Graphical Representation: An Effective Tool of Developing Writing Skills in an Academic

Context.

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GRAPHICAL REPRESENTATION: AN EFFECTIVE TOOL OF LEARNING

Abstract

Visual devices such as graphs and tables are convenient ways of displaying large quantities of information in a form that is quick and simple to understand. According to Sharon (2000), graphs can be used to illustrate many types of data. In order to present large blocks of data or reveal comparisons, a text can be supplemented with graphics. In this paper an attempt has been made to explore various graphs to help the L2 learners infer, retrieve information and develop a coherent paragraph using connectives. Since the students of professional courses are required to present information graphically in an academic context in this article an attempt has been made to enable and expose the students to the use of various visuals and graphics.

Key words: Visual graphs, developing coherent paragraph

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Introduction

In technical writing visual aids accomplish several goals. Graphics whether hand drawn, photographed, or computer generated will help sustain reader's interest in presenting information with conciseness and clarity. A graph is a chart or drawing that shows the relationship between changing things. Graphs can be used to illustrate many types of data and are not limited to the simpler types such as line, bar, and circle. They should be used to make facts clearer and more understandable.

Visual aids help to look for key concepts, retaining the interest of the student. According to Sharon (2000), visual aids and graphics clarify complex information and help students in the following ways:

- Trends indicating increase or decrease in sales figures which are evident in line graphs.

- Comparisons between like components (as in actual monthly versus average rainfalls). These can be seen in grouped bar charts.

- Percentages are often used in pie charts that help the students discern them.

- Tables and figures stating more clearly than in a wordy paragraph.

In this paper an attempt has been made to make the students identify the advantages of graphical representation in an academic context. The article primarily aims to enable the students represent information in the form of graphs and retrieve information from graphs to pictures.

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Objectives of designing the Tasks

Most often writers are made to retrieve information from a graph or represent information in the form of graphs analyze graphs based on information in an academic context. Accordingly, the tasks are broadly divided into three categories graded from simple to complex. Firstly, tasks that enable the students identify various types of graphs, followed by tasks that lead to presenting information in a precise way are focused. The second category of tasks focuses on helping the students learn to represent information graphically from a given text. Thirdly, tasks that help the students retrieve information from graphs and summarise in the form of coherent paragraphs are presented.

Some of the Objectives are:

- *To enable the students to use different types of graphs such as pie chart, polar graph, histogram, schematic diagram, contour graph, etc., in an academic context.*
- *To enable the students to develop reading skills required for relating texts to graphics.*
- *To enable the students to retrieve information and develop coherent paragraphs from a given graph using adverbials and comparitives.*
- *To enable the students to present information in a given text graphically.*

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Description of the tasks: Task -1 is related to identification of various types of graphs. Task -2 helps the learners to use connectives in an exercise based on the density of population. Task-3 is a bar chart illustrating comparison of sports membership, while Task -4 is a pie chart comparing tea consumption across the countries. Task- 5 is related to extracting detail from a line graph and writing a coherent paragraph. Task-6 is related to completion and construction of graphs based on the information given.

Task-1

Given below are the most common graphs used to present data in various forms. Identify them using the examples given below.

Now write your answers in the following manner

a. A is a an example of an histogram

b. B is an example of -----------------

c. C is an example of ----------------

d. D is an example of -------------------

e. E is an example of -----------------

f. F is an example of ---------------------

<u>Bar graphs</u>   Flowchart   <u>Histograms</u>

Vertical bar chart   <u>Pie charts</u>   Horizontal bar chart
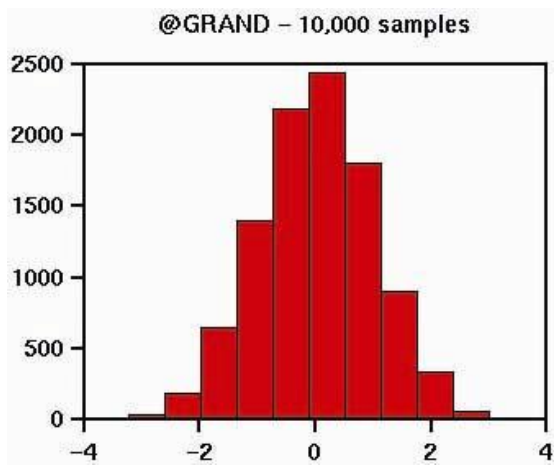
Tree diagram   Schematic diagram   Pictograph

