



Development of Reasoning in Student-teachers for Quality Improvement in Teacher Education Programme

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Abstract: Knowledge is significant in the life of every individual. Its development depends on the level of Reasoning of any individual. Reasoning prepares any individual for facing different situations and solutions to any problem and the performance of any activity. The development of reasoning is significant for students and their teachers in schools. There are different types of reasoning like Inductive, Deductive, Analogy, Abductive and Fallacious. The preparation of teachers in the Teacher Education Programme provides a platform for strengthening the teachers for schools. Inculcation of reasoning skills in student-teachers must lead to quality improvement in schools. The Teacher Educator may provide learning experiences for the development of Reasoning of Teachers and prepare teachers to create a strategy for their classrooms.

Introduction

The Global society is dynamic, and the different nations have varied types of geography, atmosphere, society, culture, etc. Even the nations might be separated themselves as Western and Eastern countries based on specific homogeneities. The citizens of those nations also have their specific characteristics, with which the nations are developing, influencing and dominating others. The development of a nation is depended on its educational practices with the influence of philosophy, sociology and psychology of the particular nation and the recent trends at the global level. The education of Western countries is developing reasoning in the students learning, whereas the Eastern countries are lesser. It is the reason for what the nations like United States (US), United Kingdom (UK), Germany, Japan etc. are carrying out innovations for the sake of giving thoughts and skills in the field of technology, education for upliftment, development, progress, wellbeing and comfort of the human being of the world. A glance over the World-class Universities like Harvard in US, Oxford in UK, the University of Tokyo in Japan, the National University of Singapore (NUS) and Tsinghua University in China provide a platform to the students for research, which results in developing Reasoning and quality output.

The reasoning is the significance for the quality of life. It is developing the right type of perspective, vision, thought, and higher mental abilities and preparing the individual as an educated human being. When Education develops reasoning in the students, it leads towards quality improvement in education and results in quality individuals and citizens. The development of reasoning in Teachers depends on their learning in Teacher Education Programme (TEP). The practices of World-class Universities in Education might be considered to plunge into practices at TEP. So, the inclusion of Reasoning at the initial stage of learning about teaching during that programme is desirable.

Reasoning:

The word 'Reason' derived from Greek word 'logos' and translated in Latin as 'Ratio', and then derived in French language as 'Raison', which uses as 'Reason' in English. The reason is clarifying or justifying any occurrence, behaviour or truth. The concept of 'Reason' is something referred to as rationally. Different scholars defined the concept of Reasoning.

"Reasoning is a process of delaying response until data are arranged into a new combination, so that a clearly perceived good can be achieved."

- Bernard

"Reasoning is a combination of past experiences in order to solve a problem, which cannot be solving by mere reproduction of earlier solutions."

- Munn



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

- Gates

Aristotle defined the human being as rational animals, emphasizing the characteristics of human nature. Every human being has the ability to reason, where animals have lesser logical ability. The reasoning is higher than the other characteristics of the human being.

In relation to ‘Reasoning’, ‘Thinking’ recognizes the concept, while Reasoning is more than normal thinking. Thinking provides a foundation for a reason, but reasoning is not necessarily in thinking. The reasoning is the developed form of thinking only. Thinking comes from one idea to a related idea through reasoning. Rational individuals think about cause and effect relationships. Thinking is giving concepts, and concepts are tested through reasoning and constructing the concepts granted and true. The reasoning is a mental attitude leading towards the ultimate truth. Reasoning, therefore, a highly purposeful, controlled, selective thinking process, and it represents mainly earlier true learning only. The reasoning is based on the determination and appropriateness of the goal. If the goal is pre-decided, then reasoning occurs suddenly and when not pre-decided, then very slowly. Reasoning has its methods. It is solving problems with the use of insight in a normal situation. An individual may solve the problem by trial and error, motor exploration, and utilize mental exploration.

Reasoning provides individual strengthens of the knowledge, and the divine knowledge shows the right life path. The different sources of knowledge are experiences, authority, deductive reasoning, inductive reasoning, scientific method etc. As a foundation for structuring knowledge the understanding of Reasoning requires attention.

