the school are English Language Learners. Majority of the students are eager to learn and want to succeed.

Length

The instructional unit on graphs is over a span of six to seven days. Each unit is about ninety minutes long. The sixth lesson could be implemented over a span of two days. On the second day the students would be uploading their created graphs to the online bulletin board resource called Padlet.

Delivery Approach

Each lesson begins with a pre-instructional approach to gain students curiosity, attention, and to make connections to their own life experiences or previous lessons. Whole group activities begin the process of building graphs together and analyzing graphs. Some activities provide opportunities to work in collaborative groups and to use their communication skills by commenting on completed projects. The students are also encouraged to participate in surveys that gives them the chance to show their likes and dislikes. After building and creating graphs together the students will have the skills needed to work independently towards mathematical success.

Instructional Sequence

This unit contains six graphing lessons about 50 to 90 minutes each. The unit will take six days of instruction with additional days as needed for follow-through activities. The flow of each lesson begins with pre-instructional activities, content presentation, learner participation, then assessments. The first lesson is about identifying the different kinds of graphs of pictographs, bar graphs, pie charts, line graphs, tally charts, and line plot. The students will work collaboratively by matching the title of the graph to the correct mathematical product. For the second lesson a video from Brain Pop, Jr. will introduce the students to pictographs. The class will also complete an online quiz together to learn how to analyze pictographs data. The third

lesson is practice building pictographs on an online teaching resource called Khan Academy. After the students practice building pictographs digitally then they will use stickers to represent pictures on a printout. The fourth lesson is developing a class graph, collecting data, and representing data. The students will have a real-world experience of tasting their favorite apple then build a class pictograph using linking cubes to represent the data of the class developed graph. For the fifth lesson, students will use the online teaching resource again (Khan Academy) to building bar graphs digitally. For a documented assessment the students will then complete a bar graph using colored pencils to represent the data on a printout. The final lesson the students will conduct a survey, create a graph, then post their graphs on an online bulletin board posting site called Padlet.

Materials

The materials needed for the pre-instructional activities is examples of graphs, pictographs, and bar graphs. Math picture books such as *The Great Graph Contest* by Loreen Leedy and *Lemonade for Sale* by Stuart J. Murphy are used for the content presentation. The following items will also be used for the content presentations: chart paper, index cards, red, yellow, and green construction paper cut into small squares, apples of the colors red, green, and yellow, math manipulatives of linking cubes of the colors red, green, and yellow. Students will also need access to desktop computers for online bulletin board platforms, online learning resources, and videos. Learners will need supplies typically used in a second-grade classroom of scissors, colored pencils, stickers, whiteboards, and dry-erase markers for the learner participation. Worksheets and skill sheets will be used to record student progress and provide feedback.

Lesson Descriptions

Lesson 1 Graphing Components: This lesson is an introductory lesson to graphs. The students will be introduced to the different types of graphs. Different graphs will be displayed to show the difference between them and to name each graph. For the assessment the students will have to match the name of the graph with the correct mathematical represented picture.

Lesson 2 Pictographs: A video on pictographs from the Brain Pop, Jr. website introduces students to what pictographs are. After the video the teacher will guide the students in completing a digital quiz about pictographs. The assessment in the lesson the students analyze the data in a print-based pictograph.

Lesson 3 Building Pictographs: This lesson gives the students an opportunity to use technology to build pictographs that represent the data given. After building pictographs digitally, the students will be assessed by using stickers as manipulatives to build a print-based pictograph.

Lesson 4 Bar Graph Our Favorite Apple: The students engage in this lesson to use their senses to taste three different kinds of apples then choose their favorite apple. Once the students choose their favorite apple the class will construct a class graph to represent the data. Teacher will lead a discussion and model how to analyze the data on the class graph. For the assessment the students will use linking cubes to recreate the class apple graph.

Lesson 5 Building Bar Graphs: For this lesson the students are given another opportunity to create bar graphs digitally. The students will use an online learning resource to build the graphs. After building the bar graphs digitally the students will transfer their knowledge to creating a print-based bar graph for an assessment.

Lesson 6 Collecting Data: Once students have had opportunities to create pictographs and bar graphs together, they will begin to conduct surveys to collect data about their classmates. The students will then decide if they want to represent the data, they collected in a bar graph format or a pictograph. The students will create their graphs then post them on a digital bulletin board resource. This will encourage the students to be creative and to use communication skills by commenting on each other's graphs digitally.

Assessments

The learners will be assessed during whole group learning, small group collaborations, individual performance assessments, and a final project rubric assessment. The following is a list of assessments of how the learners will be assessed throughout the unit.

- Students will be assessed informally during content presentations. Students correctly identifying and chorally reading correct graphing components.
- Students will be assessed informally during content presentation. Students will correctly label graph components three or more times if needed correctly.
- Students will be assessed informally during content presentation. Students will label graph correctly after teacher labels the graph incorrectly. Students will correctly place labels on graph three or more times if needed correctly.
- Students will be assessed formally with correct labeling of graphs by worksheets.
- Students will be assessed formally with project-based rubric assessment.
- Students will be assessed summative by NWEA MAP

Performance Objective 1: Given class discussions of identifying different types of graphs and labeling parts of graphs with collaborative learning, the students will be given a worksheet to label the correct type of graph. Students will label and identify the different graphs of **pictograph, bar graph, line graph, pie chart, line plot, tally graph** to the correct graph with 90% accuracy.

