CHAPTER 2

THINKING SKILLS

2.0 Introduction

This chapter reviews the literature on thinking skills. It includes the role of lateral thinking in second language learning education system. The nature of thinking and characteristics of lateral thinking are also discussed. It covers all the features of thinking that advocates language learning/acquisition and learning strategies that make the path of acquiring lateral thinking easier. Hence the theories that support task based learning are also discussed. A model was developed based on the definitions of lateral thinking skills and other thinking skills in the context of language learning.

2.1 Definitions on thinking skills

Thinking is a mental process in which sorting and organizing of information takes place. It is a not a method that can be learned but is a process of the mind. It is an ability to consider various descriptions of problem and situations. Thinking includes different perspectives of others to frame ideas. Thinking aspect of the mind considers individual assumptions and past experiences to expand perspectives by continual questioning (Sharon L.Edwards). Thinking is “the search for meaning … thinking is a mental process in which something is turned over in the mind in order to make sense out of experience” , “(Beyer Practical strategies for the teaching of thinking 16). Presseisenn defined thinking skills as “the mental manipulation of sensory input to formulate thoughts, reason about or judge (98). Ruggerio observed thinking skills as “ a purposeful activity over which a person exercises some control”(1). Lacounte calls thinking as “abstract mental
manipulation;…is not reading, writing, speaking, acting, listening, sensing etc. which are concrete or physical acts. Thinking process enable the acts” (250). Perkins (Thinking Frames) said that intelligence could be improved if thinking skills are developed. Halpern defined thinking skills as the best ability to form new combinations of ideas to fulfill the needs. David Moseley et al. says “Thinking is a human activity that involves cognition (knowing), affect (feeling) and conation(wanting and willing)” (372). Few theories insisted that language of thinking is important for the learners to enhance association of thinking with relevant cognitive process (Beyer Planning a thinking skills curriculum-Key questions for principals to consider); Costa, Marzono (Teaching the Language of Thinking); Fisher (Teaching Thinking); Kirkwood; McGuiness (ACTS II sustainable thinking classrooms); Tishman & Perkins (The Language of Thinking); Tishman, Perkins and Joy (The Thinking Classroom: Learning and Teaching in a Culture of Thinking); Wertime). De Bono said that thinking should never be a matter of providing that “you are right in a desperate way. It should not be imposing your ideas on others”. De Bono (Thinking Course) defined thinking in two ways, a) Thinking as a matter of intelligence determined by the inborn talent. b) Thinking as a skill could be improved by training and learning. Bono differentiated thinking skill with intelligence by comparing them to operating skill and the horse power. “Thinking is the operating skill through which intelligence acts upon experience” (11). Establishing new ideas enables an individual to comprehend life experience in different ways.

2.2 Types of thinking skills

Some of the literature classifies thinking into two as critical thinking and creative thinking. Rugiero explained that critical thinking skills could be explored by teaching
learners how to construct arguments to apply logically and to avoid fallacies in their reasoning. Ennis defined critical thinking as “reasonable reflective thinking that focused on deciding what to believe or do” (sec. Marzano 146). De Bono (Lateral Thinking: Creativity Step by Step; Critical Thinking is not enough) said that creative thinking is productive and lateral. It is opposite to critical thinking. Creative thinking is reactive and vertical. Halpern defines creative thinking as “the ability to form new combinations of ideas to fulfill a need” (sec. Marzano 146) Ruggiero said that the creative thinking is meant for production of ideas whereas critical thinking meant for evaluation of ideas.

Harris says that creativity is the ability to generate new ideas by combining, changing and reapplying existing ideas in the suitable context. Chuska discovered twenty seven thinking skills. They are “comparing, classifying, estimating, summarizing, hypothesizing, synthesizing, sequencing, predicting, evaluating, translating, reorganizing, prioritizing, setting criteria, goal setting, problem solving, decision making, justifying, making assumptions using analogies, imagining, logical deducing, identifying pros/cons, identifying propaganda, identifying consequences, observing, creating/designing and interpreting (11). Creative inventive thinking skills “enable students to produce original ideas, processes and products” (George C Grice, M. Anway Jones 281). Paul mentioned about scientific thinking. He said that the scientific thinking process undermines independent thoughts. Altshuller and Sharpio says that inventive thinking proficiency is the ability to solve creative problems in various domains by avoiding trails and errors.

De Bono (The Mechanism of Mind) says that natural way of thinking depends on the behavior of the memory surface of the mind. “The flow sequence follows the contours of the surface…but it is also liable to very considerable error” (223). Natural
Thinking (NT) has the tendency of dichotomy. It leads information in parallel firm patterns. It tends to avoid alternatives and doubts. It always uses preferred concretes and extreme absolutes. NT cuts the excess of information by blocking the natural paths to provide clear cut information. In the case of mathematical thinking, rules determine the information. Information fails to control rules whereas rules control the provided information (De Bono The Mechanism of Mind 220-223). In mathematical thinking attitude also the input is rejected so intake would be less. Vertical thinking attitude expects every step to be correct in the process of information. Shlomo Waks says “…every single step has to be correct and justified before moving to subsequent stages-it is hierarchical” (p.146).

