

# Cognitive And Non-Cognitive Skills: Meaning, Nature, Types And Uses In Daily Life

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## **Abstract**

Today we are living in a time of competition. The competitive nature reflects everywhere in society and countries. If an individual seeks recognition in any field, it is only his skills, abilities, capabilities and knowledge which will decide his success in career and life. The main aim of education system should be to make ready learners to gain new knowledge eagerly and acquire skills that are necessary for overall development. Skills are the key element in deciding the future achievements. Parents, teachers, psychologist and educationist should make sure to foster the skills in the children. The objective of this paper is to know the meaning, nature and types of cognitive and non-cognitive skills. How these skills are important in daily life? what are the ways to improve these? And the usefulness of these skills in teaching learning process.

**Keywords-** Cognitive, Non-cognitive skills, Memory, Emotional maturity etc.

## **Introduction**

“It is not the strongest of species that survives, nor the most intelligent that survives. It is the one that is the most adaptable to changes”

-Charles Darwin

A country's development mainly depends upon the proper use of its resources like human resources, materialistic resources, and natural resources. In the present time of rapid progress of science and technology human resource is most significant resource of all the above. For the rapid and maximum progress of a country it is very important to identify and proper utilization of all human abilities, skills and traits. Every individual has many traits, skills and abilities and these are equally important for him as well as his country's development.

Skills are widely used as basic elements which contribute to the sustainable development of the country. Skills are important for wellbeing of individuals. Skills are not set of traits determined by the birth. Skills are developed and can be changed with the age and time. Skills enable individuals to function well. Skills help them to merge in the society and to upgrade their

social and economic level. Skills are the tools with which individuals can shape their lives. An individual develops many skills in his lifetime such as- life skills, social skills, hard skills, soft skills, cognitive skills and non-cognitive skills. All these skills play vital role in his life whether he will succeed in life or not. But all the skills are equally important.

Skills are those essential part which contribute in the welfare of the people in the society. According to psychologist skills inculcate and assess the capability to do a particular task. Green (2011) defines skill as a – “personal quality meeting three criteria 1) socially determined 2) capable of producing values and 3) improvable by training and development.” Usually, skills are comprised into cognitive and non-cognitive.

### **What Are Cognitive Skills?**

Cognitive skills are basic skills which human mind use to read, learn, think, remember, reason, observe, work with others and to pay attention. These skills grasp information and transfer it to the storage of knowledge and we use it in everyday life e.g. at work place, at school, at playground etc.

Cognitive skills help us to recognise objects, Persons, concepts and phenomena in proper manner. The question arises here - what is cognition? The term cognition has been derived from the Latin word ‘cognoscere’ which means ‘to know’ or ‘to recognise’ or ‘to conceptualise’. In other words cognition is the set of all mental abilities and process to knowledge, attention, memory and working memory, judgment and evaluation, reasoning and problem solving, decision making, comprehension and production of language. American Psychological Association (2007) defined cognition as – “all forms of knowing and awareness, such as perceiving, conceiving, remembering, reasoning, judging, imagining and problem solving”. Cognition is a set of brain-based abilities and processes.

### **What Are Non-Cognitive Skills?**

Non cognitive skills which are known as soft skills involves motivation, integrity, attitudes, multiple personal traits and interpersonal interaction. These skills are mainly related with personality, temperament and attitudes. Borghans et. al. (2008) defines non cognitive skills as – “pattern of thoughts, feelings and behaviour.” These skills help individual to function effectively in an environment and work well with other people. Researchers shows that non cognitive skills can be shaped, fostered and boosted in an effective environment by monitoring and guidance. “The role of parents is most effective in fostering non cognitive skills in their kids.” (Cunha and Heckman, 2008)