Assessment for Objective 1: Use Assessment #1 document to assess the students on six different types of graphs. The students should be able to write the correct title to each graph.

- Assessment #1 Types of Graphs worksheet attached

Performance Objective 2: Given a video presentation of pictographs and a whole group digital pictograph quiz discussion, the students will be given a worksheet answering questions about a picture graph with 90% accuracy.

Assessment for Objective 2: After watching the Brain Pop Jr. video on Pictographs guide the students throughout the digital video quiz on pictographs. Check for understanding of correct analyzing of pictographs throughout the quiz. The students will then be assessed individually using Picture Graphs document.

- Brain Pop Pictographs Quiz:
    - Access the following website: www.jr.brainpop.com
    - Login using the following access code:
        - Username: caslv
        - Password: coral8185
    - Click the pink Math tab
    - Then click the Data tab
    - Click the Pictographs tab
    - Play the Pictographs video
        - https://jr.brainpop.com/math/data/pictographs/
    - After the video click the Easy Quiz tab for whole group quiz
        - https://jr.brainpop.com/math/data/pictographs/easyquiz/
- Assessment #2 Picture Graphs worksheet attached

Performance Objective 3: Given an online video presentations of bar graphs and pictographs the students will complete an online quiz with 5 out of 7 questions for mastery. The students will use stickers to create a pictograph of data given on a worksheet with 3 out of 4 columns correctly representing the given data.

Assessment for Objective 3: For the first assessment the students complete an online practice of building pictographs from Khan Academy. The students practice building seven graphs with the data given. The second assessment the students apply their digital practice to building pictographs on a printed document.

- Khan Academy Practice Quiz:
    - Access the following website: www.khanacademy.com
    - Have students click 'Learners Start Here' button
    - Then have then click '2nd Grade' in the Math by Grade tab
    - Click the blue Measurement, Data, and Geometry tab
    - On the left of the screen use the scroll bar to find the topic Picture Graphs
    - Then on the right side of the screen click the Make Picture Graphs 1 Practice button
    - https://www.khanacademy.org/math/cc-2nd-grade-math/cc-2nd-measurement-data/modal/e/make-picture-graphs-1
- Assessment #3 Build-A-Pictograph worksheet attached

Performance Objective 4: Given class discussions, examples, and collaboration of building bar graphs students will be given collected data, a graph template, and linking cubes. The students will use the linking cubes to build the bar graph to represent the data with 90% accuracy.

Assessment for Objective 4: The first assessment the class conducts a survey by tasting three different kinds of apples. Then the class builds a class graph to represent their favorite apple. The students will be assessed informally by checking for understanding while analyzing and discussing the class graph. The second assessment the students are given an apple worksheet and linking cubes. The students use the cubes to represent the class apple graph.

- Glass Apple Graph title and apple cutouts attached
- Assessment #4 Our Favorite Apples worksheet attached

Performance Objective 5: Given an online video presentation of bar graphs the students will complete an online quiz with 5 out of 7 questions for mastery. The students will use crayons or colored pencils to create a bar graph of data given on a worksheet with 3 out of 4 columns correctly representing the given data.

Assessment for Objective 5: For the first assessment the students complete an online practice of building bar graphs from Khan Academy. The students practice building seven graphs with the data given. The second assessment the students apply their digital practice to building pictographs on a printed document.

- Khan Academy Practice Quiz:
    - Access the following website: www.khanacademy.com
    - Have students click 'Learners Start Here' button
    - Then have then click '2nd Grade' in the Math by Grade tab
    - Click the blue Measurement, Data, and Geometry tab
    - On the left of the screen use the scroll bar to find the topic Bar Graphs
    - Then on the right side of the screen click the Make Bar Graphs 1 Practice button
- Assessment #5 worksheet attached

Performance Objective 6: Given class discussions of identifying different types of graphs and the building of pictographs and bar graphs, the students will be given a blank survey worksheet to ask at least 10 classmates to choose between two topic choices to collect data. Students will show collected data, analyze data correctly, and post their graphs on an online bulletin board source.

Assessment for Objective 6: For the first assessment the students will have to conduct a survey on 10 classmates of which food they like between cake and ice cream. The students will then complete the three questions provided on the assessment. For the second assessment the students will upload their graphs onto the online bulletin source called Padlet. Use the rubric provided to complete a project-based assessment.