Critical thinking (Alfaro Lafevre) is a purposeful outcome of directed thinking. It is based on the principles of scientific method. Critical thinking is associated with knowledge, complex reasoning, argumentation, beliefs, action, problem identification, evidence and envisioning of alternative frames of references and possibilities (Daly). Strategies and maximum human potentialities are needed to access critical thinking skills. De Bono (Thinking Course) compared critical thinking skills with front wheels of the car. He called it inadequate on its own and argued that it has no part in forming better hypothesis. He said that it is “creativity that produces better hypothesis” (15). Divergent thinking is a process of generating thoughts that involves thinking in multiple directions seeking changes and investigations (Guilford). All the above mentioned skills are based on linear way of thinking process. They bother about changing the patterns of the mind. The thinking attitude that has the potential to change the pattern of the mind is needed. Effective second language communication is possible when learners change the established patterns of the mind. An appropriate thinking attitude is needed to change the mindset of the learners.
2.3 Higher order thinking skills

Hemming; Siegel pointed out a few essential characteristics of the attitude of higher thinking skills such as open mindedness, evidence mindedness and persistent mindedness. Open minded thinking possesses the characteristic of giving respect for other point of view, willing to consider alternative ideas and intellectual curiosity to consider new ideas. Evidence mindedness withholds the judgments until the proper evidence is obtained; always include a type of systematic skepticism. Persistent mindedness possesses willingness to ask questions and shows determination to exhaust possibilities. Reed Geertsen identified six characteristics of higher level thinking skills. They are strategic, referential, assessment, scientific, reflexive and comparative thinking. Referential thinking uses organized sets of operation to explicate the frame of references. Assessment thinking uses the organized sets of operations to evaluate the value of something. Scientific thinking explores causation in a systematic way by using inductive logic and inferential statistics. Reflexive thinking includes two types of self examination such as the logical foundations of the thought and integrated personal structures of thoughts. Berger & Lukemann; Giddens mentioned that constructional thinker seeks knowledge that enables self awareness which plays a dynamic role in the reaffirmation and reshaping of the social and cultural world. Bruner divided the levels of thinking into two a) staying within the information given b) going beyond the information given. Sanders considered that the thinking process that goes beyond the given information is considered as higher level of thinking.

2.4 History of Lateral Thinking

The term Lateral Thinking (LT) was coined by Edward de Bono. He intended to find a unique talent that is unique to human experience. He found that perceptual and
creative thinking skills are peculiar which are possible only in human mind not in computers. All types of thinking skills are linear, sequential and logical whereas nature of lateral thinking skills is quite different. In 1967, the word ‘Lateral Thinking’ was allowed in Oxford English Dictionary. The key word given by Oxford English Dictionary for the word ‘lateral thinking’ was ‘apparently’. The meaning for the word ‘lateral thinking’ in the dictionary was ‘seeking to solve problems by unorthodox or illogical methods’. De Bono described lateral thinking through the following example “you cannot dig a hole in a different place by digging the same hole deeper” to emphasize different ways of looking at things. The word ‘lateral’ refers to moving sideways across the patterns instead of moving along the track of normal thinking (DeBono Serious Creativity: Using the Power of Lateral Thinking to Create Ideas.). It uses various methods to get out of the usual line. LT could be used in two ways as such in specific terms and in general terms. In specific terms “a set of systematic techniques used for changing concepts and perceptions to generate a new one” (ibid 54). In general terms, LT explores a number of possibilities and approaches instead of pursuing a single approach. The brief technical description for lateral thinking is “cutting across pattern in a self organizing system” (ibid 54).

2.5 The nature of Lateral thinking skills

Lateral thinking is different from logical thinking. Logic is concerned with ‘truth’ and ‘what it is’ whereas lateral thinking is concerned with ‘possibilities’ and ‘what might be’ (De Bono Serious Creativity 54). Lateral thinking is an obvious creativity but not all aspects are the same as creative thinking skills. “Lateral thinking is concerned with exploring perceptions and concepts but specific or creative sense is concerned with changing perceptions and concepts” (De Bono Serious Creativity 55). Both creativity
and LT takes place in perceptual phase. Hence, LT is closely related to perceptual phase. Creative outputs are results of two types of process, a) The result of investment in the long run, b) The result of an idea makes sense without any investment. Lateral thinking results from the second type of process. LT becomes a place for information as perception. The mind with lateral thinking attitude always shows willingness to look at things from various points of views. “…the purpose of lateral thinking is to provide more deliberate means for pattern switching than relying on mistake or accident”(De Bono Thinking course 53). De Bono (Serious Creativity) said that the direct effort and attention increase the creative thinking ability but that may cause psychological inhibitions such as the fear of being wrong and the fear of making mistakes. LT is a special form of information handling system that should be treated differently. Through lateral thinking any person can change the old perception and keep changing the perceptions according to the situations. Thereby, it maximizes the personal-self of the person. It requires unlimited usable and recognizable patterns. A Pattern is any repeated concept, idea or thought and image. Instead of developing readymade pattern LT restructures the pattern by putting things differently. It is an insight restructuring. The purpose of rearrangement of pattern is to find an effective and different pattern. LT takes place in two processes, a) refusal to accept rigid patterns and b) attempts to put things together. LT never judges any pattern as inevitable whereas acknowledge it as one of the useful patterns and regards it as one of the ways of looking at things. LT uses information to give effectiveness in the pattern. It limits the self maximizing memory system (SMMS) because that tends to create patterns then perpetuate the patterns. LT attempts to restructure and create the pattern continuously. It breaks down the old pattern to liberate information from the old pattern.
2.6 Need for Lateral Thinking Skills in the context of second language learning