### **Nature of cognitive and non cognitive skills**

Skills are defined as the capacities to function. They enable people to work with competency. As Hellenback and Gerhard (2015) revealed in his research that “skills refer to the level of performance of an individual on particular task for the capacity to perform a job well which can

be divided into technical elements and behavioural elements.” Cognitive skills are related to brain that enable the people to do any task in the easiest to the most complex manner. These skills focus on how people learn, pay attention, remember, solve problem in daily life. These skills are different from bookish knowledge and reflect in people’s behaviour more prominently. Cognitive skills enhance people's ability and capabilities in doing any task, in learning new things. For example, a person opens the door when the doorbell rings, it involves perception (to hear the doorbell), decision making (to decide to open the open the door or not), language skill (to ask who is at the door), motor skill (to unlock the door) and social skill (to interpret the tone of the person and to communicate with him).

As Neisser (1967) defined that “cognitive skills are the processes by which sensory input is transformed, reduced, encoded, shared, recovered and used.”

### **Types of skills**

Commonly skills are divided into two parts- cognitive and non-cognitive.

**Cognitive skills** – cognitive skills include conscious intellectual work like- thinking, reasoning and remembering. Pierre et.al. (2014) defines cognitive skills as the – “ability to understand complex ideas, to adapt effectively to the environment, to learn from experience, to engage in various forms of reasoning, to overcome obstacles by taking thoughts.” The parts of the cognitive skills are-

1. **Memory** - Memory is the ability to recall facts stored in the past short memory (limited storage) and from long term memory (unlimited storage).
2. **Reasoning** - Reasoning is the ability to reason with logic. It is used to analyse data and make reports. It helps to generate new ideas and solve problems.
3. **Perception** - It is a process of capturing and noticing something through senses. In the process of perception, the information is organised, identified and interpreted. It is sensory experience of the environment.
4. **Creativity** - Creativity is the ability to make new things through imagination. In the process of creativity, new ideas, things, solution of the problem are discovered.
5. **Problem solving** - Problem solving is a process to identify a problem and its cause. It also gives the solution to resolve the issues related to the problem.

**Non-cognitive skills-** Gutman and Schoon (2013) identified 8 non-cognitive skills: - self perfection of ability motivation, perseverance, self-control, metacognition, social competencies, resilience and coping as well as creativity. Commonly the types of non-cognitive skills are as-

1. **Motivation** - Motivation is a drive in an individual to accomplish the goal.
2. **Adaptability** - Adaptability is the quality to make adaptation with the different environment, circumstances and conditions.

3. **Emotional Maturity** - Emotional maturity is the management of emotions no matter what/ how the situation is. Emotional maturity is when you do not depend on others to fulfil your needs.
4. **Perseverance** - It is quality to do efforts continuously to gain something despite difficult situations. It is not giving up on to something.
5. **Communication skill** - Communication is the sharing of, ideas and feelings through symbols, signs and language effectively and appropriately with a wide variety of people, maintaining a good eye contact.

Both cognitive and non-cognitive skills are interdependent on each other. They are not separable from each other. It has been proved that the individuals who have good non cognitive skills such as- more positive towards education, higher aspirations, good attention skills, good social adjustment, self-control and self-belief, will have better prospect in the education system. (Heckman, 2008)

### **Researches about skills**

Skill development is the key component for ensuring student success in life. Many researchers and educationist have debated that success in life is not only dependent on bookish knowledge. In last decades a lot of cross-sectional, longitudinal and survey research have proved this conviction on verifiable ground. Educators and researchers have already suggested that certain other non-academic skills are also important factors in student's success. (Bandura and Schunk 1981, Amis and Archer 1988, Zimmerman 1990). There have been a lot of researches related to skills. Many researchers have discussed that both cognitive and non-cognitive skills play a crucial role in child's development. There are some examples of researches conducted on both cognitive and non-cognitive skills by foreign and Indian researchers.

