



Title	Interpreting a Narrative to Create a Line Graph
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Subject Areas Grade Level	Math, Science, ELA for 9th Graders 50 minute lesson

Content Curriculum Frameworks addressed in this lesson	<p>CCS: 9-10.W.9 (ELA): <i>Draw evidence from literary or informational texts to support analysis, reflection, and research.</i></p> <p>CCS: F-IF.4 (Math): <i>For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity.</i></p> <p>NGSS: MS-L.S2-1 (Science): <i>Analyze and interpret data to provide evidence for the effects of resource availability on organism and populations of organisms in an ecosystem.</i></p>
Specific Technology Standards addressed in this lesson	<p>ISTE: 1c. <i>Students use technology to seek feedback that informs and improves their practice and to demonstrate their learning in a variety of ways.</i></p> <p>3d. <i>Students build knowledge by actively exploring real-world issues and problems, developing ideas and theories and pursuing answers and solutions.</i></p> <p>5b. <i>Students collect data or identify relevant data sets, use digital tools to analyze them, and represent data in various ways to facilitate problem-solving and decision-making.</i></p> <p>Massachusetts State Technology Standards: G9-12: 3.9: <i>Plan and implement a collaborative project with students in other classrooms and schools using telecommunications tools (e.g., e-mail, discussion forums, groupware, interactive Websites, video conferencing).</i></p>

Learning Targets and Assessments	
<ul style="list-style-type: none"> ● I will be able to identify and annotate key information from a narrative, and use it to plot coordinates and create a labeled graph. 	<ul style="list-style-type: none"> ● Formative Assessments <ul style="list-style-type: none"> ○ Do Now Activity ○ Students will analyze a narrative and draw a graph based on the information they found in the narrative. ● Summative Assessments <ul style="list-style-type: none"> ○ Poll Everywhere Question

There are three phases to this lesson:

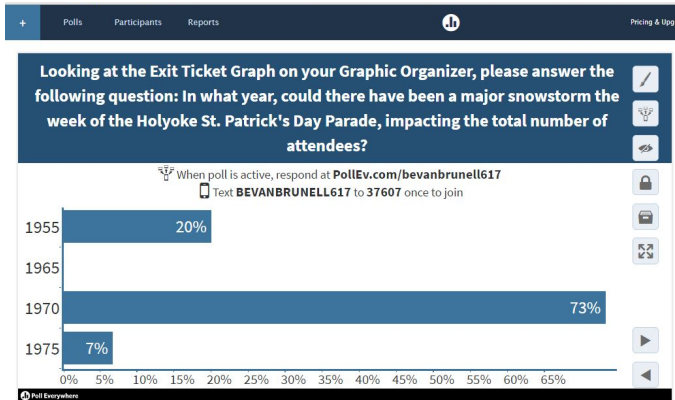
INTRODUCTION of the lesson: Building engagement/setting purpose/activating prior knowledge....	
Instructional Steps (5 Minutes)	Differentiation
<ol style="list-style-type: none"> 1. When students enter the classroom, there is a “Do Now” posted on the projector; the materials to complete the “Do Now” are on each table. Each student will receive an envelope that contains two narratives and three graphs. (Slide 7) 2. Each student will have 3 minutes to complete their “Do Now” independently. 3. They will have two minutes to turn and talk with a partner next to them; partners should answer question on the provided note catcher during this time. 4. Teacher will select one to two students to share their findings from the “Do Now” with the class. 	<ul style="list-style-type: none"> ● All students are provided with a graphic organizer/note catcher that has explicit directions for each step of the lesson. An PDF version of the graphic organizer is bundled with this lesson. This will aid students in need of written/visual instructions. ● Students in need of an accommodation, will use the text to speech feature of <i>Read & Write</i>, an extension by Google Chrome. Each student is equipped with a laptop and earphones to be able to do so. ● Shorter narratives can be provided for students.

Scaffolding plans for the BODY of the instruction	
Instructional Steps (30 Minutes)	Differentiation
<ol style="list-style-type: none"> 1. Annotation <ol style="list-style-type: none"> a. Connect annotation of all different types of texts, explain that this is a skill that can be applied in many situations and individualized. b. Students will be asked to each grab “Lesson Narrative” from the center of their table, as well as one yellow and one green highlighter. c. Teacher reads narrative aloud to the class. (2 min) (Slide 8) d. “I do” - Teacher demonstrates how to annotate the first paragraph of the narrative (instructs students to follow the directions on the note catcher). (2 min) e. “We do” - Teacher calls on a volunteer to share what annotations they think need to be made for the second paragraph. (3 min) f. “You do” - Teacher instructs students to annotate the third paragraph on their own. (5 min) g. Students have an opportunity to turn and talk with their partner, to compare annotations. (2 min) h. Teacher displays slide of correct annotations on slideshow; opportunity for students to ask any questions about annotating. (3 min) (Slide 9) 	<ul style="list-style-type: none"> ● The narrative being read aloud by the teacher is a form of differentiation for the auditory learners who struggle reading. ● Important vocabulary terms are translated into Spanish and have symbols to assist students. ● Lesson includes visual and verbal instruction. ● Students with Google <i>Read & Write</i> will be able to listen to the narrative independently after the group read to annotate their text.