The mind works as an information system consisting of perception and processing. Perception allows the mind to form patterns and then uses them. The entire conscious system is recognizing familiar patterns. The analysis process of the perception consists of two processes. A) Breaking down a complex situation into familiar and recognizable patterns. B) Looking for the familiar patterns in the mechanism of recognition. Never think that they are actual components of the situations (De Bono Thinking Course). Perception allows process based on context, experience, emotions, points of view, framework etc. It strives to make sense of the present condition. Framing different pattern within the existing pattern is not possible for the mind. Natural tendency of the mind is moving towards, certainty, security, and arrogance. The normal human mind makes sense of the confusion and uncertainty. As soon as it recognizes such patterns it automatically switches into uncertainty and starts thinking to stop further thinking. It never takes steps to change the pattern of mind consciously. De Bono (Thinking Course) said that discoveries are not possible through systematic search. Flexibility of Lateral thinking is needed to explore and fit the mind within the situation.

In Indian context Second Language learning plays an important role in learners’ educational development. The information to the mind never arrives at once but in dribs and drabs. Sequence of experience and information set up the routine patterns of experience. De Bono (Thinking Course) said that the mind creates and recognizes patterns by communicating with the environment. It builds few patterns into the mind and manifests it as instinctual behavior for the life time. The target learners are entry level graduates. Their mind might have started to cope with the old patterns. In the case of second
language learning, learners form the attitude that they don’t have the natural talent of L2 communication. Hence, they believed that effective communication in English is impossible. They built the pattern of inability toward L2 acquisition through the rigid method of teaching. It induced the fear of making mistakes and fear of being wrong as fetters for their L2 ability. Hence, it is necessary for L2 learners to break the old patterns and form new pattern to create new attitude. The new attitude should induce them to try with all possible ways to attain effective proficiency and create ways to develop the communication ability. Replacing ‘is’ with ‘can be’ (De Bono Serious Creativity 62) is needed. In the words of De Bono, a) There is nothing more marvelous than thinking of a new idea, b) There is nothing more magnificent than seeing a new idea working, c) There is nothing more obvious than a new idea that serves your purpose”(De Bono Serious Creativity :Using the Power of Lateral Thinking to Create Ideas XIV). Lateral thinking is concerned with changing patterns and concepts. Since the nature of mind never paves way to change the fettered pattern of mind it is necessary to escape from the old patterns to put new sequences. Attempts to making old things better is not sufficient. Lateral Thinking is needed to break the tentative pattern /structure set up by sequence of experience. Without lateral thinking ability it would be impossible to repair the existing concepts and perception.

2.7 Thinking and Learning

A unique educational framework to empower thinking skills is needed to increase the balance between mind and the real world. Learning occurs when the mind makes connection between known ideas and information. Therefore knowledge is constructed by the thinking process (Gleitman). By stimulating the thinking process, knowledge of
language system and the ability to use the knowledge in communication would be increased (Nelson et al.). Bloom in “Taxonomy of Education” includes thinking skill as one of the important factors in the education. He includes thinking skills, knowledge, comprehension, application, analysis, synthesis and evaluation. George L. Grice; M. Anway Jones insists on the importance of including thinking skills in the curriculum by saying that “…thinking skills are a valuable component in the development of our students, it is time that we implement those skills into our teaching as well as into our curriculum” (341). Beyer (Practical Strategies) Thinking skills motivate learners to learn and increase better learning of the subject. Ruggiero explains that “teaching thinking is a course emphasizes the process that give every subject its vitality- hypothesizing, interpreting, seeking alternative views, raising questions, evaluating and discovering. That emphasis to create excitement and encourages involvement” (12). David Moseley et al. Types of thinking that covered in thirty five noted frameworks are, Self engagement(19), Reflective thinking(29), Productive thinking(35), basic thinking skills(33), Knowledge recall(27), Perception(13) etc.

Alexander Sokol et al. mentioned about thinking approach to enhance language learning. Thinking approach is based on a number of learning technologies especially on the idea of non-linear nature of learning. Four vectors of thinking technology are

a) Learning as the objective of the study, learning takes place to see language as a system.

b) Communication as the object of the study. Language used as one of the means for solving problems and using language as one of the means for solving problems.

c) Problem solving as the object of the study. Students learning to see how various problem solving models work in a system.
d) Learning as the object of the study providing learners with possibilities for transfer of knowledge and skills to new contexts and educate learners who wish to accept full responsibility for the learning and knows how to make learning successful.