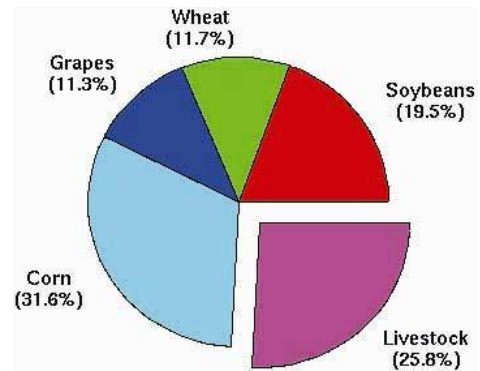GRAPHICAL REPRESENTATION: AN EFFECTIVE TOOL OF LEARNING

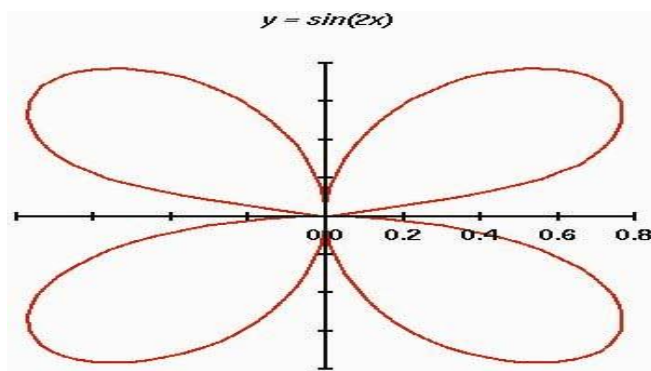Line graph   Polar graph   Contour grap
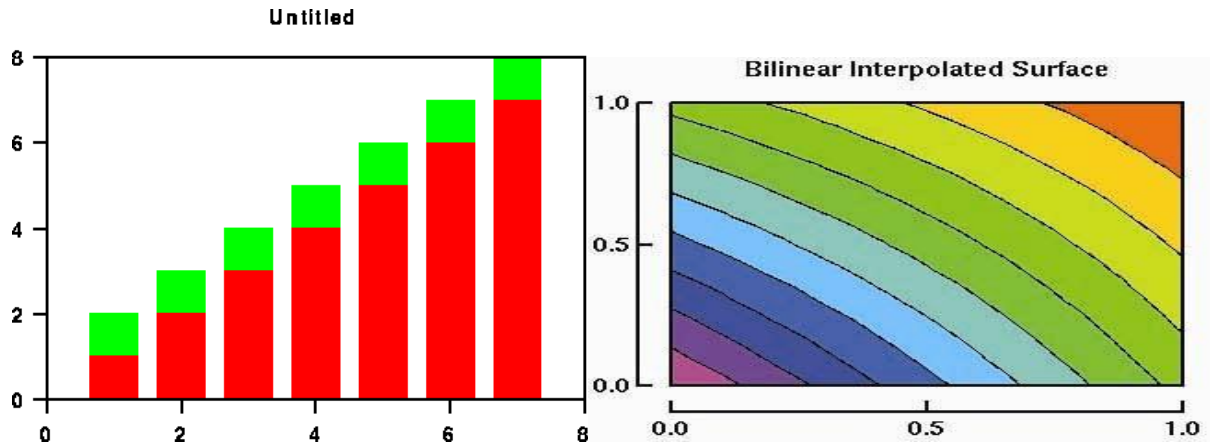
A

B

@GRAND – 10,000 samples

Wheat (11.7%)
Grapes (11.3%)
Soybeans (19.5%)
Corn (31.6%)
Livestock (25.8%)

C

D

$y = sin(2x)$

Fitted Graph

E

F

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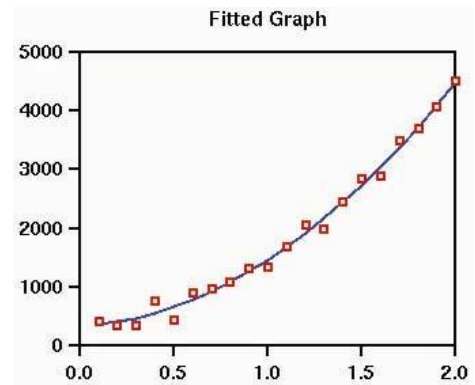
(http://wwwslap.cern.ch/doc/NExS/html/node270.html .retrieved on 11Nov 2008)

Task: 2 Complete the following description of the chart below using the connectives

(Tend to, between, illustrates, because, since, sparsely populated exemplifies).

The chart shows population <u>density</u> in a variety of countries around the world. It --- the extreme contrast --------- crowded nations such as South Korea (475 people per sq km.) and much -----------countries such as Canada (3 people per sq km). Clearly, climate plays a major role in determining population density,   ----The least crowded nations ------ to have extreme climates (e.g. cold in Russia or dry in Algeria.

