

Enhancing the Skills of Interpretation of Diagrams in economic Subject

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Abstract

Economics plays a very important role in the development of understanding and skills. Requirement of diagrams to represent specific data as said, diagram is a geometric form of presenting the data. Diagrams is visual aids which support tabulation this representation designed to make it easier to explain the data it represents. Students also face problem to take scale on X-axis as well as only on Y-axis they are unaware of the various components of a diagrams. Diagrams representation enable us to study the trend of the statistical values as they are very interesting, attractive, and impressive. The study of diagrams in economics make the data simple as it do not put any mental strain. Problems faced by college students in understanding and interpretation of diagram. Students get confused in segregating types of diagrams the data it repeats etc. It is needed to provide clear picture of any situations or problems of data through diagrammatic forms.

Therefore keeping in view the need of diagrams for economics students in this competitive world, the present study aims to understand and identify diagrams by economics students and to give a remedial measures for their improvement in understanding and interpretation of the various diagrams in economics.

1.1 Introduction:

Economics focuses on the behaviour and interactions of economic agents and how economies work. Consistent with this focus, textbooks often distinguish between microeconomics and macroeconomics. Microeconomics examines the behaviour of basic elements in the economy, including individual agents and markets, their interactions, and the outcomes of interactions. Individual agents may include, for example, households, firms, buyers, and sellers. Economic analysis can be applied throughout society, as *in* business, finance, health care, and government. Economic analysis can be applied throughout society, as in business, finance, health care, and government. Economics analyses may also be applied to such diverse subjects as crime, education, the family, law, politics, religion, social institutions, war, science, and the environment.

Economics permeates into everyone's daily life in the area of purchasing decisions. How much money you have in your bank account dictates what types of purchases you make. Economics groups purchasing choices into three groups: luxury goods, normal goods and inferior goods. India has one of the fastest growing service sectors in the world with annual growth rate of above 9% since 2001, which contributed to 57% of GDP in 2012-13. India has become a major exporter of IT services, BPO services, and software services with \$167.0 billion worth of service exports in 2013-14. It is also the fastest-growing part of the economy. The IT industry continues to be the largest private sector employer in India.

Economics has a very extensive field for the selection of its subject – matter in fact all activities of human being had some bearing on economic activities. It is wide field's or a concept and its including consumption, production, distribution of commodities all 3 sectors such as primary, secondary, tertiary. As we are aware that there is a fluctuation in the all 3 sectors there is various data have to study. On account of the limitation of human mind to understand unorganized and varied data, it is important to make comparison, analysis, interpretation and appreciation by making proper arrangement of data through diagrams and graphs etc.

This is an introduction of drawing, reading, and interpretation of diagram. It is useful for review. Diagrams are important because much of things in economics can be understood more easily in diagrammatic form. The diagrams are clear picture of which include Dots, lines, Histogram, frequency, polygon.

1.1.1 Meaning of Economics:

Economics is the social science studying about the consumption, production, and distribution of goods and services. It may appear to be the study of complicated tables and charts, statistics and numbers, but more specifically it is a study of human behavior in the endeavor to fulfill needs and wants. Economics is one of the crucial and important subject for every individual students. It helps the students to know about the economic conditions. It also helps the students to understand about various concepts and situations of market such as demand and supply, inflation, deflation etc.

Diagrams: In learning economics diagrams play a very important role to understand the whole scenario. Therefore it is important for every individual students to learn and understand the various concepts which is very important, it is said that a pictures is worth a thousand words. A diagram makes economics genuinely interesting for the development of students understanding and also for modern economics.

1.1.2 Definition of diagram:

A diagram is a series of one or more points, lines, line segments, curves, or areas that represents the variation of a variable in comparison with that of one or more other variables.

1.1.3 Importance of Economic:

Economics and economic education are very important for providing people with valuable insight into how foreign and domestic markets operate, which allow them to make reasoned and rational choices for short term and long term financial benefits. Studying economics also allow people to learn how to manage and most effectively use scare and infinite resources, such as time and money. Studying economics equips people with a varying levels of financial literacy, which allows them to manage effectively their own finance and even advise others in financial management and planning too. The decision-making skills acquired by studying economics, for instance, are also valuable for helping people make other decisions such as support or not public policies, banking and market analysis.

1.1.4 Importance of diagrams:

A diagram is a symbolic representation of information according to some visualization technique. It have been used since ancient times. The word graph is sometimes used as a synonym for diagram. The diagram is used as a collective term standing for whole class of technical genres, including graphs, technical drawings and tables. One of the major purpose of a diagram is to show how things, people, ideas, activities etc are interrelate and interconnect.