Beyer argues that one-shot teaching is insufficient to improve thinking skills of learners. He insists on continual teaching to explore thinking skill. Thinking skills should not be taught in isolation; it should be integrated in syllabus to apply in various contexts. There are a number of authors who have implemented thinking skills to enhance the learning process and a few of the examples are mentioned here, Feurstein’s Instrumental Enrichment; De Bono’ CORT lessons, Lipman’s Philosophy for children; Blagg’s Somerset Thinking Skills course; Integration of thinking skills into subject matter (Swatz (Towards Developing and Implementing a Thinking Curriculum); Wiske; Zohar; Nemet). Ashman Conway claims that thinking skills programme typically involves metacognition, critical thinking, creative thinking, cognitive process, core thinking skills and capacity of understanding the role of content knowledge. Developing metacognition forms basis for improving various cognitive skills that is reflected in majority of thinking frameworks Beyer (Improving student thinking: A comprehensive approach); Brown, A; Costa (Developing minds: A resource book for teaching thinking); Fisher (Teaching Thinking); Grotzer, Perkins (Teaching intelligence: A performance conception.); Halpern; Mc Guiness (Teaching thinking: Theory and practice). To enhance independent thinking and to form established thinker, learners should be taught to transfer various skills to their everyday lives (Ashman, Conway; Perkins, Solomon (Transfer and teaching thinking); Perkins, Salomon Teaching for Transfer).
2.8 Teaching techniques

It has been found that it is not possible to teach thinking skills in terms of theories. No single method is best for everyone (Prabhu There Is No Best Method-Why? 161-176). Variations in the context decide the best. Variations related to social situations such as language policy, language environment, linguistic and cultural attitudes, economic and ideological factors; related to educational organization such as instructional, objective constraints of time, resources, administrative efficiency, classroom ethos etc; related to learner related factors as age, aspirations, previous learning experience, attitude to learning etc. Therefore, single theory can only be a contribution to bewilderment not for understanding. Blending of theories and methodologies may lead to fruitful learning. The “aim of all teaching is to bring about as much learning as possible. It seems self evident that teaching methods should be judged by the amounts of learning they can lead to in a given period of time” (Prabhu There Is No Best Method-Why? 168). It has been suggested that teaching method should not control any contextual features because “any success actually achieved in controlling contextual features will have only the effect of disembodying the method” (169). Learning tasks focused on exploration of the working knowledge systems of the brain. N.S.Prabhu refers tasks as enabling process of self regulation. Nunan called the classroom language activities that centre around the real world as “dress rehearsal for real life encounters” (Nunan The Learner Centered Curriculum 53). N.S. Prabhu (Language education: equipping or enabling?) called Functional approaches and task based approach as equipping and enabling education. Equipping procedure in education “provides young people with the knowledge and skill necessary for functioning in later years as useful and productive members of the society. Enabling opportunities of education “provides young
people with opportunity and support in realizing their potential in the form of understanding and ability…major aim is to broaden such serviceability maximally by concentrating on the more fundamental abilities” (Prabhu. Language education: equipping or enabling?” 190-191). Task based approach of teaching bridges the first language competence as an interpreter with the target language. Prabhu (Second Language Pedagogy) refers the enabling procedure as self regulating activity that includes information gap activities, reasoning gap activities, and reasonable challenge activities. Information gap activities involve the activity of transferring information from one person to another and from one place to another. Reasoning gap activities demands to get new information from given information by the process of inference, deduction and practical reasoning. Reasonable challenge demands effort within the capabilities. “Task based approach to language teaching and learning looks at communicative knowledge as a unified system where there are communication tasks which focus upon the actual sharing of meaning through spoken or written communication” (Joseph Foley 69). De Bono (Thinknig Course) suggested that providing complicated problems enhances the lateral thinking skills of the learners.

2.9 Tasks and Thinking Proposed by Language Practitioners

Alan Waters (319-327) attempted to clarify the types of ELT activities to promote thinking skills. It insisted on providing opportunities to use the best level of cognitive abilities in the course of learning in order to foster a healthier adult psychological frame of mind. It was suggested that “it is possible to combine activities that involve simple language with complex thinking” (Alan waters 326). A model has been introduced including seven activities relevant to worldwide ELT situations. They activates the following abilities of the brain,
Memory: it has the ability to identify the information already provided.

Translation: Thinking process occurs as a result of attempting to reconstructing the information and reconstructing the pattern of information according to the situation. It is a kind of mental processing involved in information transfer.

Interpretation: It creates and comprehends rules of grammar and relates with uncovering regular knowledge of language system.

Application: It puts language knowledge into practice; applies the generalizations derived from earlier activities to new context and involves the learner to go beyond the information given.

Synthesis: It is greater degree of creative thinking. Learners have to think beyond the given information and apply learning creatively than in the previous categories.

Evaluation: Learners use the same kind of thinking as the previous one in the first step. Then they need to see the suitability of the solution to the problem in order to determine success or failure.

Implication: It finds the type of thinking involved in the previous activities. Implication is the process of calculating the improvement in the level of thinking, implementation and language learning through an activity. The article provided a conceptual framework to evaluate the activities and comprehend the process of thinking in integrated ways at various levels of learning. Alan Waters (319-327).

