

16 • How to Use Graphs in the Literacy and ESL Classroom

Adapted from The CUNY HSE Curriculum Framework, available on CollectEdny.com

Data and graph reasoning skills are vitally important in math, both in terms of HSE assessment and in the real-world and workplace. The NYSED/CUNY CareerKits contain graphs depicting a range of data including recent trends in employment, salary range and sector growth, among other things. While each graph is part of an activity, there are many ways the graphs can be employed as meaningful texts for building literacy, numeracy and workplace skills. Below you will find nine effective open-ended strategies for developing these skills with your students using graphs.

Open-ended activities allow students to engage with the graphs at their own level as they work to interpret them. They can be particularly effective in classrooms with a wide range of student abilities. They encourage students to take responsibility for the information that is central to a discussion, and develop student ability to speak and write in precise mathematical statements.

Because they offer room for student interests to come out, they often pave the way for follow-up graphs and/or data to further pursue their interests. Because the direction comes from the students themselves, students draw on their life experiences and they can see how math connects to things that they care about, not to mention the other HSE content areas.

Our role as teachers is to help students verify their observations and the observations of their peers. We can also ask follow-up questions to help students go deeper into the stories embedded in every graph. The following strategies can be used to enhance or adapt the graph activities contained in the CareerKits so they most effectively meet your students' needs.

1 Discuss titles

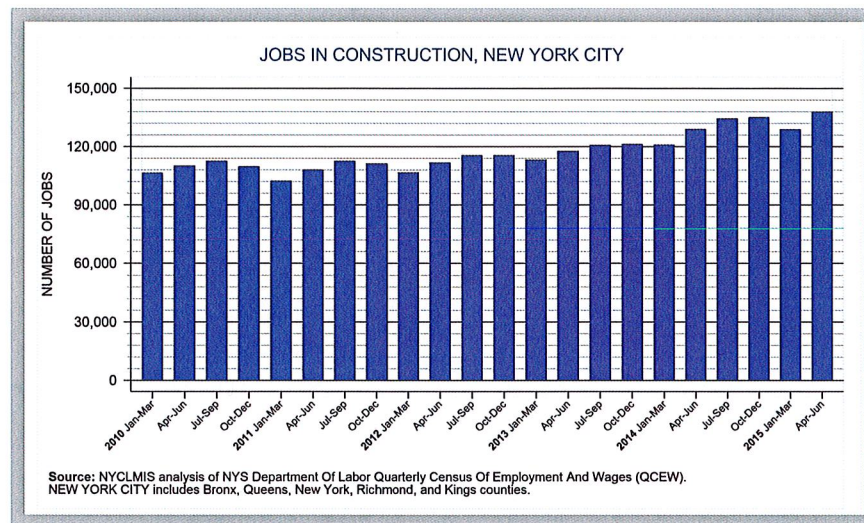
Before distributing the graph, announce the title to your students and have them make written or verbal predictions about what they think the data will show. After giving them the graph, compare the class predictions to the actual data. This is a great way to engage student interest and/or prior knowledge. For example:

- › *I am about to show you a data set titled "Life Expectancy in the U.S. 1900–2000." What do you expect the data will show?*

2 Ask: “What do you notice?”

Give your students the graph without any attached questions, and ask them to write and talk about what they notice about the data. This is a good approach for all students, but particularly for lower-level students who feel less confident about reading graphs. When we attach questions to a graph, students will often narrowly focus on those questions and they to consider the graph more broadly.

- *What do you notice?*
- *What do you see that interests you? What do you want to know more about?*
- *What do you have questions about?*



3 True/False Statements

Ask your students to create true and false statements about the data in the graph. Students can try to stump one another by reading their statements and challenging others to decide if the statements are true or false.

- › *Write three true statements based on this data.*
- › *Write two true statements and two false statements based on this data.*

4 Write questions about the graphs

Ask your students to write questions that can be asked and answered based on the data. (You can take their submissions and create a handout from it for a later class. When you use student questions, identify them by name beside each one.)

- › *Create three questions that can be answered using information from the graph.*

- According to the graph...
- One thing about the graph that surprises me is...
- One thing about the graph that confuses me is...
- One thing about the graph that upsets me is...
- _____ confirms my opinion that...
- One question I have is...
- When I compare _____, I notice...
- One explanation for _____ might be _____.
- One thing I knew that helped me understand this graph was...
- One thing I did to help me make sense of this graph was...
- One thing that took some time to figure out was...
- The number _____ in the graph represents...
- This graph makes me want to...
- I would like to show this graph to _____ because...
- The most important number in this graph is _____ because...
- When I first looked at this graph...