### **Researches about skills in foreign countries -**

1. **Ting (2003)** conducted a longitudinal research on 215 students to find out that students' academic successes established by some particular non cognitive skills such as (social service, field base information, inclination, accurate self-appraisal system and optimistic self-concept. Students' prediction towards long term goals instead of short term or instantaneous and capability to defer gratification for the attainment of goals, capability to comprehend and manage racism and availability of strong support system and SAT scores.
2. As **Heckman 2006** point out that for the reassurance of socio-economic success of human beings, both the cognitive and non-cognitive skills are very crucial. These skills have effect on earnings also. Non cognitive skills were stronger in case of some different outcomes. Both cognitive and non-cognitive skills can be strengthened.
3. **Brunello and Schlotter 2011** discussed in their paper that high cognitive scores are the outcomes of greater level of motivation and definite personality traits, rather than only based on definite cognitive test scores. They point out in their discussion that cognitive skills are affected by personality differentials also.

4. In his study **Kautz (2014)** revealed that non cognitive skills help to predict later life outcomes. These skills make difference in educational attainment but also influence the life beyond school campus.
5. **Garcia (2014)** mentioned in his study that both cognitive and non-cognitive skills are very important. Non-cognitive skills should be teach together with cognitive skills. Both the skills are connected with each other. If one tried to improve cognitive skills it will help in the development of non-cognitive skills also.

### **Researches about skills in India**

1. **Krishnan and et.al. (2013)** conducted a research on ‘non cognitive skills formation in poor neighbourhoods of urban India’. In their study they recognise that for better education the development of both cognitive and non-cognitive skills are mandatory. In the research it was found out that development of non-cognitive skills have effect on self-efficiency and self-esteem, on the adolescents and children who live in slum area of Mumbai.
2. In a research carried by **Inderjeet Bairagya and Rohit Mukherjee (2019)**, ‘Impact of non-cognitive skills on cognitive learning outcomes : A study of elementary education in India is measured’. The results shows that there is a positive correlation between 5 indicators of non-cognitive skills (perseverance of efforts, growth mindset, conscientiousness, academic behaviour and consistency) and mathematics test scores. There is a need to introduce non cognitive skills among students to shape their cognitive learning outcome.
3. **Abhilasha Agarwal and Bhavana Arya (2020)** carried a research to find out the ‘role of non-cognitive skills in academic performance.’ Research revealed the result that the role of non-cognitive skills is very important in educational attainment.

### **Use of skills in daily life**

No one can remember what a 5 year old Rajat did to get his mother so angry. But whatever it was, his mother was very much upset. His mother asked him to go to the room and just ‘think’ about this for a while. But Rajat did not move from their and was standing with a confused look, as if he wanted to say something.

His mother asked with irritation, “what is the matter now?”

“But ma, I don’t know how to think” Rajat said.

From the above example it is clear that Rajat did not know how to think. He had been ‘thinking’ all his life but in a different way. Thinking power is humans most important tool to do any work adequately and differently. Thinking power, evolution of intelligence, adaptation to the environment and skill development has provided us the changed environment.

Generally, intelligence and thinking power were considered as the best determinant of one’s success and achievements in life. But there are other characteristics that allow a person to be

called educated and successful in life. These characteristics include many traits, skills and abilities. These all should be combined to an individual's overall development. Skills play a vital role in the development of an individual.

The skill set is not considered as the traditional intelligence. Skills have been proved to have major effect on individual's life. Non-cognitive skills such as - optimism, self-efficiency, hope, perseverance, communication, motivation etc are very necessary to gain success in every aspect of life such as workplace, society, family, school etc. Cognitive skills also help individual to adjust adaptively in his environment. Cognitive skills play an important role in problem solving, mind mapping, thinking, remembering, judging. All these skills are higher level functions of the mind and encircle imagination, language, perception. There are some points through which it will be clear how cognitive and non-cognitive skills help in daily life.