<p>2. Table</p> <ol style="list-style-type: none"> a. Teacher directs students to the table in their note catcher; teacher points out that first ordered pair has been filled out for the students in the table. (“I do”) (2 min) b. “We do” - Teacher will ask for two different volunteers, to fill in the next two points on the table; emphasis on the fact that the third ordered pair is slightly less direct. (3 min) c. “I do” - Teacher directs students to fill out the rest of the table independently. (5 min) d. Students have the opportunity to turn and talk, and compare their table with their partner. (2 min) e. Teacher displays slide of correct table on slideshow; opportunity for students to ask any questions about the table. (2 min) (Slide 10) <p>3. Graphing</p> <ol style="list-style-type: none"> a. Blank graphs will be distributed to pairs of students. b. Students will be instructed to compare this graph with the graphs that they worked with in their warm-up; students will be asked to think of potential starting points to get the graph started. (2 min) c. “We do” - Teacher will field responses on what students think the first steps should be for setting up the graph; together, the teacher and students will label the axes, as well as title the graph (2 min) d. “We do” - Teacher will point out to students that one point has been filled out for them on their graph, and will ask for a volunteer to share where they think the next point should go (2 min) e. “I do” - Students will be instructed to fill out the graphs as a group, using the directions from the note catcher. (5 min) f. The correct completed graph will be displayed by the teacher. (2 min) (Slide 11) 	
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END Synthesis: How will students synthesize their understanding?	
Instructional Steps (10 minutes)	Differentiation
<p>1. Exit Ticket</p> <ol style="list-style-type: none"> a. Teacher instructs students to follow the directions to the exit ticket listed on their notecatcher. (3 min) (Slide 12) <p>2. The Exit Ticket is to be completed either on paper, or if technology allows, by using <i>Poll Everywhere</i>.</p>	<ul style="list-style-type: none"> ● Written instructions are provided on the graphic organizer ● The teacher will read the directions and the prompt aloud as students follow along on their graphic organizer.

The teacher must set up the poll using their own account on www.polleverywhere.com. The poll asks: *Looking at the graph on your graphic organizer, what year could there have been a major snow storm the week of the Holyoke St. Patrick's Day Parade, impacting the total number of attendees?*



3. Next, students fill out the lesson objective evaluation slips (center of the table), and teacher collects those slips at the door on the way out. (2 min)

Lesson Objective: I will be able to identify and annotate key information from a narrative, and use it to plot coordinates and create a labeled graph.

How confident do you feel that you mastered today's objective? (Circle One)



4. Debrief or ending question (5 min)
 - a. Ask students about what occupations might study animal populations or would collect data and need to graph that data. Discuss if the jobs they would like to pursue would use this skill.

Please include information on each of the following:

Materials Required for this lesson (complete list and each document or item typed up)

- 3 Graphs with 2 accompanying narratives supplied to each group/table in envelopes (and online option)
- Poll question on Poll Everywhere
- Graphic organizer with objective, poll prompt and directions to submit polling info
- Blank Graphs for assessment (one for each group or pair)
- Presentation with agenda, learning targets, and other key information
- Green and yellow markers
- Posters with information: Learning target, annotation tips, table
- Timer (sand timer, egg timer, or web-based timer)
- Lesson Objective Self-Evaluation slips

Social Justice Orientation

Our lesson utilizes a social justice framework in two ways: multiple access points and conservation/environmentalism.

Part of social justice is ensuring that all people have access to information, and to ensure this in our lesson, we created an interdisciplinary lesson that offers students who prefer certain subject matter to experience graphing through science and English. Also, we differentiated for ability by altering the narratives to ensure all students could access the data and master the skill. Moreover, the lesson had different styles of engagement from individual activities, discussions, whole class lectures, and group work, which allows learners with different preferences and skills multiple opportunities to see, hear, and interact with the material.

By focusing the lesson on the re-introduction of a well-known but endangered species, this lesson opens doors for student to expand their views of who and what matters beyond humanity, and consider the impacts we have on our environment and ways that we can make positive changes to help other species survive.

Human Development – Age appropriate learning and activities – elaborate on how you selected the activities and how you know they are age appropriate

Our lesson incorporates math, ELA, science, and technology standards appropriate for 9th grade students. Ninth grade math students should be able to label and create a graph from a table of values. By incorporating reading and analyzing text, we wanted to challenge students to think broadly about how information can be conveyed and how different subjects in school connect in real world situations.

The activities were selected by considering how we might give students the opportunity to initiate independent work, interpret abstract information, create collaboratively, all tasks appropriate for the adolescent stage of development. By using actual data of eagle population, students can make connections to their environment and communities. In 9th grade classrooms cell phones can distract from learning but in our lesson technology is a learning tool.

Technology Integration – write a paragraph on how the technology in this lesson enhanced the learning of the students.

Our lesson utilizes two different forms of technology. The first piece of technology is the google chrome extension, *Read & Write*. This piece of technology can be used as an accommodation for students with varying disabilities, including, but not limited to, dyslexia or visual impairment. Each of these students will be using the text to speech feature of this extension, which allows these students to have the passage read to them. Each student will be equipped with a laptop or tablet, as well as earphones, to enable them to use this extension without distracting others.

We have decided to use *Poll Everywhere* to conduct our exit ticket. *Poll Everywhere* is an effective and efficient way for the teacher to collect data, and for the students to engage with one another. Collecting and sorting through exit tickets can be a disorganized and arduous process for the teacher. *Poll Everywhere* allows both the teacher and students to see the students' results instantaneously. Additionally, cell phone usage in schools has become an arising conflict in many districts. *Poll Everywhere* allows the students to constructively use their phones in class.

Social Emotional Learning – write a paragraph about how you have included process or activities that speak to the 'heart' rather than simply content – the head!

Our lesson incorporates positive dialog between student pairs and students in groups. Throughout the lesson, students will developing a sense of community by working cooperatively together while also strengthening relationships with their peers and instructors. Throughout the lesson, the instructors will be using positive language toward students to encourage continued participation and expected classroom behavior. Additionally, our lesson connection to the animals of the Quabbin Reservoir and the local history will be of interest to students of a wide-variety of experiences.