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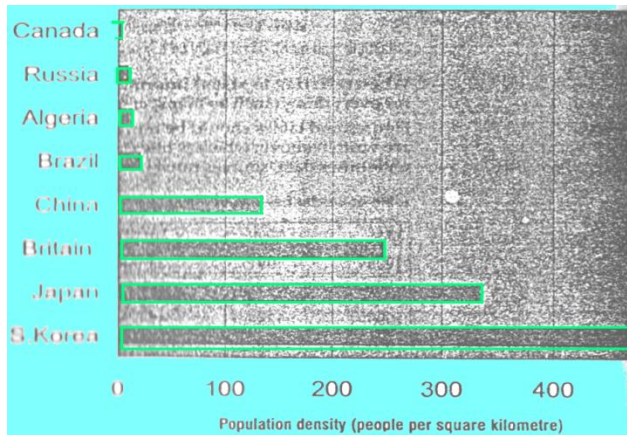
Adapted from ('*Academic Writing'* :Stephen Bailey: 2004)

In the earlier sections you have learnt how to identify the types of graphs. In this section you will learn how to extract information from a visual with some more examples.

Task -3

Take a look at the graph and complete the description of the data using the phrases given in Table 1.1. You can also think of your own adverbial and adjectival phrases to add to the list given below.

a. Sports centre membership <u>increased slightly</u> in 1992 and then in 1993 and 1994 the rise continued steadily. In 1995 the growth rate dramatically ------------- while in 1996, there was a

sudden -------. In 1997, the growth rate of sport membership considerably----------- and from

1998 to 1999 the rise reached the peak and declined ----------in 2000.

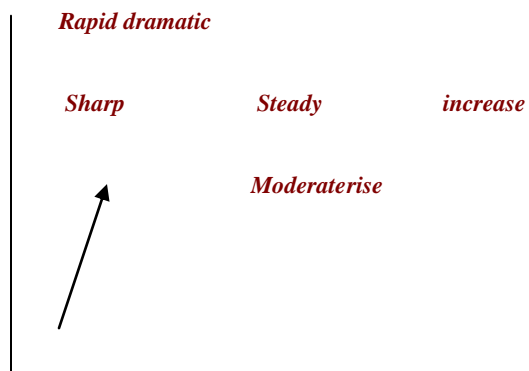GRAPHICAL REPRESENTATION: AN EFFECTIVE TOOL OF LEARNING

**List of comparatives used in describing stages in a graph. Table 1.1.**

- In the year 1992 the membership grew slightly.

- In the year 2000 the percentage of students who enrolled *rose gradually, dropped slightly*

- In the year 1999 the number of road accidents   *increased sharply, acutely, moderately*

- In the year 2002 the number of infant deaths recorded *dropped suddenly* /*note worthily/

  reasonably, predominantly, unexpectedly presumably*

- In the year 1997 the pass percentage of students in SSC board exam reached the *ceiling, /climbed

  the highest/ premium.*

**Some other expressions of describing trends in a Visual….**

- The graph shows a *rise/an increase/a fall / a drop/ a decline in ...*

- The number of species *declined , dramatically/sharply/considerably/steadily/gradually/slowly

  over the following one hundred years.*

- The area of forest *remained the same/remained stable/reached a peak/remained constant

  until.1998.*

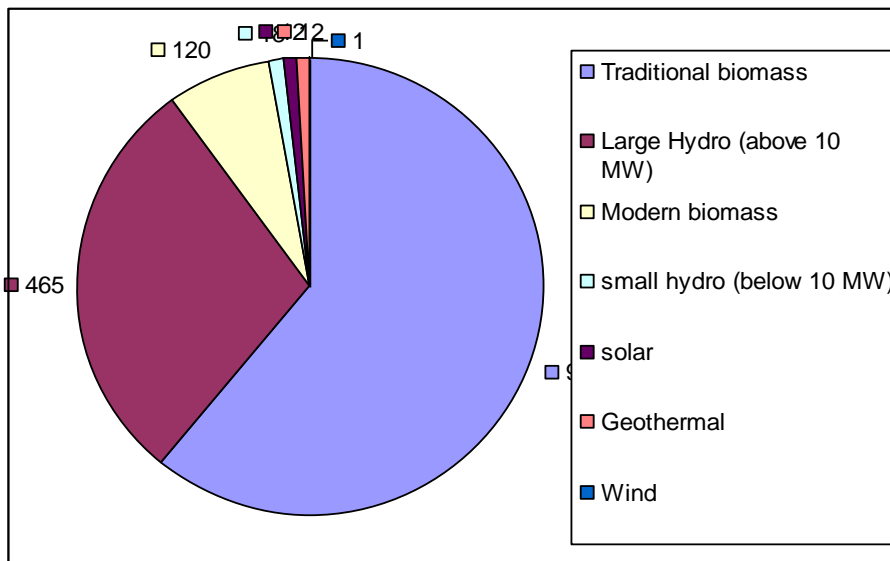**You can also read various expressions used in a graph denoting changes in the data.**