- Which Do You Like Most? survey worksheet attached
- Padlet Instructions
    - Access the website https://padlet.com/kfogg2/j48zbvbvz2wp
    - Students just must click the plus (+) symbol in the bottom right corner to add a post.
- Rubric for Padlet project-based assessment attached

Instructional Strategies

The strategies are derived from Gagne's nine domains of learning. The general format of instructional strategies I use for instruction begin with pre-instructional activities to gain the students curiosity, attention, and making connections to their own life experiences or previous lessons. Examples of different graphs are presented while informing students of the objectives. Each lesson begins with a read-aloud modeling and describing how graphs are used in real-world situations. The read-aloud presents the content for each lesson which forms the discussions of graphing vocabulary and provides visuals of graphs to develop those intellectual skills. The labeling of pre-built graphs, gathering data, constructing graphs is the instructional strategies used to provide guided practice. The learners then participate in labeling pre-built graphs, gather data, and construct graphs to practice performance of the new skills. I continue to monitor, question, and provide feedback for ongoing assessments of the learner's performance. Assessments are also conducted by verbal assessment of listening to components of graphs to represent on paper, completing a paper assessment, and using manipulatives to construct models of graphs. The enhancement retention and transfer domain of learning is the final component of having follow-through activities in math centers and daily math warm-ups.

Materials and Resources

Instructional Materials Needed

- *The Great Graph Contest* by Loreen Leedy. 2006 Holiday House
- Graph Posters
    - Graph posters attachment
- Assessments
    - Assessment #1: Graph Titles attached
    - Assessment #2: Picture Graphs attached
    - Assessment #3: Build-A-Pictograph attached
    - Assessment #4: Our Favorite Apples attached
    - Assessment #5: Bar Graphs attached
    - Assessment #6: Survey and Rubric attached
- Titles of graphs **(pictograph, bar graph, line graph, pie chart, line plot, tally graph)** on index cards.
- Manila envelopes with graphing matching game inside (one envelope per group of four students)
    - Contents in manila envelopes:
        - Pictures of the different graphs without the title from Graph Posters attachment
        - Index cards with the titles of the graphs written on them **(pictograph, bar graph, line graph, pie chart, line plot, tally graph)**
- **Our Favorite Apples** title to graph attached
- Student apple cards to graph attached
- Crayons
- Colored pencils
- Linking cubes
- Stickers with pictures of bugs on them

Physical Resources Needed

- Projector
- Desktop computers (one for teacher and one for each student)
- Internet access to Khan Academy, Padlet, and Brain Pop, Jr.
- Document camera
- Google Chromebooks

Instructional Unit Lessons

Lesson Plan #1 Title: Graphing Components

Performance Objective: Given class discussions of identifying different types of graphs and labeling parts of graphs with collaborative learning, the students will be given a worksheet to label the correct type of graph. Students will label and identify the different graphs of **pictograph, bar graph, line graph, pie chart, line plot, tally graph** to the correct graph with 90% accuracy.

Resources or Materials Needed:

- **Instructor**
  - Projector
  - Pictures of different graphs
  - Titles of graphs **(pictograph, bar graph, line graph, pie chart, line plot, tally graph)** on index cards.
  - Pictures of different graphs **(pictograph, bar graph, line graph, pie chart, line plot, tally graph)**
  - Math storybook of graphs:
    - *The Great Graph Contest* by Loreen Leedy. 2006 Holiday House
- **Students**
  - Manila envelopes with titles of graphs and pictures of graphs for matching game.
  - pencils

Time: Approximately 90 minutes

Step 1: Pre-Instructional Activities: (students are seated at their desks)

- The instructor will begin by projecting examples of graphs on the board.
- Explain that graphs are used to organize data or information.

Step 2: Content Presentation:

- Explain to students that we will read *The Great Graph Contest* to understand how graphs are used to organize information.
  - Instruct the students to come to the floor
  - Read the story
  - Pause and reflect throughout the story to identify the different kinds of graphs (bar graphs, pie charts, Venn diagrams, etc.)
- Display the different graph posters *pictographs, bar graphs, pie chart, line graph, tally chart, line plot*
  - Teacher will identify and define the components of the graphs.
  - Students will choral read the components of the graph when teacher points to them.
- Display the cards of the picture of graphs and the definition with title to the graphs
  - Mix up the cards
  - Model playing a matching game with the cards 3 or more times as needed.

Step 3: Learner Participation:

- Instruct the students to go back to their seats that are arranged in groups.
  - Teacher will instruct the students that they will be matching the title to graphs with the correct graph picture and definition.
- Distribute manila envelopes that contain the graphing matching game cards.
  - Instruct the students to place cards face down on desks.
  - Students will work in groups to match the title to graphs with the correct graph picture and definition.
- Teacher will monitor and provide feedback

Step 4: Assessment: (Appendix A)

- Students will be given a worksheet example of graphs.
- Students will label the title to each type of the graph.

Step 5: Follow-Through Activities:

- Manila envelopes with graphing matching game will go in the math center tubs.
- Students can practice more graphing at home with their ixl.com accounts

Lesson Plan Summary: The instructional strategy of organizing the components of a graph aligns with the cognitive learning theory. Another instructional strategy is collaborative learning, which is evident when the students work in groups to label and build the graph components. Collaborative learning aligns with the learning theory of constructivism, as the students were building graphs together.

Lesson Plan #2 Title: Pictographs

Performance Objective: Given a video presentation of pictographs and a whole group digital pictograph quiz discussion, the students will be given a worksheet answering questions about a picture graph with 90% accuracy.