### **Use of cognitive skills in daily life**

1. Cognitive skills help in perceptual process to grasp any information and decode it into a message that our mind can recognize and can act on that information.
2. These skills enable individuals to stay focused on one task for a continued period of time.
3. These skills help to remember any information stored in the past (long term memory) such as- remembering names, things, phone numbers etc.
4. These skills help to hang on to any information while in the process of using it (short term memory) such as- following multi direction, remembering things said in the discussion.
5. These skills help in reasoning, generating new ideas, problem solving, being strong in mathematics, to get any information at once and not feeling overwhelmed etc.

### **Use of non-cognitive skills in daily life**

1. Non-cognitive skills help in social interaction to communicate well with others.
2. These skills are helpful for wellbeing in life.
3. There are some non-cognitive skills which are very important at workplace, at Academic level and in the society. They are- self-discipline, kindness, perseverance, motivation, faith, self-esteem, self-efficiency, persistence etc.
4. Non cognitive skills help in getting job easily.
5. These skills are very important to cope up with the time in the present time of innovation and technology.
6. Creativity generally known as, "the production of something new or original (Torrance, 1963) helps in risk taking, generate new ideas, to work in a very different way and exploration of new opportunities.

### **How to improve skills**

Development is a dynamic process that continues lifelong. The process of human development is very important and it takes place from the interaction with environment. The foundation of success of any individual are determined in early life. To assure effective human development, it is

essential to shape their skills accordingly. Boosting and improving skills in early life increase the advantages in school and life after school. Both cognitive and non-cognitive skills can be shaped. Skills make individual efficient to do any function. They promote inclusion in the society, help in social mobility. There are some cognitive and non-cognitive skills that help individual to give direction to their life. They are- perception, attention, memory, grit, creativity, problem solving, reading, writing, language etc. Many researches have been conducted to prove the ways of improvement of skills in the child. There are some ways to enhance or improve skills in a child or individual.

1. **Need to make Policies:** - In the present time of globalization there is a huge demand of such policies that encourage the skill development programmes in schools. As the NEP 2020 focuses on socio-emotional and cognitive domain of the students. It also focuses on fostering the 21<sup>st</sup> century skills among the students like- creativity, problem solving skills, collaborative skills, critical thinking skills and character Building.
2. **Improvement in critical thinking:** - Critical thinking help individual to solve problems and complete any task. It is useful in assessing and interpreting information with critical mind. If any individual is feeling difficulty in critical thinking he should improve the skills by using some methods such as- reason through logic, divergent thinking and question everything etc.
3. **By improving self-esteem skills:** - Self-esteem is known as individual's own subjective evaluation about his own qualities, pride values, identity etc. It impacts every aspect of individual's life such as- emotional state, relationships, decision making, critical thinking. It is very essential to be furnished in the child from the early age. When parents or teachers nourish self-esteem in child they provide them with critical thinking they need to be succeed socially and emotionally.
4. **By managing good communication skills:** - Communication is the way how you express your ideas feelings emotions and knowledge. There are some points to follow to improve communication skills -
  - I. Pay attention when someone says something without interrupting.
  - II. Use proper words to express your ideas, feelings, messages.
  - III. As the famous English poet George Bernard Shaw said, "The single biggest problem in communication is the illusion that it has taken place". So, for being a good communicator a person should avoid making assumptions about something.
  - IV. Making proper eye contact while talking to someone.
5. **By learning social skills:** - Social skills are the ways to communicate effectively with others. We use these skills in daily life to interact with others. Social skill is not a single skill but these are set of many skills such as- empathy, management skills, interpersonal skills, creativity, life skills etc. If parents and teachers want to improve cognitive and non-cognitive skills in children, firstly they will have to improve social skills also. Because without learning these social skills, child cannot mingle in the society or in the given environment.

- 6. Adaptability to the change:** - Adaptability is a skill to accept change skilfully and effectively. Being adaptable to change shows that you have non-cognitive skills. It helps in learning new skills also.