Rapid dramatic

Sharp   *Steady*   *increase*

Moderaterise
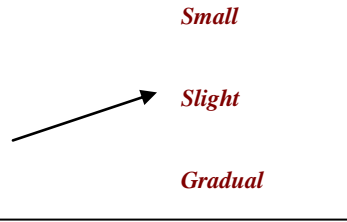
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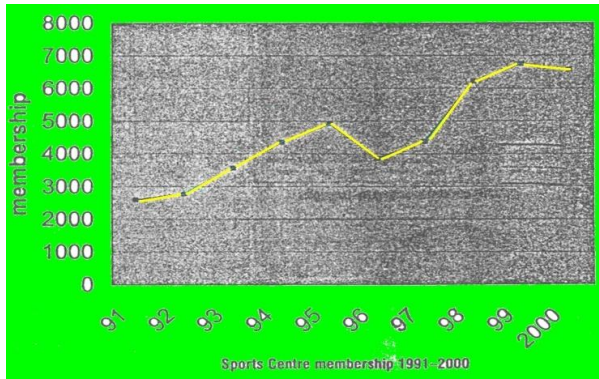
Source :Adapted from '*Academic Writing'* :Stephen Bailey :2004

Task-4

**Study the pie chart given below and answer the following questions**

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a. What does the chart show? Explain in about three sentences.

   e.g. The chart shows the details of renewable sources of oil/energy

b. What is the proportion of solar energy produced/consumed in comparison with other alternative sources of energy?

c. Identify a suitable title for the chart?

While working on tasks in the earlier sections the students learn to construct graphs. In this section the students will learn to present information in the form of paragraphs using the data given.

Task -5

Take a look at the line graph given below describing the age and height of a boy. A **line** graph shows points plotted on a graph. The points are then connected to form a line.
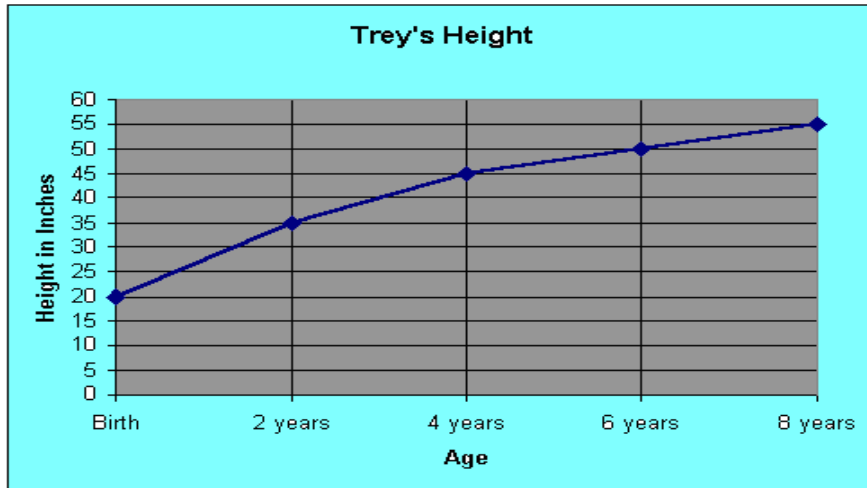
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Now convert the information given in the line graph into a paragraph. Use the hints given below.

You can begin your writing ---------as shown in Table Trey was 20 cms tall when he was born. At the age of two he grew by another 15 inches. ---

--**Here are some useful expressions for writing about visuals/graphs.**

- *As shown in Table-1 / Figure- 2 /the chart/diagram/graph*

- **As can be seen from** *the chart/the diagram/the graph/ Table l/Figure 3*

- *According to Table l/Figure 4/ the graph*

Now summarise the information in a coherent paragraph

Task -6

Study the bell shaped graph popularly known as "Hubbert's Curve". The graph is incomplete. You can read the text related to the "Hubbert's Peak Theory" and complete the graph .(Hints: indicating the years starting from 1850 -1900-1950-2000-2050-2100-2150-2200 on 'x' axis and the rate of growth and gradual decline of oil production on the planet on 'y' axis starting from 0-14)

