CHAPTER-2
REASONING ABILITY MEANING AND TYPES

2.1 Introduction

2.2 Types of reasoning
   2.2.1 Abstract Reasoning meaning
   2.2.2 Characteristics of reasoning
   2.2.3 The reasoning process
   2.2.4 Types of reasoning
   2.2.5 Factors affecting reasoning
   2.2.6 Area
      2.2.6.1 West area
      2.2.6.2 East area
   2.2.7 Types of School
      2.2.7.1 Granted School
      2.2.7.2 Non Granted School
   2.2.8 Gender

2.3 The Stages of the Reasoning Power. (According to the age)

2.4 The Limitations of the Reasoning Power of the Child

2.5 The mistakes while using Reasoning Power

2.6 The need of The Reasoning Power

2.7 The Scientific Reasoning Power in Technology

2.8 Achievement in School

2.9 Conclusion
2.1 Introduction

The important achievements gained in the present life proves the importance of The Reasoning Power of a person. The Reasoning Power in a person’s life has played a major role in this modern Scientific World. We can think, see, visualize and feel it. The latest technology has proved that when The Reasoning Power is applied, how much achievements are achieved. The reasoning power is a specialty of the mankind. And it shows the importance how it is different from the animals. Many incidences, principals are gathered in subjects like Science, Mathematics, Technology to use the Reasoning Power to come to some conclusions. The knowledge derived with this system is very much useful to achieve the highest results in Industrial growth, academic achievements or in business. Many complicated problems are being solved with the help of reasoning power of Mathematics. Even in Astronomy many principals are derived with the help of The Reasoning Power.

Every mankind is using their Reasoning Power to satisfy their own needs to survive. Same way the mankind is also using their Reasoning Power for developing their overall growth.

By using their Reasoning Power, they try variety of options for the survival in this crucial World. They try to accommodate in the society by using their Reasoning Power. The importance of studying the need of The Reasoning Power in mankind is most desirable and so the researcher has selected to do research in that area. It is very much important and serious matter for improving the standard of education by using The Reasoning Power.

2.2 Variables of the Study

Variable is a quality or an attribute which exhibits difference in magnitude & varies along same dimensions. Variables are generally classified as independent variable, dependent variable, moderate variable, control variable & intervening variable.

The variables related with the present study are Abstract Reasoning, Gender, type of college & Area.
Here, the correlation between reasoning ability and scholastic achievement is the dependent variable while the other three are independent variables.

2.2.1 Abstract Reasoning meaning

Reasoning and problem-solving are not different from thinking. They may be regarded as the highest forms of thinking. In simple way one can say that the most orderly process of thinking is reasoning process. For understanding and defining the problem the individual may use the technique of analyzing the problem.”

Reasoning is a process of thinking, involving inference or of solving problems by employing general principles. It is a form of controlled association which starts with some problems of interest to the reasoned and directed towards its solution.

Acc. To Gates,

“Reasoning is productive thinking in which previous experiences are organized or combined in new ways to solve a problem.”

Acc. To Bernard,

“Reasoning is a process of delaying response until data are arranged into a new combination so that a clearly perceived goal can be reached.”

2.2.2 Characteristics of reasoning

On the basis of these and other definitions we can conclude that the characteristics of reasoning are

- It is needed when there is delayed response.
- It acts as information for insight in problem-solving.
- It depends on the goal of solution of problem.
- It is the tool of thinking in problem solving.
- It is a productive thinking.
- It is creative and reflective in nature.
- It is a process of insight and understanding.
- It is closely related to intelligence.
- It may be inductive and deductive.
- Individual differs in capacity to reason out.
The ability to reason develops gradually.
It is a reflective thinking.

2.2.3 The reasoning process

Following are the steps involved in the process of reasoning or reflective thinking.
- Awareness of the problem
- Locate and define difficulty
- Collection of data
- Formulation of hypothesis
- Evaluation of hypothesis or verification
- Application of hypothesis

2.2.4 Types of Reasoning

Reasoning may be classified into following three types:

- **Deductive reasoning**: In deductive reasoning the individual applies a general principal to a particular fact. For example principle “Everything in this world disappears.”
  - **Particular Fact:**
    a) Table is a thing, therefore it will also disappear.
    b) Box is a thing, therefore it will also disappear.

- **Inductive reasoning**: Inductive reasoning consists in depriving a general principle from particular observed facts. Here, we collect the data observe experiment and then try to verify the theory to reach a particular principle for eg. ‘A’ school has classes, ‘B’ school has also classes, ‘C’ school is also having classes, therefore, “all the schools have classes.”

- **Analogical reasoning**: This type of reasoning consists of inferring a new particular fact from the particular facts observed.