### **Cognitive Skills in Teaching Learning Process-**

For assuring students' success both cognitive and non-cognitive skills are considered as key elements. Many researches have revealed that both skills are associated with students' performance in schools. Cognitive and non-cognitive skills can be improved at school level (Heckman, 2006). Cognitive variables (high school GPA) and non-cognitive variables (such as real self-appraisal, understanding and dealing mechanism concerning racism) were found as the best predictor of academic success in comprehensive public university (Adebayo, 2008). Cognitive as far as non-cognitive skills are important in predicting particular outcomes like academic achievement. (Rosenbaum 2001; Lleres 2008; Duncan and Magnuson 2011) In national curriculum framework (2005) included several non-cognitive/transversal skills in curriculum through CCE (Continuous and Comprehensive Evaluation) system. Non-cognitive skills come under the category of skills which are fostered by schools. These skills are associated with personality (Kyllonen 2012). Let us discuss how cognitive and non-cognitive skills can be used in teaching and learning process.

- 1. Memory:** - Memory has divided into many types like- short term memory, long term memory, sequential memory, rote memory, receptive memory etc. All these types of memory used in teaching learning process. Memory helps the learner to grasp the dynamic information quickly in learning experience. In the process of learning, memory helps the learner to understand, conceptualise, analyse and interpreting data and in recalling the information from the past.
- 2. Perception:** - Perception is the perspective to look at the things and events in right way. Different perceptions depend upon different situations. Therefore, it results in different responses. It is very subjective. In learning process learner makes different perception, so the work of a teacher is to guide them to see things as they are, and perceive them correctly.
- 3. Rational Attitude:** - Rational attitude is a positive approach towards any topic. It helps the learner to achieve his goals and catching the right path to achieve attainable goals. It enables learner in using all his capacities and abilities.
- 4. Logical Thinking:** - In the process of logical thinking learner uses both logic and reason to reach on to any conclusion or solution. It is a mental process. In teaching learning process teacher should emphasize the learner to think logically and help them to practice it because logical thinking is not a genetic quality. It is learned by practice.
- 5. Mind Mapping:** - Cognitive skills play an important role in constructing mind mapping among learners. In mind mapping there are one basic concept and other sub-concepts for example the concept 'Chair' has sub-concepts like plastic or wood, four legs, colour etc. Mind mapping helps learner to use all his range of cognitive skills. It is also considered as brainstorming.



### **Non-cognitive skills In teaching learning process -**

1. **Decision making:** - Decision making skill is important to choose the right between two options. It is a process of making decision on avail information at the time. Intuition is the most important part of decision making and it also involves teamwork, leadership, logic, time management etc. It is helpful for learners in making right decision about their work career, goal and life.
2. **Persistence:** - Persistence is a soft skill. It is willingness to continue a work towards its goal despite of many challenges. It is the skill of not giving up on to something. In learning process it is highly required to develop this skill among learners. It is a main skill for the learners who want to be successful in their life. It helps the learner to do any work out of their comfort zone.
3. **Creativity:** - Creativity is the divergent thinking. It is very essential to gain high level learning. In schools creativity is considered as the most effective tool to find any solution. It is a way to think differently and learners are asked to find many conclusions and solutions of problems.
4. **Interpersonal Skills:** - In the present time of globalization, it is very demanded to have good interpersonal skills. These skills are highly required for good career and good life. Learners have to learn these skills to communicate well with others and connect with the people.
5. **Learning new things:** - Learning is the process of attaining new knowledge. Non-cognitive skills like social interaction, good communicative skills and self-confidence etc.

### **Conclusion**

In nutshell, it is relevant to mention here that both cognitive and non-cognitive skills are the integral part of individual's development. Now a days, these skills are in demand for career development, personal life and social life. Individuals who have less cognitive and non-cognitive skills lag behind from the peer group or in the society. It is the demand of the time to prepare such future citizens who will contribute in the development of the nation. To meet such demands there is a huge responsibility of teachers and parents to develop desirable skills such as- integrity, teamwork, leadership, creativity, interpersonal and intrapersonal skills, logical thinking, reasoning power, grit, self-esteem, motivation etc. among the children.

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