Karakelle (124-129) showed the role of creative drama process activity by enhancing two important aspects of divergent thinking, viz. fluency and flexibility in
adult groups. It has been found that repetition of tasks provide safe environment, opportunity to revise, re-regulate one’s performance, encourage the production of multiple and different responses and enhance effective, fluent and flexible thinking.

Moseley et al. (367-390) formed a restructured version of six category framework in a schematic form. Two broad categories suggested were strategic and reflective thinking. It includes three steps which are information gathering, building understanding and productive thinking to induce cognitive skills. Information gathering included experiencing, recognizing and recalling, to allow comprehension and recoding of information. Second step is Building understanding that involves development of meaning, concept formation, organization of ideas system work with patterns and rules. Third step, productive thinking is possible when the mind activates reasoning ability, understands casual relationships, initiates systematic enquiry, increases problem solving abilities. This article has concluded by saying that when thinking is strategic and reflective meaningful learning will occur.

Jeff Zwiers (317-332) proposed an action research study to explore possibilities for scaffolding academic language and historical thinking. The target learners were non-native English learners in two middle school classrooms. The study aimed at developing historical thinking skills related to academic language by using various types of instructional activities and teaching writing assignments. Teacher modeling and scaffolding played an important role in achieving positive results. Through a series of scaffolding activities, information gap activities as pro-con, pair-share and jigsaws students acquired the language. Learners communicated their thoughts by pursuing the genre of persuasive essay. The implication of frequent assessment shaped the teaching of language and thinking.
Barbara Garii (1-12) provided models for K-12 student learning to deepen the understanding of learners’ own learning. The aim of the study was to articulate the strengths by providing the “real world” learning tasks. Questioning techniques, alternative note taking methods and brain storming activities were incorporated. Learners worked in self-selected groups and teacher organized groups. Discussions were encouraged to clarify their own learning and to link their learning stances with course content and understanding. Presentations of focused groups were audio recorded to understand learners’ understanding capacity on their own learning.

Sharon L. Edwards (303-314) engaged nurses to enhance the concepts of critical thinking by using two phase frame work. The first phase demanded nurses to organize and expound complex abstract ideas to identify more than one solution to the problem. The second phase encouraged the target learners to be responsible for justifying the decision. The study found that the suggested methodology had enhanced the concepts of critical thinking skills.

Lynsey A. Burke, Joanne W. Williams (104-124) investigated the effectiveness of teaching skills explicitly to 11-12 years old learners by infusing thinking skills into the curriculum. The effectiveness of the intervention was assessed by evaluating the responses of pre- test and post-test tasks. Three intervention conditions were included in the study. They were collaborative, individual and control groups. The study was conducted for eight weeks. Three thinking skill lessons were taught. Researcher introduced thinking skill to each class at the beginning of each week. The participants were 178 children from six different mainstream of same socio-economic status. Participants were considered as three groups. Beyer(2001) six task format was followed. The respondent was asked to
define the thinking skill, identify an example for thinking skill used, apply thinking skill and
metacognitive reflect on the process of applying the skill. Chi square analysis was employed to
determine significant difference between pre- and post test responses. Independent sample
T-test was used to compare intervention tests. P-value was set at P<0.05 for post hoc. The
results showed that mean score of collaborative learning condition was statistically significantly
higher than other conditions. Improvement in the control group was lesser than other
conditional groups. It has proved that when thinking skills are taught explicitly children’
learning will be improved.

Gholamhossein Shahini, Mehdi Riazi(1-10) introduced philosophy based language
teaching to develop productive language and thinking skills in students. Two methods
were followed in this study. First one was posing philosophical questions and the second
one was engaging students in dialogues. Thirty four students of a university were assigned
into two groups. The experimental group led by philosophical questions and the other
was control group directed by non-philosophical questions. Results revealed that
experimental group outperformed the control group in both speaking and writing.

Some thinking skill packages encouraged thinking as a discrete subject through
set of descriptions and descriptive plans. They aimed at forming the generic skills as “tool
kit” that the learners can use and generalize it in various other situations. (Aday, Robertson
and Vanville ex. “Let’s Think!”), Instrumental Enrichment (Feurestein Instrumental
Enrichment intervention programme for cognitive modifiability) etc. Some theorists
insisted thinking in infused curriculum by using thinking diagrams (Beyer Improving
student thinking: A comprehensive approach; Clarke Graphic organizers: Frames for
teaching patterns of thinking; Kirkwood 2005; McCombs & Whisler 1997; McGuiness
ACTS II sustainable thinking classrooms; Perkins, Goodrich, Tishman and Owen
Thinking connections: Learning to think & thinking to learn; Swartz, Parks the teaching
of critical and creative thinking into content instruction).