1.1.5 Types of diagrams:

As we have seen that diagrams is most important because as much of things we learn in economic can be understood more easily when we learn through graphical formation. The diagrams are the clear picture which employs dots, lines, histogram, frequency polygon, multiple bar diagram, simple bar diagram, pie-diagram, etc. and statistical data to show a relationship. There are several types of diagrams used such as line diagram, bar diagram, pie-diagram.

a] Line diagram:- In a line diagram data is presented with the help of simple lines horizontally or vertically drawn.

b] Bar diagram:- A bar graph consist of bars arranged horizontally and vertically from a 'zero base'. The color, length, size of the bars represents different values.

c] pie-diagram:- Data may be presented in circle graph.

1.1.6 Roles and importance of diagrams in person's life:

- a) It helps to develop to demonstrate understanding of economics concepts and principle.
- b) It develops a skill to know how to apply economic reasoning to policy issues in a critical manner.
- c) It display familiarity with the possibility that many economic problems may admit of more than one approach & more than one solution.
- d) It is important to develop a skill of drawing diagrams with more accuracy.
- e) It develop a logical thinking and interpret the data into diagrammatic forms.
- f) It is important to develop understanding & interpretation of diagrams in economics

It is important for the students to head the different parts of diagrams for E.g. the scale index, sources, footnotes, etc.

1.1.7 Skill needed for interpretation of diagrams in economics subject:

- a) Interpretation is highly specialized profession that required training and practice for diagrams.
- b) It requires more brain power or brain stroming skills than usual for diagrams.
- c) Successful interpreter should have an excellent language skills and extensive vocabulary while explaining diagrams.
- d) Encourage participants to communicate their ideas and understanding about the diagrams.

- e) A individual can use various other techniques to prevent confusion while interpretation diagrams.
- f) It also requires greater critical thinking while understanding or interpretation diagrams.

1.2 Need of the study:

Economics plays a very important role in the development of understanding and skills. Requirement of diagrams to represent specific data as said, diagram is a geometric form of presenting the data. Diagrams is visual aids which support tabulation this representation designed to make it easier to explain the data it represents. Students also face problem to take scale on X-axis as well as only on Y-axis they are unaware of the various components of a diagrams. Diagrams representation enable us to study the trend of the statistical values as they are very interesting, attractive, and impressive. The study of diagrams in economics make the data simple as it do not put any mental strain. Problems faced by college students in understanding and interpretation of diagram. Students get confused in segregating types of diagrams the data it repeats etc. It is needed to provide clear picture of any situations or problems of data through diagrammatic forms.

Therefore keeping in view the need of diagrams for economics students in this competitive world, the present study aims to understand and identify diagrams by economics students and to give a remedial measures for their improvement in understanding and interpretation of the various diagrams in economics.

1.3 Statement of aims:

Enhancing the skills of interpretation of diagrams in economics of S.Y.J.C students of Pal Rajendra Jr. College.

1.4 Operational Definitions of the key words:

- **Enhancing the skill:** Improve the skills in observing, inferring, measuring, applying and solving the problems.
- **Diagram:** It refers to the presentation of data in economics subject at SYJC class of HSC board.
- **Interpretation:** an explanation or way of explaining the represented work.
- **Economics:** It refers to the subject taught in SYJC class of HSC board.
- **S.Y.J.C Students:** It refers to the student of Standard XII of Pal Rajendra Junior College.

1.5 Objectives of the study:

- a) To identify the difficulties in understanding and interpretation of diagrams in Economics by S.Y.J.C students of Pal Rajendra Jr. College.
- b) To improve the difficulties and provide remedial measures for the difficulties in understanding & interpretation of diagrams by S.Y.J.C students.
- c) To find out the difference between scores of pre-test and post-test of S.Y.J.C students.

1.6 Hypothesis:

- a) The students of S.Y.J.C do not face any difficulties in understanding and interpretation diagrams in economics.

- b) There is no difference between the pre-test & post-test scores of SYJC students in Pal Rajendra Jr. college.

1.7 Delimitation of the study:

- a) The present study is limited to only one college of Mumbai city that is Pal Rajendra Jr. College.
- b) The present study is focused only on the S.Y.J.C students.
- c) The present study is limited to the difficulties related to skills of understanding & interpretation of diagrams in diagrams.
- d) The study consisted of only 27 students.
- e) The study is limited to the students of session 2016-17 only.