Resources or Materials Needed:

- **Instructor**
  - Document Camera
  - Projector
  - Brain Pop Jr. website (Pictograph video)
    - https://jr.brainpop.com/math/data/pictographs/
  - Brain Pop Jr. website (Pictograph quiz)
    - https://jr.brainpop.com/math/data/pictographs/easyquiz/
  - Pictograph assessment worksheet
- **Student**
  - Crayons
  - Pencils

Time: About 90 minutes

Step 1: Pre-Instructional Activities: (students are seated at their desks)

- Teacher will review prior knowledge of what graphs are and the purpose of graphs.
- Review the components of graphs (title, key, labels)
- Teacher will project examples of pictographs

Step 2: Content Presentation:

- Explain to students that we will watch a video about what Pictographs are and complete a quiz about the video together.
  - Instruct the students to come to the floor
  - Play the video https://jr.brainpop.com/math/data/pictographs/
  - Pause and reflect throughout the video to direct attention to the components of a pictograph.

Step 3: Learner Participation:

- Guided Whole Group Practice: Inform students that they will complete a quiz on pictographs about the video together.
  - https://jr.brainpop.com/math/data/pictographs/easyquiz/
  - Whole group practice reading and analyzing graph data.
  - Questioning:
    - *Where can you find what symbols mean in a pictograph?*
    - *What does **Display** mean?*

Step 4: Assessment: (Appendix B)

- Distribute *Our Class' Favorite Animal* pictograph worksheet
- Teacher will project a copy of same worksheet to guide students through the questions.
- Teacher will interpret graph components on worksheet.
- Questioning:
  - *What is the graph about?*
  - *What kind of animals are in the graph?*
  - *Which animal did the class like the best? How can you tell?*

        - *Which animal did the class like the least? How can you tell?*
    - ❖ Students will complete questions about graph independently.
    - ❖ Teacher will monitor.

Step 5: Follow-Through Activities:

- ❖ Students will ask classmates which animal their favorite is: cat, dog, bird, fish and record on data sheet
- ❖ Students will build a pictograph representing the data they collected
- ❖ Students will continue to practice graphing at home with their ixl.com accounts

Lesson Plan Summary: The instructional strategy of watching a video explaining and demonstrating what pictographs are aligns with the cognitivism theory. The teacher assists the students in building a pictograph as a class and provides ongoing feedback. The students analyze and summarize a pictograph to demonstrate their graph knowledge.

Lesson Plan #3 Title: Building Pictographs

Performance Objective: Given an online video presentations of bar graphs and pictographs the students will complete an online quiz with 5 out of 7 questions for mastery. The students will use stickers to create a pictograph of data given on a worksheet with 3 out of 4 columns correctly representing the given data.

Resources or Materials Needed:

- ❖ **Teacher**
    - Projector
    - Desktop Computer
    - Access to Khan Academy Website
    - Access to Khan Academy making picture graphs video
    - https://www.khanacademy.org/math/cc-2nd-grade-math/cc-2nd-measurement-data/modal/v/making-line-plots
- ❖ **Students**
    - Desktop Computer
    - Pencils
    - Stickers with pictures of bugs on them
    - Pictograph assessment

Time: Approximately 90 minutes

Step 1: Pre-Instructional Activities: (students are seated at their desks)

- ➢ Teacher will review the purpose of graphs is to gather information and represent data.
- ➢ Teacher will show examples of bar graphs.
- ➢ Teacher will review the components of graphs (title, key, labels)
- ➢ Teacher will review pictograph of class graph of *Our Favorite Apples* from Lesson #3.

Step 2: Content Presentation:

- Explain to students that they will be watching a video on building pictographs.
  - https://www.khanacademy.org/math/cc-2nd-grade-math/cc-2nd-measurement-data/modal/v/making-line-plots
- Inform the students that they will be practicing building pictographs on the computer.

Step 3: Learner Participation:

- Students will access www.khanacademy.com
- Instruct students to access the following:
  - **Learners**
  - **Math**
  - **2nd Grade**
  - **Measurement, data, geometry**
  - **Picture graphs**
  - **Making Picture Graphs 1**
    - https://www.khanacademy.org/math/cc-2nd-grade-math/cc-2nd-measurement-data/modal/e/make-picture-graphs-1

Step 4: Assessment (Appendix D)

- After students complete online building pictographs instruct them to return to their seats.
- Distribute assessment worksheet of building a pictograph.
- Distribute a sheet of stickers with pictures of bugs on them.
- Instruct students to use the stickers to represent the data given on the assessment.
- Students will use the bug stickers to represent the given data on the assessment.
- Teacher will monitor.

Step 5: Follow-Through Activities:

- **Math Center:**
  - **Supplies:**
    - Stickers with different pictures (flowers, insects, bugs, etc.)
    - task cards
  - **Center Activity:**
    - The students will build pictographs using stickers to construct a pictograph that corresponds to the task card.
    - After building the pictograph the students will complete a bar graph worksheet that represents the data from the pictograph.
    - Students will continue to practice graphing at home with their ixl.com accounts

Lesson Plan Summary: The instructional strategy used in the learner participation of building a pictograph representing the data aligns with the cognitivism theory. The students demonstrate their learning of pictographs by building pictographs digitally and by modeling pictographs on the paper assessment with the stickers representing the data.