2.9.1 Interactional Activities

“Acquisition of a language is mastered first in collaboration with an adult or a more
competent peer solely with the object of communicating. Once mastered sufficiently it can
then become internalized and serve under conscious control as a means of carrying out
inner speech dialogues” (Joseph Foley 67). Learners work together to solve linguistic
problems and co-construct the language. The opportunities to talk and interact in the
second language allowed learners to re-organize knowledge in communicative aspects of
language. “From the theoretical perspective of a socio-cultural theory of mind, cognition
and knowledge are dialogically constructed” (Merrill Swain, Lindsay Brooks, and Agustina
Tocalli-Beller 171). “Psychological process emerges first in collective behavior, in co-operation
with other people and only subsequently become internalized as the individual’s own
‘possessions’” (Stentsenko, Arievitch 161). Teresa Pica (Second-Language Acquisition,
Social Interaction, and the Classroom) suggested some techniques to promote social and
linguistic environment in second language classroom. The classroom experiences
involved teacher-fronted and group participation in a number of various activities such as
open-discussion and problem solving. The findings suggested that providing active role to
the students shapes their learning. It emphasized nature conditioned classroom activities to
structure and re-structures their social interaction toward mutual comprehension. The
interactional activities help the learners to expand the power of communication by
drawing on “heretofore untapped sources”(Stern 85)). Kinginger(44) says that “…the
vagaries, perils and delights of making sense in the company of other human beings who interest them”. Merrill Swain et al. reviewed that peer-peer collaborative dialogue mediates second language learning and suggested that peer-peer feedback enrich the understanding of their own learning. Nunan (Designing Tasks for the Communicative Classroom); Pica, Kanagy, and Falodun (Choosing and using communicative tasks for second language instruction) analyze tasks in terms of interactional patterns and requirements. Their goals insisted transaction of tasks. Interactive opportunities have stretching influence on interlanguage and the precision of expression occurs as a result of the integral completion (P.M. Lightbown).

2.9.2 Real world conversational tasks

“Spoken language does not take place in a vacuum but is greatly affected by its context and the quality of interlocutor’s participation” (Christopher Still Well et al. 449). Tasks related to the real world and the demand for meaningful language engage students to complete the tasks without noticing much of anything about the language they use. Learning environment that include opportunities that engage learners in meaningful activities as conversation enhances second language communication ability of the students. Ali Yaliya Al Arshi (337-346) discussed the hybrid nature of role playing in two different impulses from language acquisition perspective. One was imitating the real world and another one was imaginative self expression in the role play. They were called as real play and surreal play accordingly. It was found that the real playing increases the L2 interaction among the students whereas artificial role hinder the normal interaction. He said that “artificial role and its ubiquity will necessarily hinder normal communication” (Ali Yaliya Al Arshi 344).
2.9.3 Pair and Group tasks

Krashen (Second Language Acquisition and Second Language Learning; Principles and Practice in Second Language Acquisition: Language Teaching Methodology) reported that group work allows the learners to negotiate meanings with one another, create comprehensible input that helps in second language acquisition. Roger Nunan (169) said that “classroom activities in small groups provide opportunities for practicing important interactional skills such as distributing and competing for opportunities to speak, holding the floor, adjusting to the contributions of other speakers and negotiating real understanding when exchanging information, opinions, feelings and attitudes”. Raymond Brown (Group Work, Task Difference, and Second Language Acquisition) mentions about the effectiveness of two way tasks. He said that in two way tasks both the participants possess some information and they need to resolve the task by using those information. It enables everyone to participate and it demands everyone to get some information to contribute to the task. It makes learners active and leads them to contribute to a greater extent. In one way tasks only one participant possesses the information and others need to get the information which makes learners passive.

2.9.4 Sequencing of tasks

The cognition hypothesis (Robinson Cognitive Complexity and Task Sequencing) claims that the pedagogic tasks to be sequenced in an order of increasing cognitive complexity (Prabhu Second Language Pedagogy; Long, Crooks Three approaches to task-based syllabus design; Skehan Cognitive approach to language learning; Robinson Cognition and Second Language Instruction; Gracia Mayo). It increases learners’ attention to the aspects of L₂ system and promotes good grammatical and complex speech production.
Increase in complexity affect the ease of access to and control over a current language system (Bialystock Cognitive Complexity and Attentional Control in the Bilingual Mind 636-644). Task conditions are needed to be taken into account in the task based approach. It concerns with the differences in participants’ background, role and the nature of participation (N.S. Prabhu Second Language Pedagogy). Resource direction plays an important role in task based approach (Peter Robinson et al. Time and Motion: Measuring the Effects of the Conceptual Demands of Tasks on Second Language Speech Production) to increase the accuracy. “Resource directing dimensions of complexity distinguish the task basis of the concepts that the task requires to be understood (eg. Relative time, spatial location, casual relationships, intentionality)” (Peter Robinson et al 536). Resource directing tasks demand a number of cognitive resources such as attention and memory, effort at conceptualization and second language development. “The internal status of linguistic competence is based on the observable output that results from learners attempted production of target language norms”(Seliker 214). Peter Robinson et al. measured the effects of increasing the complexity of task demands in conceptual domains using the measures of the accuracy and complexity of the speech. The conditions such as simpler Here-and-Now and complex There-and-Then conditions were used to find the effectiveness of complexity in task demands. Target learners were intermediate level students learning English as second language. A sequence of three wordless cartoon picture strips illustrating stories were used to elicit narrative. Short written prompts in present tense were given to Here-and-Now condition group and past tense prompts were given to There-and –then condition group. The results had shown significant differences in language production, in which complex task responses provided expected responses.
Cadlin (Towards task based language learning); Nunan (Designing Tasks for the Communicative Classroom) sequenced the tasks based on the formal factors with content named as code complexity; pressure to achieve communication was communicative pressure. Peter Skehen (A Framework for the Implementation of Task-based Instruction 52-53) mentioned that