2.2.5 Factors affecting reasoning

- Maturation
- Experience
- Data
- Intelligence
- Knowledge
- Attention
- Imagination

2.2.6 Area

It is difficult to define area in terms of magnitude. Simply it determines the geographical position. In the present study, the area being restricted to Ahmedabad city, the study is confined to Ahmedabad city. Here, the area Ahmedabad city means area of Ahmedabad by Vinjal in south, Naroda in North, Sarkhej in west, and Maninagar in East. The area has two indicators like urban area and rural area.

2.2.6.1 West Area

An area is characterized by the highest population density, maximum facilities available, easily approachable in comparison to surrounding it. Urban areas may be cities and towns. West areas are created and further developed by the process of urbanization. In the present study, urban area of Ahmedabad city means Maninagar, Navrangpura, Laldarwaja, Kalupur, and Shahibaug.

2.2.6.2 East Area

This is an area outside of cities and towns; it is large and isolated areas of a country, often with low population density. In the present study, east area of Ahmedabad city means Vatwa, Isanpur, Vinjal, Thaltej, Vasna, Bopal, Satellite, Sarkhej etc.

2.2.7 Types of School

Based upon the nature of the schools it can be divided into several groups. Depending upon the gender of the child the schools can be divided as co-education schools and girl’s school. Based upon the types of course it can be divided as CBSE School and GSEB School. Further it can be divided as the granted and non-granted schools depending upon the schools source of income. In the present study, the type of schools has been divided into two groups. Granted Schools and Non-granted Schools.
2.2.7.1 Granted School

The granted schools means the schools where the teacher is paid by the government and the students has to pay just term fees of negligible amount.

2.2.7.2 Non-Granted School

The Non-granted schools means the schools where the teacher is not paid by the government but the trust or the owner of the school pays the teacher by charging the fees from the students.

2.2.8 Gender

It is the property or quality by which human beings are classified as male or female on the basis of their reproductive organs and functions. The males are physically stronger and well built. Males are capable of doing heavy and hard work. The females are delicate, soft spoken and caring in nature. In the present study gender is divided into two group males and females studying in IX standard of Ahmedabad city. It is the independent variable whose effect on abstract reasoning is to be known.

2.3 The Stages of The Reasoning Power. (According to the age)

‘Arva’ in 1969 citing ‘Priyanje’ says that the reasoning Power of a child can be divided in three stages.

❖ First Stage: The incompetence / no knowledge to find out the matter of problem. And it remains in the child up to the age of 7 to years by large.

❖ Second Stage: The age group of 8 to 12 is thought of included in this stage. The child becomes very conscious during this period of his age. At the same time can identify the happening with different experiences of his past. This intelligence and strength gives him knowledge and confidence to find out the solution. At the same time he can understand the problem and can find out the solution. He is observing everything in the present geographical area and will try to understand the problem and will do needful to solve it.

❖ Third Stage : The third stage belongs to the persons above 11 years. It starts after finishing the age of 11 and more. They are observing day to
day activities and also looking at the geographical environment the decision depends upon the truth factor of the situation. Analysing it at the laboratory level, the development in a child is arising on the area of basic facts and figures.

As per the opinion of ‘Priyanje’ the correct period of development of The Reasoning Power in any child starts only after the age of 11 years. But at the same time no one can say that 100% development has happened in any child.

Incompetence of any kind in zero perspective can not be present in anyone, at the same time 100 % perfection and presence of intelligence also can not be accepted to have in any child. The energies are thought to be developed in any one stage wise.

2.4 The Limitations of the Reasoning Power of the Child

Too many limitations are found in the child regarding the Reasoning Power. The centralization of any thought in the brain of a child plays a major role of the limitation having in child. It means any child tries to understand the problem looking to his age and position in the society. He does not try to understand the problem with the help of any other person due to his non explaining capacity.Such thought is considered to be self centered thought and they do not either try to get the advise of another person or to understand the position of another person. They try to find out the solution of the problem within their own capacity.

Another limitation is related to the common thinking of their Thinking power – Reasoning Power. The teacher is trying to help him by explaining the solution of problem or making him understand where he is lacking to find out the solution. Also the teacher tries to analyze whether the reasoning Power of a Child has become competatitive or not.

Many mistakes are remaining if the problem solving exercise is not done properly. Many a times we come to non scientific conclusion due to our limited knowledge of World affair, limited experiences faced in life and so the wrong Reasoning Power is concluded. The reason being very limited area of knowledge.
2.5 The mistakes while using Reasoning Power

- The wrong decision are derived due to incompetent and casual observations of the situation.
- Many wrong conclusions are derived due to wrong proverbs and wrong non scientific beliefs.
- Many a times wrong decisions are derived due to wrong doubts, suspicions.
- Many a times wrong conclusions are derived on the basis of persons own wrong belief as well as thinking that his opinion is always right.
- Any prejudicial opinion also plays a major role in the process of taking right decision.