Lesson Plan #4 Title: Bar Graph Our Favorite Apple

Performance Objective: Given class discussions, examples, and collaboration of building bar graphs students will be given collected data, a graph template, and linking cubes. The students will use the linking cubes to build the bar graph to represent the data with 90% accuracy.

Resources or Materials Needed:

- **Teacher**
  - Chart Paper with *Our Favorite Apple* Title
  - Apple cutout outs copied on white paper (one for each student)
  - Apples (red, yellow, green)
    - At least 3 of each color cut into eight slices
    - Put 3 slices of different apples on plates prior to lesson
    - Account for each student to have one plate with three different apple slices.
  - Linking cubes (red, yellow, green)
- **Students**
  - Pencils
  - Colored pencils or crayons

Time: Approximately 90 minutes

Step 1: Pre-Instructional Activities: (students are seated at their desks)

- Teacher will review the purpose of graphs is to gather information and represent data.
- Teacher will show examples of bar graphs.
- Teacher will review the components of graphs (title, key, labels)

Step 2: Content Presentation:

- Explain to students that they will be tasting three different apples and will choose their favorite apple to build a bar graph with the data collected.
- The teacher will distribute paper plates with apple slices to each student.
- Students will taste each apple slice and choose their favorite apple.
- Distribute one apple cutout to each student.
- Instruct students that they will color their apple cutout the color of their favorite apple (green, red, or yellow).
- Students will color their apple cutout their favorite apple color.

Step 3: Learner Participation:

- The teacher will display class apple graph.
- Instruct students that you will call them by their groups to come to the floor.
- The students will come to the floor with their colored apple paper square representing their favorite apple when teacher announces their group.
- Direct attention to components on class apple graph display (key, labels, title)
- Teacher will model placing a paper apple square on the graph display of the corresponding column labeled favorite apple color.

- ❖ Students will place their construction paper colored squares on graph when teacher calls their name.
- ❖ Discuss and analyze graph data class when all classroom data is gathered.
    - Questioning:
        - *Which apple did students like the most?*
        - *Which apple did students like the least?*
        - *How could we show if a student didn't like apples?*
        - *What other graphs could we make as a class?*

Step 4: Assessment (Appendix C)

- ❖ Instruct students to return to their desks.
- ❖ Distribute apple graph template.
- ❖ Guided instruction of building bar graphs to represent classroom apple graph using linking cubes.
- ❖ Students will use the linking cubes to represent the classroom graph onto their apple graph template.

Step 5: Follow-Through Activities:

- ❖ **Math Center:**
    - **Supplies:**
        - apple cutouts
        - task cards
    - **Center Activity:**
        - The students will build bar graphs using pictures of apples to construct a pictograph that corresponds to the task card.
        - After building the pictograph the students will complete a bar graph worksheet that represents the data from the pictograph.
        - Students will continue to practice graphing at home with their ixl.com accounts

Lesson Plan Summary: The instructional strategy used in the learner participation of building an apple graph representing the data gathered from the class of their favorite apple aligns with the constructivism theory. The students are working collaboratively while building the graph. It is also authentic learning by tasting an apple before building a graph of their favorite apple.

Lesson Plan #5 Title: Building Bar Graphs

Performance Objective: Given an online video presentation of bar graphs the students will complete an online quiz with 5 out of 7 questions for mastery. The students will use crayons or colored pencils to create a bar graph of data given on a worksheet with 3 out of 4 columns correctly representing the given data.

Resources or Materials Needed:

- ❖ **Teacher**

- Projector
- Desktop Computer
- Access to Khan Academy Website
- Access to Khan Academy making bar graphs video
    - https://www.khanacademy.org/math/cc-2nd-grade-math/cc-2nd-measurement-data/modal/v/creating-bar-charts-1

❖ **Students**

- Desktop Computer
- Pencils
- Crayons or colored pencils
- Bar graph assessment

Time: Approximately 90 minutes

Step 1: Pre-Instructional Activities: (students are seated at their desks)

- Teacher will review the purpose of graphs is to gather information and represent data.
- Teacher will show examples of bar graphs.
- Teacher will review the components of graphs (title, key, labels)

Step 2: Content Presentation:

❖ Explain to students that they will be watching a video on building bar graphs

- https://www.khanacademy.org/math/cc-2nd-grade-math/cc-2nd-measurement-data/modal/v/creating-bar-charts-1

❖ Inform the students that they will be practicing building bar graphs on the computer.

Step 3: Learner Participation:

❖ Students will access www.khanacademy.com

❖ Instruct students to access the following:

- **Learners**
- **Math**
- **2nd Grade**
- **Measurement, data, geometry**
- **Bar graphs**
- **Making Picture Bar Graphs 1**

https://www.khanacademy.org/math/cc-2nd-grade-math/cc-2nd-measurement-data/modal/e/make-bar-graphs-1

Step 4: Assessment (Appendix E)

❖ After students complete online building bar graphs instruct them to return to their seats.