2. REVIEW OF RELATED LITERATURE

The review of related literature is the most essential step when undertaking a research project. It provides a brief and critical appraisal of related studies and shows how the study contributes to the knowledge available in this particular field. It is as valuable as it helps the researcher to understand useful concepts, tools, techniques and the method which they are used in the study. Related literature forms the necessary background for the research and serves as a guidance of required knowledge with which the researcher must be acquainted.

The following literature was reviewed by the researcher: -

1. Title of study:

A study of problems faced by economics students in drawing and understanding graphs.

Name of Researcher:

Jitendra P.Singh.

Year:2011-2012.

Sample & sampling Method:

In the research the researcher used:

- 30 sample of 11th standard from Pal Rajendra English Medium High School.
- Simple Random sampling \ Purposive sampling.
- Single pretest – post test design.

Research Methodology:

The Researcher used experimental method in his research.

Tool used:

The researcher used self constructed pre test and post test question paper following question paper / checklist were used for data collection.

1. Economics pre test question paper.
2. Economics post test question paper.

Objectives of research:

- To identify the difficulties in making graphs and diagrams in economics students faced by 11th standard.
- To improve the difficulties and provide remedial measures for the difficulties in drawing a graph and diagram by 11th standard students.
- To find out the difference between scores of pre test and post test scores of 11th standard students.

Conclusion:

In the research mean value of pre test was 10.7 and after giving the remedial teaching the mean value of post test was 16 that are 5.3 difference. Thus when remedial teaching was given by the teacher, the student had a clear understanding about types of graph in detail so the students immediately understand the concept of graphical representation.

2. Title of study:

A study of difficulties in reading and understanding bar diagrams among 11th std English Medium Students.

Name of Researcher:

Laveenafrancis.

Year:2013-2014.

Sample & sampling Method:

In the research the researcher used:

- 30 samples of 11th standard from Alpha Jr. College.
- Simple Random sampling \ Purposive sampling.
- Single pretest – post test design.

Research Methodology:

The Researcher used experimental method in her research.

Tool used:

The researcher used self constructed pre test and post test question paper following question paper / checklist were used for data collection.

1. Economics pre test question paper.
2. Economics post test question paper.

Objectives of research:

- To find out the difference between the pre test and post test scores of control group.
- To find out the difference between the pre test and post test scores of experimental group.
- Find out the effectiveness of PPT technique by comparing the post test scores of experimental and control group.

Conclusion:

In the research mean value of pre test was 11.73 and after giving the remedial teaching the mean value of post test was 20.20 that are 8.47 difference. Thus when remedial teaching was given by the teacher, the student had a clear understanding about types of graph in detail so the students immediately understand the concept of graphical representation.

3. RESEARCH METHODOLOGY

3.1 Meaning and types of research method:

Once the researcher has identified the problem area for study and specified the goals and objectives for the study, he or she then comes to the core of the study which is research methodology. The methodology is the most important phase of the research process. In that it gives guidance as to how the study will be conducted.

Research methods can be called as planning and execution undertaken by researcher to solve a specific research problem. It involves research method, sample and sampling technique, tools for research, data collection and data analysis methods. The research problem can be past oriented, present oriented or future oriented. Thus on the basis of the conclusions, the research methods are divided into three categories as given under:

- **Historical Method**
- **Descriptive Method**
- **Experimental Method**

Historical method: Historical method provides a method of investigating to discover and describe and interpret what existed in the past. Historical research attempts to establish facts so as to arrive at conclusion concerning past events.

To conduct historical research primary sources of data are commonly used. They are the eye witness accounts. Primary sources of data include relics or remains, documents such as laws, official minutes, films, recordings and research reports etc.

Descriptive method: According to John W. Best, ‘A descriptive study describes and interprets what is?’ it is concerned with conditions and relationships that exist, opinions that are held, processes that are going on, effects that are evident or trends that are developing. It is primarily considered with the present, although it often considers past events and influences as they relate to current conditions. Generally survey method is used for data collection in this type of research study.

Experimental method: The research in which effect of one factor on the other studied is called the experimental research. In scientific terms, experimental research means examining the hypothesis, indicating the cause and effect relation.

According to Kerlinger(1953), “An experiment is taken to make an scientific investigation in which investigator manipulates and controls one or more independent variables and observes the dependent variable or variables for variation concomitant to the manipulation of the independent variable.”

It is only method of research that can truly test the hypothesis concerning the cause and effect relationships. It represents the most valid approach to the solution of educational problems both practical and theoretical and to the advancement of education as a science.