2.6 The need of The Reasoning Power

Head, Heart and the Hands, these three H are the main fundamental principles of the Education systems. In this present situation of educational system, the delivery of education is depending on the heavy hand, as well as the head is forced to cram the knowledge and not to understand the meaning of any subject and the elation of Heart factor is forcefully put into system. The real meaning of education is forgotten. Actually the overall growth of student is called the real Education. The seed of the education should be planted in the heart. It should be flourished in the Head. And by the help of hand the fruits should be delivered.

The new age is already entered into Technological era. In this changing scenario, the elite who are very proficient in the area and knowledge of Mathematics, Science are required and are valued. Due to ever changing requirement of such persons, many a times changes are taken place in policy matters in Schools – Colleges.

Due to various such actions the purpose of developing the Reasoning Power and for the development of SCE – School Based Evaluation - is introduced. By doing this our basic requirement of providing scientific based Reasoning Power is fulfilled. Providing national education declared in 1986 is fulfilled due to this decision.
In 1986, the emphasis was thrust upon for the uplift of our educational system as well as developing the Reasoning Power in scientific way. Due to the lack of the scientific Reasoning Power only the measurement of knowledge is examined. But it does not extend to the understanding or to the depth of gathering knowledge. The student does not get good marks in Science stream due to the lack of it and can not perform well due to the lack of it in other competitions elsewhere rather than their own school.

### 2.7 The Scientific Reasoning Power in Technology

In this Technological era, it has become necessary to use the scientific Reasoning Power to reduce the stress and time taken as well as to get more productivity from the mankind.

- Will be helpful in the day to day life.
- To understand well the World.
- Will be helpful in the Science and its related matters.
- Will be helpful to understand the technical knowledge.
- Will be helpful in Social life and in Society.
- Will be helpful in research work.
- Will be helpful to make the career progressive and on top.
- Will be helpful at Life science related matters.
- Will be helpful in Medical Science.
- Will be helpful to understand the environmental matters.
- Will be helpful in the Space science related matters.

It is very important for the educationalist to keep the above things in mind to deliver the real education at every stage. With the help of proper education the overall growth of the person on all the fronts – knowledge wise, emotional as well as at the level of thinking power creates very good platform and delivers the highest results.

### 2.8 Achievement in School
Every parent have understood the real value of good education to be given and provided to their Children. They have started to send their Children to the schools.

At the same time the Government is also determined to deliver good education to their future citizens by providing variety of incentives, are changing the education pattern to suit to the modern world.

The Government is also adding different courses in the syllabus and in their curriculum. The Government is adding different activities in the School to bring the standard of Schools so that they can stand in this competitive world. Their students can shine out in all the fields. In the new policy of education 10 + 2, system is also upgraded and they change it continuously for the betterment of the students.

Only seven subjects are taught in the Schools though many more subjects are available as well as needed to learn for becoming a good citizen, responsible citizen and can shine out in future.

So it is concluded that the achievement gained in the School plays a major role to uplift the confidence level, to gather variety of knowledge and their scholastic achievement, their bias opinion regarding other fello students, value of life, compassion during the problematic time towards others, brotherhood all are developed and are necessary to lead the better future life and can become a responsible future Citizen.

Looking to all these, when the difference is found in a student after attending the School, it is always called the achievement of the School as they have delivered sensible education with many positive ways. But having and achieved all these, still something is lacking which are the fundamental points in any one’s life and that is Emotional development as well as the system to measure the knowledge of a student.

Only the measurement is done for the knowledge of a student in majority of the Schools. And so here very limited area has been taken as achievement of the schools.

The achievement of the school means the marks received by the students in their taught subjects. And that way it is taken here by the researcher.
2.9 CONCLUSION

In the present chapter, the researcher has clarified the concept, meaning, types, characteristics and importance of reasoning in academic achievements.

The researcher gets knowledge about the importance of reasoning in real life. With the help of reasoning ability one can find out the solution in life. The researcher get maximum benefit by the past researches, utilises the previous findings, takes hints from the research designs and tries to add many beneficial things to the existing store of knowledge. Which are discussed in the next chapter.
End Note

11. Mahendra Kumar N. Patel, *A Study of Relationship between Reasoning Ability & Educational Achievement of Standard 8th Students in Different

12. H.R. Banker, **Construction and Standardization of Abstract Reasoning Test for the Student in Grades 8th and 9th of the Secondary School of Saurashtra.** Unpublished dissertation, Rajkot : Saurashtra University. (1987)