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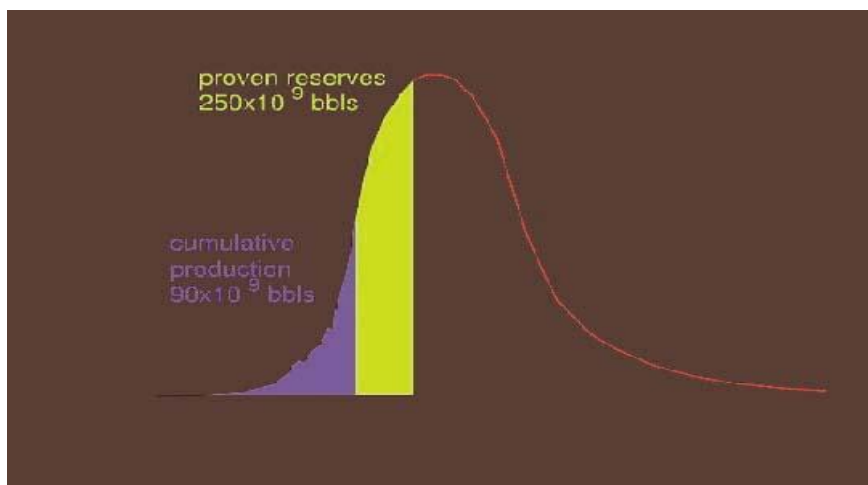
Hubbert's peak

"Hubbert's peak" can refer to the peaking of production of a particular area, which has now been observed for many fields and regions. Hubbert's Peak was achieved in the continental US in the early 1970s. Oil production peaked at 10.2 million barrels a day. Since then, it has been in a gradual decline.

Peak oil as a proper noun or "Hubbert's peak" applied generally, refers to a singular event in history: the peak of the entire planet's oil production. After Peak Oil, according to the Hubbert Peak Theory, the rate of oil production on Earth would enter a terminal decline. Based on his theory, in a paper he presented to the American Petroleum Institute in 1956, Hubbert correctly predicted that production of oil from conventional sources would peak in the continental United States around 1965-1970. Hubbert further predicted a worldwide peak at "about half a century" from publication and approximately 12 gigabarrels (GB) a year in magnitude. In a 1976 TV interview Hubbert added that the actions of OPEC might flatten the global production curve but this would only delay the peak for perhaps 10 years.

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The **Hubbert peak theory** posits that for any given geographical area, from an individual oil-producing region to the planet as a whole, the rate of petroleum production tends to follow a bell-shaped curve. It is one of the primary theories on peak oil.

Choosing a particular curve determines a point of maximum production based on discovery rates, production rates and cumulative production. Early in the curve (pre-peak), the production rate increases due to the discovery rate and the addition of infrastructure. Late in the curve (post-peak), production declines due to resource depletion.

The Hubbert peak theory is based on the observation that the amount of oil under the ground in any region is finite; therefore the rate of discovery which initially increases quickly must reach a maximum and decline. In the US, oil extraction followed the discovery curve after a time lag of 32 to 35 years.

The theory is named after American geophysicist M. King Hubbert, who created a method of modeling the production curve given an assumed ultimate recovery volume.

Task Administration: Analysis of the student's performance

The tasks have been administered to 300 students pursuing professional courses. The students have been divided into batches consisting 40 students in each batch. All the students were capable of doing the tasks efficiently though the understanding level of the tasks varied slightly. About 9-10 students in a group of 40 were able to do the tasks with ease. On the other hand, the remaining 30 students clarified their doubts frequently. Questions related to the rubrics, nature, and word limit have been frequently asked. The speeds of completing the tasks did not vary much. Only 3-5 students in the group

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found it difficult to read and understand the task, since, they are from regional medium background. However, they too could follow the guidelines since, the nature of the unit is technical and non linguistic.

Majority of the students felt the tasks on visual representation very interesting and informative. Students stated that the tasks are more serious and engaging. Most of the students felt responsible while working with such real topics. In short, the students were content with working on the tasks.

Conclusion:

The students used strategies of recalling, rephrasing, eliciting and summarizing in **Tasks-4 &6.** They attempted to develop the paragraph while working on **Tasks -5** applying the strategies of cohesion

and coherence using the hints. Though, this unit does not lend itself to practice writing independently a lot of inputs can be gained by reading the texts. The tasks help the students learn the criteria and purpose of developing effective graphs.

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