Different Types of Reasoning:

The cognitive features of decision making and choosing among alternatives are developing reasoning ability. The team Changing Minds (2002) has given different types of reasoning like Abduction, Analogical Reasoning, Cause-and-Effect Reasoning, Cause-to-Effects Reasoning, Effects-to-Cause Reasoning, The Bradford Hill Criteria, Comparative Reasoning, Conditional Reasoning, Criteria Reasoning, Deductive Reasoning, Exemplar Reasoning, Inductive Reasoning, Modal Logic, Pros.-cons Reasoning, Residue Reasoning, Set-based Reasoning, Systemic Reasoning etc.

There are some overlapping areas also. There are a few significant types of reasoning, i.e., Inductive Reasoning, Deductive Reasoning, Analogy Reasoning, Abductive Reasoning and Fallacious Reasoning. The team Changing Minds (2002), Fiboni (2011) and (Wikipedia, 2011) explained the Types of Reasoning with examples and their integrated explanations with supporting examples given below:

1) Inductive Reasoning:

Inductive is reasoning from specific to general. Coming on the finding of generalization based on previous examples is called inductive reasoning. Individual is presenting any principle based on experiences or methods. On the basis of previous general observation, it provides inferences about unobserved observations. There is a premise and a conclusion, where the truth of premises does not guarantee the truth of the conclusion.

Premises : All animals have to obey the rule of the King Lion.

Conclusion : The Elephant has to obey the Lion.

2) Deductive Reasoning:

When premises are true, the arguments and conclusions are true for reasoning. Deductive reasoning was introduced by Aristotle and his followers. It is organizing known data in order to conclude. There is a collection of prior reality in this reasoning, then deriving a principle analyzing the collected data. An individual is observing, experimenting, generalizing and then concluding a general truth

Premise 1 : All human are mortal

Premise 2 : Socrates is human

Conclusion : Socrates is mortal

3) Analogy Reasoning:

The analogy is reasoning from particular to particular. The basis for Analogue reasoning is comparison. An individual is comparing on truth to another. The truth o premise does not guarantee the truth of the conclusion.

Premise 1 : Socrates is human and Socrates died.

Premise 2 : Plato is human.

Conclusion : Plato will die.

4) Abductive Reasoning:

It is a form of Inductive reasoning. The conclusions drawn here are based on probabilities. It is presumed that the most reasonable conclusion also the correct one is.

Major premise : The jar is filled with yellow marbles



Minor premise : I have a yellow marble in my hand
Conclusion : The yellow marble was taken out of the jar

5) Fallacious Reasoning:

Flawed reasoning in arguments is known as fallacious reasoning. Formal fallacies occur when there is a problem with the form or structure of the argument. An argument that contains a formal fallacy will always be invalid. Consider, for example, the following argument:

If a drink is made with boiling water, it will be hot.

This drink was not made with boiling water.

This drink is not hot.

Different Factors Influencing Reasoning:

The goal of Reasoning is to find a solution. When different factors are influencing effectively, then only reasoning succeeds in the goal. Different factors influence the reasoning. Maturation is such a factor, where the reason is developing from adolescence only. The ability of problem-solving begins consistently with the growth of age. Mature children are being able to solve complex problems, express themselves clearly and construct reasoning for the same. When a child is becoming mature and growing age, the child's increasing experiences and experiences are strengthening the reasoning. Reasoning needs different data also and utilizes it in real life situations. Even the individual with a higher mental ability level uses reasoning and solves the problem immediately. The usage of Reasoning is in the problem of any individual encounter in real life. Sometimes people may dislike or neglect an act of any individual, but with the use of reasoning, one establishes its techniques and importance and proves that act. When an individual has doubt in any action, the reasoning might be taken place to search its truthfulness.

Steps of Reasoning:

Individuals may follow different steps of reasoning like the feeling of the existence of problem or difficulty, motivation to solve a problem, synthesis of essential data and analysis, creation of a concept for problem-solving, testing concepts and acceptance of concept and implementation to a new problem. Sharma and Sharma (2002), given the following steps of John Dewey, described reasoning as speculative thinking and analyzed it:

1) A felt Difficulty:

When some specific problem confronts an individual, starts reasoning only. Hence, it is essential that the individual experience some particular difficulty that requires a solution. It may be a theoretical or practical problem.