- Code Complexity is concerned with syntactic and lexical difficulty
- Cognitive complexity is concerned with content processing and familiarity of the content. It depends on the cognitive processing. Cognitive processing is the extent to which learner can think actively through task. Familiarity is extent to which the task draws on readymade solutions (Levelt).
- Communicative stress concerns with a group of factors as follows
  a) Time pressure: concerns with time and how quickly the task has been done
  b) Modality: concerns with the pressure in listening, speaking, reading and writing (Ellis Interlanguage Variability in narrative discourse style shifting I the use of Past tense).
  c) Scale: depends on the number of participants who participated in the tasks and the relationship between the task and participants’ involvement (Brown et al.)
  d) Stakes: provides the importance of the task and the suggesting necessity to take part in the task (Willis)
  e) Control: depends on the influence of the task on learners (Pica et al.)

Schmidt (The role of consciousness in second language learning) said that it is difficult to reach all the goals of tasks simultaneously. Tasks of appropriate difficulty give learners a chance to provide a balanced attention to each of these areas.
2.10 Tools to explore Lateral thinking skills to second language learners:

The more tools results more skillful use of abilities. It covers three broad approaches as challenge, design and provocation. A number of tools are suggested as tools to explore LT skills. They are practicing six thinking hats, creative pauses, challenge, alternatives, the concept fan, concepts, provocation, step stone provocations, escape provocations, the random input technique, movement, the strata and the filament technique (De Bono Serious Creativity :Using the Power of Lateral Thinking to Create Ideas).

2.10.1 Six thinking hats

Practicing six hat techniques provides a concrete frame work to move away from regular patterns to cooperative exploration of the learners. Six types of thinking are introduced by mentioning six colors of hats viz. White hat, Red hat, Black hat, Yellow hat, Green hat and Blue hat. White hat depicts information thinking to realize the information they have in the mind related to the situation by using the check list such as, “What information do we have? What information is missing? What information would we like to have? How are we going to get the information?”(De Bono Serious Creativity: Using the Power of Lateral Thinking to Create Ideas 78). Red hat symbolizes intuition, feelings, hunches and emotions. Red hat people are provided permission to realize and express their feelings and intuitions. Black hat symbolizes caution and legal negative. People who wears black hat play the role of judge. They are stern judges in pointing out the mistakes. It prevents people from making mistakes and find out why something is profitable. Yellow hat allows logical and positive views. It requires a deliberate effort and creative ideas deserves yellow hat attention. Green hat people allowed creative effort, creative thinking, new ideas, additional alternatives, putting forward possibilities and hypothesis
and covers provocation and movement. Blue hat is for controlling the thinking process. It was asked for setting the agenda for thinking; for building summaries, conclusions and comment on the thinking being used. It organizes and controls the thinking process to make it more productive. This six hats technique help learners to regulate their thinking skills.

2.10.2 Challenge

The factor ‘challenge’ is the creative challenge to reach uniqueness. It assumes that the current way is one of the many ways and looks for better ways. It has three elements. They are block, escape and drops it. a) Block: it blocks the current path and forces the mind to find an alternative. b) Escape- escapes from the unnecessary condition to find an alternative and new pattern. c) Drop it-drops the unwanted ideas at the end of the process and look for the next. It challenges continuity of mind in certain ways. The continuity analysis look at some types of continuity such as the continuity of neglect, continuity of lock in, the continuity of complacency, the continuity of time-sequence. Mind locks in to search deeper for the underlying problem. In the analysis of continuity of neglect- the person will stop thinking about something when he realizes that is not a problem. The analysis of ‘continuity of lock in’ challenges the past ideas to fit in some other matters. The ‘continuity of complacency’ challenges the attitude of happiness in the repeated success because repeated success protects person from re-thinking. It demands to rethink the central concepts and never mind how successful they were at past. The continuity of time-sequence challenges the mind to stop trapping the mind by the sequences of experiences. The analysis allows people to free from past concepts through continuity. It challenges the shaping factors of
ideas such as dominating concepts, assumptions, boundaries, essential factors and
polarizations. “Challenge is one of the most fundamental processes of lateral thinking”
(De Bono Serious Creativity :Using the Power of Lateral Thinking to Create Ideas 314).

2.10.3 Design

Design is the convenient technique to practice lateral thinking principles. It asks
for improvements in certain existing ideas or invention of something that is carried out.
It is to show the different ways of doing some tasks. It does not have any strict mechanical
process but has the capacity to create a new type of pattern. In the process of design there
is a tendency to use complete units. It uses complete units for any project. Challenging
the units open up the ideas. To put in a short frame, the design, a technique, emphasizes
different way of doing things, different ways of looking at things, escapes from cliché
concepts and challenges assumptions. It is a practice in lateral thinking. Critical
evaluation is suspended in this technique (De Bono Lateral Thinking).