Experimental design is the blue print of the procedures that enable the researcher to test hypothesis by reaching valid conclusions about relationships between independent and dependent variables. Three categories of experimental design are as follows:

- **Pre - experimental design**
- **True - experimental design**
- **Quasi - experimental design**

Selection of a particular design is based on the purpose of experiment, the type of variables to be manipulated and the conditions or limiting factors under which it is conducted.

3.2 Selection of research methodology:

Experimental research method was chosen to conduct the present study. Within the experimental research design pre experimental design i.e. one group pretest posttest design is used.

One-group pretest - posttest design

In this design the researcher administers a pretest, then the treatment and finally a posttest. The effects of treatment are judged by the difference between the pretest and posttest scores. The design is represented as follows:

$O_1 \quad X \quad O_2$

Where O_1 - Pretest

X - Treatment

O_2 - Posttest

3.3 Sample and sampling technique:

3.3.1 Sample:

A sample is small portion of the population that is selected for observation and analysis. The sample comprises of 27 students of Std. S.Y.J.C from Pal Rajendra Jr. College.

3.3.2 Sampling Technique:

Sampling technique is the strategy chosen for selecting samples based on logistics, ethics and paradigm of the researcher. Generally two types of sampling techniques are used, which are as follows.

1. PROBABILITY

SAMPLING

- Simple random sampling
- Systematic sampling
- Stratified sampling
- Cluster sampling
- Multi stages sampling

2. NON PROBABILITY

SAMPLING

- Quota sampling
- Incidental sampling
- Convenience or chunk sampling
- Purposive sampling
- Judgemental sampling

Purposive sampling technique was applied to select school Pal Rajendra Jr.College and class S.Y.J.C. Students were chosen by using simple random sampling technique.

3.4 Data collection

3.4.1 Tools for data collection:

The researcher used self-constructed pretest and posttest questionnaire. Following questionnaire (Appendix A and B) were used for data collection:

1. Physical Pretest questionnaire.
2. Physical Posttest questionnaire.

3.4.2 Administration of tools:

At first permission was sought from the principal of the school to conduct the present study.

Then the class teacher was contacted and permission was to administer the tool was taken from him/her. The researcher gave necessary instructions to the students regarding the pretest or posttest questionnaire. The data was collected from 27 students. (Appendix C).

3.5 Method of data analysis:

Mean method was used to analyze the pretest and posttest scores of students.

4. ANALYSIS AND INTERPRETATION OF DATA

Objective1: To identify the difficulties in understanding and interpretation of diagrams in Economics by S.Y.J.C students of Pal Rajendra Jr.College.

HO1: English medium students of S.Y.J.C do not face any difficulties in understanding& interpretation of diagrams in Economics.

Table4.1

ANALYSIS OF PRE-TEST SCORES OF THE STUDENTS

Sr. NO.	test	Total No. of students (N)	Mean (M)
1vf1.	Pre-test	27	5.40

Interpretation:

Table 4.1 shows that the pre-test scores of class S.Y.J.C who faces problem in Interpretation of diagrams. The mean score acquired by the students is 5.40. Therefore the null hypotheses 1 is rejected.S.Y.J.C students of Pal Rajendra Jr. College face difficulties in understanding and interpretation of diagrams in Economics.

Table 4.2

MEAN VALUE OF THE SCORE ACQUIRED BY THE STUDENTS IN POST-TEST

Sr. No.	Test	Total No. of students (N)	Mean (M)
1	Post-Test	27	17.40

Interpretation:

Table 4.2 shows the post-test scores of class S.Y.J.C who faces problem in Interpretation of Diagrams. The mean score acquired by the students is 17.40.

Objective3:-To find out the difference between the pre-test and post-test scores of S.Y.J.C students to understand & interpretation of diagram in Economics.

Hypotheses2:-There is no difference between the pre-test & post-test scores of SYJC students to understand & interpretation of diagrams in Pal Rajendra Jr. College.

Table 4.3

DIFFERENCE BETWEEN MEAN VALUE OF THE SCORES ACQUIRED BY STUDENTS IN PRE-TEST AND POST –TEST

Sr. no	Test	Total no. of Students	Mean	Difference of Mean (M2-M1)
1	Pre – Test	27	5.40	12
2	Post - Test	27	17.40	12

Interpretation:

Mean of the pre-test and post-test of students is calculated in table 4.3. It is clear that mean of post-test scores 17.40 is higher than that of mean of pre-test scores 5.40. The difference in the mean is 12. The null hypotheses 2 is rejected.

The graphical representation is give below.