❖ Distribute assessment worksheet of building a bar graph.

❖ Instruct students to use their crayons or colored pencils to represent the data given on the assessment.

❖ Students will use their crayons or colored pencils to represent the given data on the assessment.

- ❖ Teacher will monitor.

Step 5: Follow-Through Activities:

- ❖ **Math Center:**
  - **Supplies:**
    - Crayons or colored pencils
    - task cards
    - bar graph templates
  - **Center Activity:**
    - The students will build bar graphs using crayons or colored pencils to represent the data on the task card.
    - Students will continue to practice graphing at home with their ixl.com accounts

Lesson Plan Summary: The instructional strategy used in the learner participation of building a bar graph representing the data aligns with the cognitivism theory. The students demonstrate their learning of bar graphs by building graphs digitally and by modeling graphs on the paper assessment using crayons or colored pencils.

Lesson Plan #6 Title: Collecting Data

Performance Objective: Given class discussions of identifying different types of graphs and the building of pictographs and bar graphs, the students will be given a blank survey worksheet to ask at least 10 classmates to choose between two topic choices to collect data. Students will show collected data, analyze data correctly, and post their graphs on an online bulletin board source.

Resources or Materials Needed:

- ❖ **Instructor**
  - Projector
  - Chart paper titled: *Which Scares You the Most?*
  - Chart paper labeled with 2 columns labeled: *snakes* or *spiders*
  - Dry-Erase Markers
- ❖ **Students**
  - Survey worksheet titled: *Which do you like more? Cake or Ice Cream?*
  - Pencils
  - Small poster boards or construction paper
  - Colored pencils or crayons
  - Google Chromebook

Time: Approximately 90 minutes

Step 1: Pre-Instructional Activities: (students are seated at their desks)

- ➢ Teacher will review the purpose of graphs is to gather information and represent data.
- ➢ Teacher will review bar graphs and pictographs.

- Teacher will review the components of graphs (title, key, labels)

Step 2: Content Presentation:

- Explain to students that you are going to take a survey of the class and define the term *survey*.
  - Instruct the students to come to the floor
  - Show the students the chart paper titled *Which Scares You the Most?*
  - Show the students the two columns labeled *Snakes* or *Spiders*
  - Direct each student to come to the chart paper and use a dry erase marker to put an 'x' in the correct column of which creature they are scared of the most.
- Questioning:
  - *1. Are more people afraid of snakes or spiders?*
  - *2. Which creature are students afraid of the least?*
  - *3. How many more students are afraid of _____ than _____?*
  - *4. What other two topics could we survey our class?*

Step 3: Learner Participation:

- Instruct the students to go back to their seats that are arranged in groups.
  - Teacher will instruct the students that they will be using a survey worksheet to collect data.
  - Teacher will instruct the students that they will be asking 10 classmates if they like cake or ice cream.
- Distribute the survey worksheet.
  - Instruct the students to walk around and ask 10 students if they like cake or ice cream.
- Teacher will monitor and provide feedback

Step 4: Assessment: (Appendix F and G)

- Instruct students that they are to use their survey data sheets to create a picture graph or a bar graph then upload a picture of their graph to https://padlet.com/
- Students will create pictographs or bar graphs using poster boards, crayons, colored pencils, or markers.
- Students will take a picture of their completed graph using the Google Chromebooks and upload to https://padlet.com/.

Step 5: Follow-Through Activities:

- Survey gathering data sheets and Google Chromebook at math center.
- Students can practice more graphing at home with their ixl.com accounts.

Lesson Plan Summary: The instructional strategy of creating a pictograph or bar graph is with the constructivism theory. Another instructional strategy is collaborative learning, which is evident when the students must complete a survey about their classmates. The process of uploading their completed projects on the Padlet online bulletin source provides an authentic learning experience of the constructivism theory.

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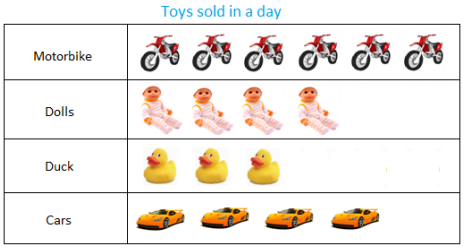
Appendix A

Assessment #1

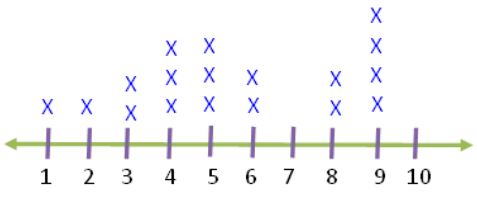
Write the title to each graph:



_____ _____

_____ _____

Food	Votes
Pizza	𝍸 𝍸 |
Burger	𝍸 ||||
Pasta	𝍸 𝍸
Hot Dog	𝍸



_____ _____

Pictograph **Line Graph** **Pie Chart**

Bar Graph **Tally Graph** **Line Plot**

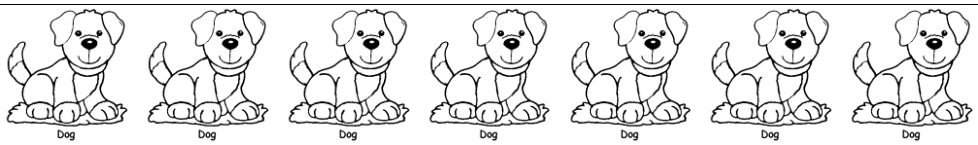
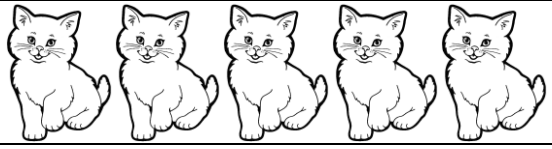
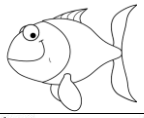
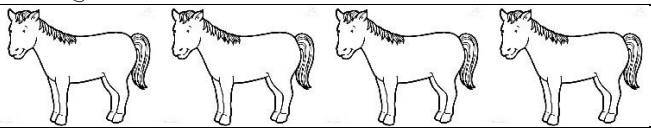
Appendix B

Assessment #2

Name _____

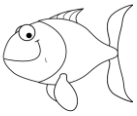
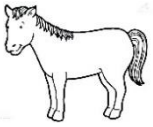
Picture Graphs

Answer the questions about the picture graph.

Students Favorite Animal	
Dog	
Cat	
Hamster	
Fish	
Horse	

1. Write how many of each animal.



_____ _____ _____ _____ _____

2. Which animal do the students like the most?

_____

3. Which animal do the students like the least?

_____

Appendix C

Assessment #3

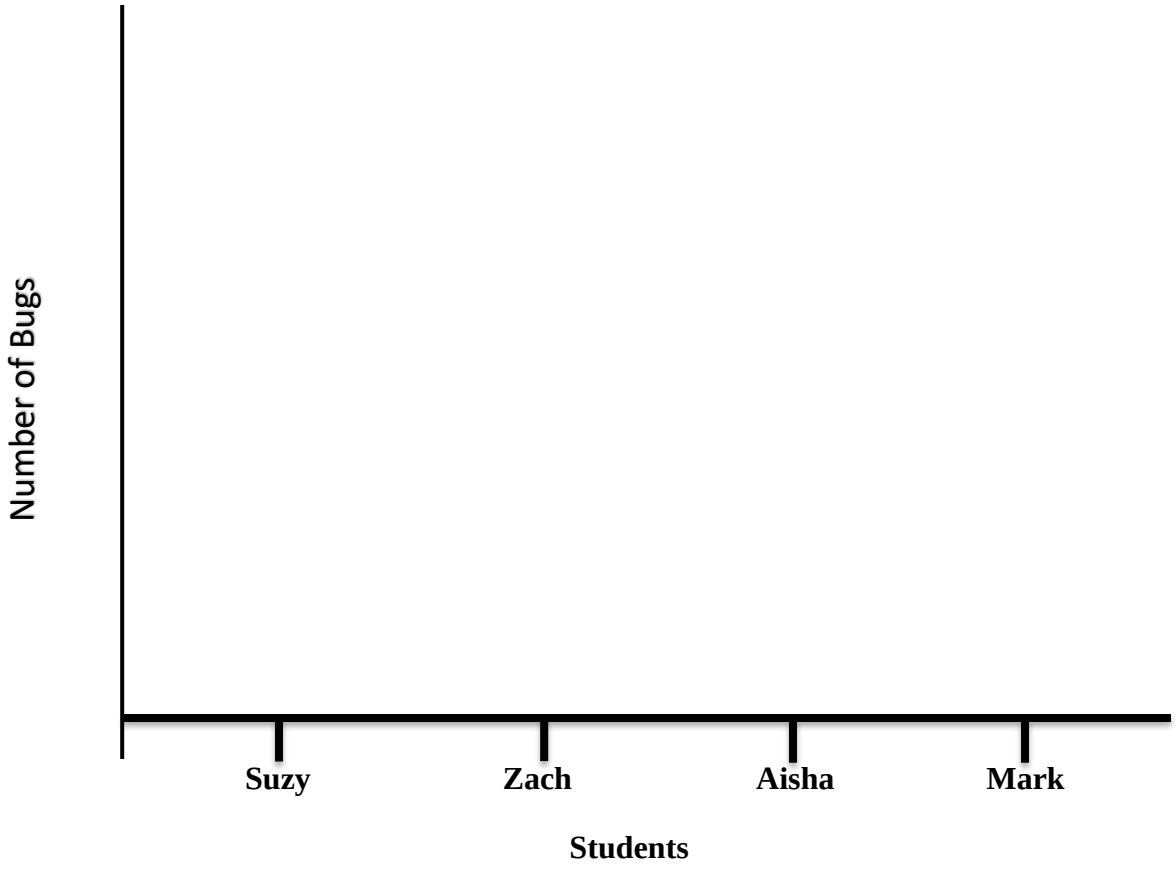
Name _____

Build-A-Pictograph

Create a picture graph with stickers to show how many bugs each student collected:

Student	Number of Bugs
Suzy	8
Zach	4
Aisha	5
Mark	3

 **= 1 bug**



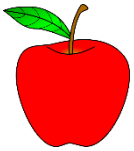
Appendix D

Assessment #4

Name _____

Our Favorite Apples

Use Red Green and Yellow linking cubes to show the data of Our Favorite Apple class graph

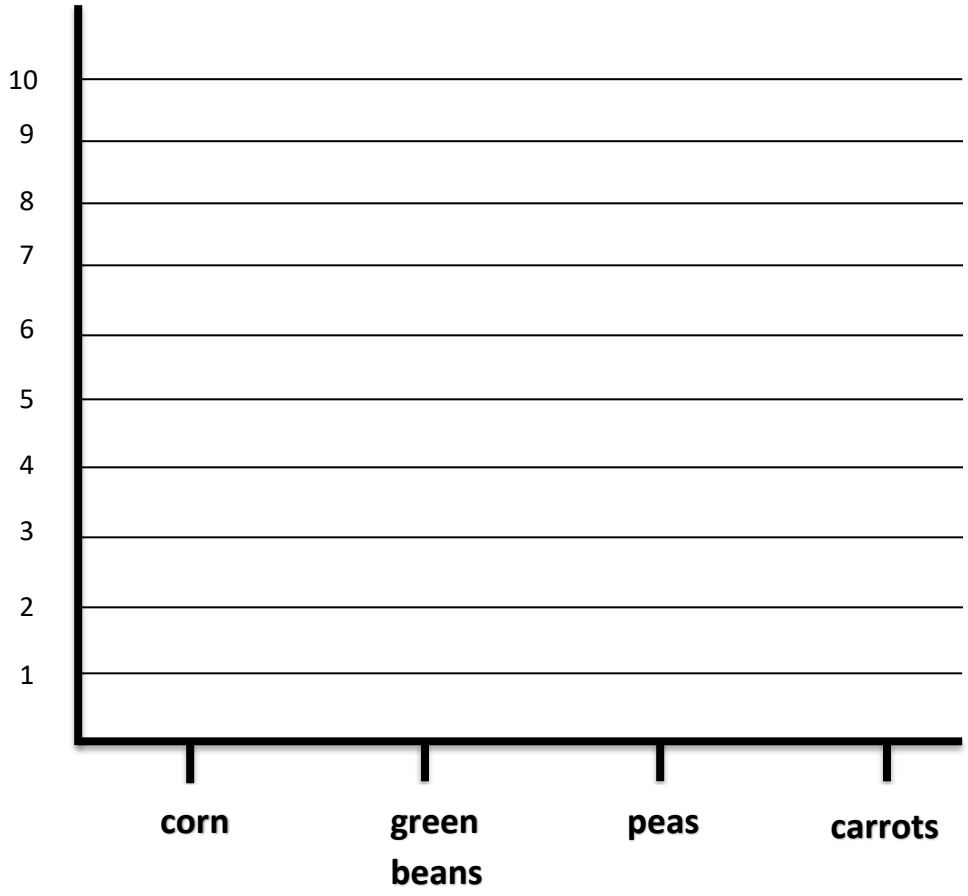
Appendix E

Assessment #5

Name _____

For the can food drive, the students collected 10 cans of corn, 5 cans of green beans, 3 cans of peas, and 7 cans of carrots.

Make a bar graph for this data.



Appendix F

Name _____

Which Do You Like Most?

10		
9		
8		
7		
6		
5		
4		
3		
2		
1		
	Cake 	**Ice Cream** 

1. **Which type of food did people like the most?**

_____

2. **Which food did students like the least?**

_____

3. **How many more students chose _____ than _____?**

Answer _____

Appendix G

Padlet Survey Graph Project

Name _____

2.MD.D.10 Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph.

	4. Distinguished	3. Proficient	2. Apprentice	1. Novice
Design-Layout and Organization: Organized and easy to read	**Content was well organized with title, labels, and data. Text and graphics were neatly organized and made the project easy to read.**	**Project was organized with headings and subheadings. Text and graphics were placed to make the project easy to read.**	**Most of the project was organized. The placement of text and graphics sometimes made the project hard to read.**	**Project was hard to read. There is no clear structure.** **Text and graphics were randomly placed.**
Digital Portfolio-Reflection: Self-evaluation of sample work	**All sample work includes text or audio reflections. Reflections include why the type of graph was chosen.**	**All sample work includes text or audio reflections. Some of the reflections tell which graph was chosen.**	**Most student work sample include reflections. Reflections do not always include information about the sample.**	**Only a work sample is posted with no reflections.**
Graph Model Overview: Neat, creative, and has all required elements	**Excellent quality. Key features were present and labeled correctly. Design helps explain content.**	**Key features were present and labeled correctly. Related to the topic.**	**One or two key features were missing. Some labeling was not correct.**	**Key features were missing or mislabeled. Did not relate to topic.**
Research-Quantity: Number of sources	**Had facts and information from 8 or more sources.**	**Had facts and information from at least 5 different sources.**	**Had facts and information from one source.**	**Did not have any facts.**

Appendix H