2) Locate and define difficulty:

After the presence of a difficulty has been established, the second step in reasoning is the location and defining of it. For this, one must analyse the problem or difficulty and track it down to a specific position, besides defining or elaborating it. The experience and ability of a student are called into play in this effort.

3) Locate, evaluate and organize data:

Before the individual embarks on reasoning upon a problem, it is only natural for him to require all possible data concerning it, and for this, the individual must collect such data. Before looking for the solution to the problem, it is necessary to see whether one enables one to gather all relevant data. Once the information has been gathered, it is essential to evaluate it because some pieces of data are more valuable than others. After data has been evaluated it should be organized and classified. The specific data is to be divided depending upon the insight of the examiner.

4) Evaluation of Hypothesis:

Classification of concepts help to bring to light the patterns concealed in the information and forming some hypothesis, and as new information continue to pour in; individual's first hypothesis is strengthened or is contradicted, in which case it has to be discarded in favour of a more appropriate hypothesis. After the pattern of concepts is precisely known, one's preconceptions of hypothesis can be evaluated, and the correct one decided upon.

5) Apply the solution:

The next step is applying solution or inferences for solving the problem since only then can the validity of the inference be actually known.

Different Stratagem for Development of Reasoning in Student-teachers:

The development of Reasoning is desirable and essential in schools, where the Teacher Education Institutions (TEIs) play a major role in providing human resources. The development of Reasoning and Scientific knowledge in and about the education process is possible through different activities, stratagems, practices etc.

There are different stratagems for the development of reasoning in TEIs. The theory and practice of Life skills is very effective for developing reasoning into Student- teachers. There are ten life skills listed by World Health Organization (WHO) (1994), like Decision Making, Creative Thinking, Critical, Thinking, Problem Solving, Negotiation Skills, Interpersonal



Relationship, Self Awareness, Empathy, Effective Communication and Coping with stress & Emotions. All of these ten life skills are useful for practicing with practical experiences or activities.

There are different higher levels of teaching objectives such as application, Analysis, Synthesis, Skills etc. also. Individuals may utilize various teaching-learning methods like brainstorming, project, workshop, supervised assignment, symposium etc., which are very fruitful for the development of reasoning. There is the scope of Reasoning development in the student-teachers by planning and implementing different activities in TEP like prayer talk, submissions, assignments, tutorials, etc. Teacher Educator may create an atmosphere for Student-teachers by asking logical questions, implementing different reasoning tests, and using trial-and error to develop reasoning. It must bring quality improvement in learning of students and influence quality in school education.

Even the contribution of research work is developing Reasoning to a very greater extent. The TEIs have to provide an opportunity to the Teacher Educators, and Student-teachers to do research work. The clarity of different kinds of Researches is significant where the more focal point is Action Research. With Reasoning Mind, Student-teachers develop their higher level of mental abilities during the course and then teach into schools.

Conclusion:

In consideration of education at the global level, the reasoning is inevitable for development in mental abilities, which reflects in behaviour of an individual. Education is the prime field in society that delivers learning for the sake of quality life and livelihood. The reasoning contributes to a significantly greater extent for providing quality individuals for the betterment of society and the Universe. There are various types of reasoning like Inductive, Deductive, Analogy, Abductive and Fallacious. Different factors influence the Reasoning. In fulfillment of quality improvement in schools, the TEIs have to implement inculcation of reasoning in TEP. The Teacher Educators have to follow certain steps of reasoning like a felt difficulty, locate and define it; locate, evaluate and organize information; evaluation of hypothesis; and apply the solution. Use of different stratagem needed for development of reasoning in student-teachers like teaching and practicing ten life skills; practicing higher levels of teaching objectives such as application, analysis, synthesis; asking logical questions, solution through trial and error, creation of atmosphere and provide opportunities to the student-teachers for doing research work.

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