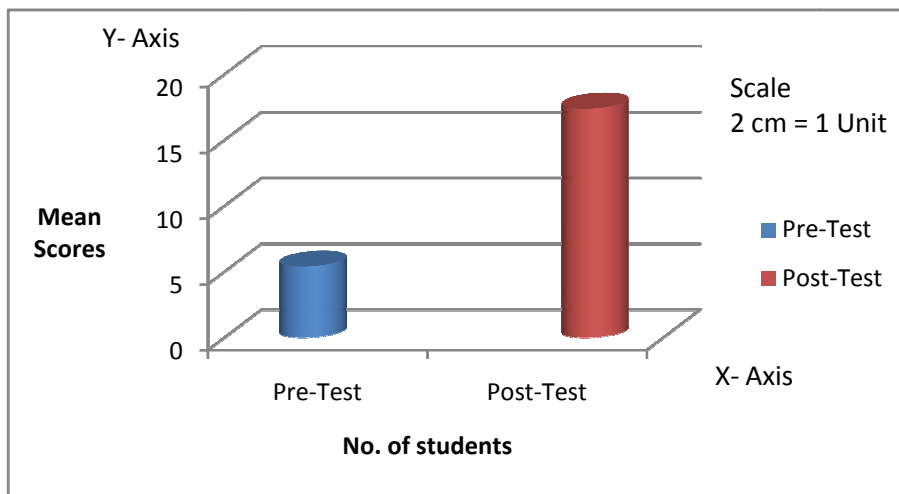


Figure 1

DIFFERENCE BETWEEN MEAN VALUE OF THE SCORES ACQUIRED BY STUDENTS IN PRE-TEST AND POST –TEST.

5. SUGGESTION AND CONCLUSION

5.1 INTRODUCTION:

Economics is the social science studying the production, distribution and consumption of goods and services. It is a complex social science that spans from mathematics to psychology. At its most basic, however, economics considers how a society provides for its needs. Its most basic need is survival; which requires food, clothing and shelter.

Once those are covered, it can then look at more sophisticated commodities such as services, personal transport, entertainment, the list goes on. Today, this social science known as "Economics" tends to refer only to the type of economic thought which political economists refer to as Neoclassical Economics.

5.2 Objectives:

- a) To identify the difficulties in understanding and interpretation of diagrams in Economics by S.Y.J.C students of Pal Rajendra Jr. College.
- b) To improve the difficulties and provide remedial measures for the difficulties in understanding & interpretation of diagrams by S.Y.J.C students.
- c) To find out the difference between scores of pre-test and post-test of S.Y.J.C students.

5.3 Hypothesis:

- a) The students of S.Y.J.C do not face any difficulties in understanding and interpretation of diagrams in economics.
- b) There is no difference between the pre-test & post-test scores of SYJC students in Pal Rajendra Jr. college.

5.4 Conclusion:

In the research mean value of pre test was 5.40 and after giving the remedial teaching the mean value of post test was 17.40 that are 12 difference. Thus when remedial teaching was given by the teacher, the student had a clear understanding about types of graph in detail so the students immediately understand the concept of graphical representation.

5.5 Suggestions [General]:

While teaching –learning process a teacher should make use of modern teaching aids like PPT presentation, project method discussion method, Game technique so that are get motivated and develop a interest in a subjects.

General suggestions for:

❖ Students:

- a) Students should be active in a class following instructions regarding practice of diagrams.
- b) Students should be very disciplined & follow instruction given to him.
- c) Student should listen carefully.
- d) If students is not clear with the content should ask for review or re-guidance.

❖ Teachers:

- a) Teachers should always try to use Audio-visual aids of teaching E.g. Project method, PPT presentation, etc.
- b) Teachers should always try to make the class as interactive.
- c) Teachers should motivate students by giving them also activities such as to prepare any Projects or PPTs.
- d) Teacher should have a friendly nature in the classroom.
- e) Teacher should always clear doubts of the students.

❖ **Parents:**

- a) A parent should always have a communication with the teacher and child.
- b) A parent should give a personal attention & guide the child.
- c) A parent should understand what are the needs & demand of the child.
- d) A parent should always supervise & motivate the child performance.
- e) A parent should always help the child & available for them whenever child needs.

❖ **Suggestions for further studies:**

- This research can be done in ICSE, CBSE, IB schools also.
- Different teaching methods can be done Discussion method, Brain storming, etc.
- Comparison should be done between two schools.
- Comparison should be done between two different medium of schools.
- Technique of sample selection would be different.
- Comparison between Girls & Boys can be done.
- Research could be done on a non-curricular activity.
- Comparison between two different standards can be done.

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