

DIAGRAM Center's Tools for Improving Image Descriptions

presented by Steve Landau

Touch Graphics' is working under subcontract to DIAGRAM Center on new ways to improve the quality and consistency of image descriptions in digital talking books (DTB). This year's work will focus on developing templates for streamlining creation of well-crafted descriptions of textbook images as part of an overall textbook transcription workflow. Touch Graphics will demonstrate an online tool that presents human transcribers with a series of questions about individual images; responses to these questions will be used to build descriptive paragraphs to replace visual images in the final DTB. The system will mix human- and system-generated sentences and phrases, and then allow human transcribers to revise and elaborate on descriptions based on their own interpretation of the graphic and their awareness of the context of the page where it appears.

We believe that image descriptions produced using these methods will be superior to those by human transcribers using traditional, less automated means. We know from observation that readers appreciate descriptions that are terse and consistent, both qualities that human transcribers often find hard to achieve when working without a suitable framework. Readers appreciate concision and predictability when working to rapidly develop accurate mental models of images, and we hypothesize that our online tools will lead to superior results in reader comprehension, while improving throughput in large-scale, geographically-distributed transcription operations such as Bookshare's POET cloud-based service. This year's work will include a field test of the online system. Those interested in participating should contact Ting Siu at ts@touchgraphics.com

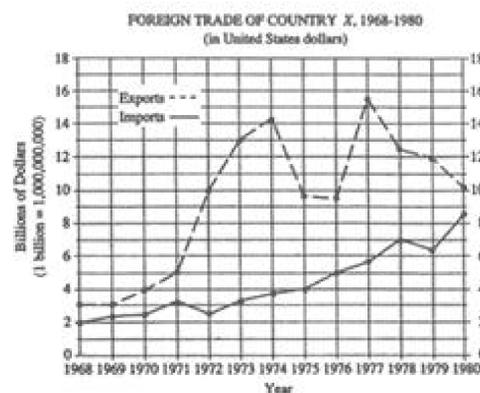
The example to the right shows how a typical description paragraph is generated for a common type of graphic. Human and system-generated fragments are combined to produce a descriptive paragraph, ready for review and post-editing by the human transcriber for added nuance and specificity. In the example to the right, we use color-coding to indicate the meaning of each fragment:

- **black** = system-generated text.
- **blue** = human-generated responses to generic questions.
- **red** = prompts appear where additional information should be added by the human transcriber
- **green** = comments or embellishments supplied by a human transcriber in post-editing.

Project collaborators

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from: NCAM Standards for Effective Practices for Description of Science Content within Digital Talking Books



Sample 2-line graph

Fill-in-the-blanks questions asked by Lime Survey:

1. What is the title of the graph? **Foreign Trade of Country X, 1968-1980 (in United States dollars)**
2. What is the title of the vertical axis? **Billions of Dollars**
 - a. What are the units? **dollars**
 - b. What is the lowest value? **0**
 - c. What is the highest value? **18**
 - d. What is the increment of units? **2**
3. What is the title of the horizontal axis? **Year**
 - a. What are the units? (example: dollars) **years**
 - b. What is the lowest value? **1968**
 - c. What is the highest value? **1980**
 - d. What is the increment of units? **1**
4. How many lines representing data sets are on the graph? **2**
5. What is the label for line 1? **Exports**
6. What is the label for line 2? **Imports**
7. What is the line type for line 1? **Solid**
8. What is the line type for line 2? **Dotted**
9. What is the width and height of a table needed to summarize the data in the line graph?
 - a. Enter number of rows **13**
 - b. Enter number of columns **2**
10. Enter data from the line graph into the table that is now on screen (see result below).

Generate:

Line graph titled "Foreign Trade of Country X, 1968-1980 (in United States dollars)". There are 2 lines on the graph, a **dashed** line labeled "Exports" and a **solid** line labeled "Imports". The vertical axis is labeled "Billions of Dollars", ranging from 0 to 18 billion, in increments of 2 billion. The horizontal axis is labeled "Year", ranging from 1968 to 1980, in increments of 1 year. The Exports line describe the shape and direction of this line. The Imports line describe the shape and direction of this line. provide additional observation or interpretation that will help the student understand concepts in the text.

With Editing:

Line graph titled "Foreign Trade of Country X, 1968-1980 (in United States dollars)". There are 2 lines on the graph, a **dashed** line labeled "Exports" and a **solid** line labeled "Imports". The vertical axis is labeled "Billions of Dollars", ranging from 0 to 18 billion, in increments of 1. **A note: one billion equals a one followed by 9 zeros.** The horizontal axis is labeled "Year", ranging from 1968 to 1980, in increments of 1. The Exports line begins in 1968 at 3 billion dollars, rises steeply to 14 billion in 1974, then drops to 9.5 billion in 1975 and 1976. In 1977, the Exports line shoots up to 15.5 billion, then trails off to 10 billion in 1980. The Imports line begins in 1968 at 2 billion and rises steadily to 8.75 billion in 1980, except for minor dips in 1972 and 1979. Exports in this period has rose gradually and steadily, while Imports were highly variable.

The data are summarized in the following table. All data are approximate:

Foreign Trade of Country X, 1968-1980 (in United States dollars)

Year	Exports	Imports
1968	3	2
1969	3	2.3
1970	4	2.4
1971	5	3.1
1972	10	2.5
1973	13	3.3
1974	14.2	3.7
1975	9.7	4
1976	9.5	5
1977	15.5	5.7
1978	12.5	7
1979	12	6.3
1980	10.2	8.6



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