2.10.4 Alternatives

The very essence of creativity is search for alternatives. The strict meaning for
alternative is another choice. The very word ‘lateral’ suggests the movement sideways to
generate alternative patterns. Lateral alternatives are deliberate. Lateral search for alternative
tries to produce as many alternatives as possible that go beyond the research. In lateral
alternatives, the purpose of the search is to loosen up rigid patterns to provoke new ones.
It is not a matter of finding an appropriate fixed point but finding out a number of
suitable fixed points. The fixed point may be purpose, group, resemblance or concept.
2.10.4.1 Fractionation

Fractionation is a useful method for generating alternatives. It looks for a standard view of situation. It is not to provide a complete breakdown of the situation but to provide material to stimulate restructuring of the original situation. “The purpose of the fractionation is to escape from the inhibiting unity of a fixed pattern to the generative situation of several fractions” (De Bono Lateral Thinking 140).

2.10.4.2 The Concept Fan:

It is an elaborated way of seeking alternatives. The concept fan is supposed to start with a purpose and then work backwards. Concept fan provide a framework to generate alternatives by providing a number of fixed points. For example, seeking the upstream by asking questions such as “How does it help?; seeking downstream by asking “How can this be carried through?” This is working from both upward and downward direction to end up with a number of alternative new focus points.

2.10.5 Concepts

Concepts are needed and must be put into action by using specific ideas. Concepts could be created directly and sometimes they are pulled out from a number of ideas. It demands to extract the original concept to either find or create another concept. Once the concept is extracted it strengthens the changed ones, provides better ideas and put everything into action. Concepts are fixed points to generate alternatives. The more specific concepts limit the usefulness of the concept. For example, there are few concepts such as purpose concept, mechanism concept and value concept. The purpose concept answers the questions such as “what we are trying to do? What is the purpose of the activity?”
Mechanism concepts raise the questions such as “How does it work? How is the purpose achieved? What is the operating mechanism? What is happening?” It tries to see the mechanism involved in the concept process. Value concepts arise the questions like “why is this useful? What value does this provide? Where is the value? Why is this worthwhile?” (Serious Creativity :Using the Power of Lateral Thinking to Create Ideas 143). There is a need of continual movement from idea to concept and concept to ideas in the process of lateral thinking.

2.10.6 Provocation

Provocation plays a central role in the process of lateral thinking. Provocation is the term used for thought experiments. It can be obtained in deliberate manner and may arise in the course of thinking and conversation. The symbolic word ‘po’ was used to indicate provocations. The word ‘po’ was coined by De Bono referring to the words like, possible, hypothesis, suppose and poetry. Both hypothesis and provocation aims at changing the direction. Hypothesis guides perception in a certain direction and provocation seeks to take away the perceptions from the usual directions. It is a logical necessity in self organizing system of mind. Provocation produces instability in the mind to reach new sort of stability. It provides ways to getting out from main tracks in order to be creative. Humor is a provocation which occurs when the mind moves from main track and ends up in side track. “…humor can only occur in self-organizing patterning system” (De Bono Thinking Course 52). It involves the mechanism of escape from one pattern to the other. It leads the thought process to provide humor. This is how the systematic abstraction of lateral thinking takes place. The sequence of provocation could be done by following three steps such as choosing a creative focus, setting up the provocation and using the provocation.
2.10.7 Setting provocations

The thinker can set the provocations naturally or through the method of escape.

1) If the thinker realizes that the idea is unsound then he can look forward for an alternative automatically. It arises provocations naturally.  2) The thinker can take all the points as granted for any situation then proceed to escape from the granted points in order to find new ideas.

2.10.7.1 The Random Input technique

The random input technique starts from a new point and increases the chance of hitting the new track. It motivates the thinkers to open up patterns from the input. It works with a random word, person, magazine, other objects and exhibition, etc. this provocation could be done in a more deliberate way. Random word works in our mind in the following way: “In our thinking we move out of a certain area along the traditional route. If we toss in a random word it has its own associations. Later those link up with the associations of the ‘problem’. We can now move out of the ‘problem’ along this new route and see what we find” (De Bono Thinking Course 63). Association of ideas occurs until large fans of ideas are obtained. Random task open up association of ideas until a large fan of connectors obtained. In the escape method the focus was on the things that were taken for granted whereas in the random stimulation people open themselves to influence the other and allow themselves to be stimulated. It has the capacity to set new provocation.

2.10.7.2 Movement method

Using provocation in active mental operation is called movement. It is an active operation of the suspension of judgment. It is a general willingness to move forward from
an idea to new idea. Systematic ways to arouse the process of movement are, a) Extract principle: the process of extraction of principle, concept, feature from the provocation and ignoring the rest. People seek to work within the selected principle to form a new idea. b) Focus on the difference: It is necessary to see the difference in provocation. It focuses on difference to seek a new idea. c) Moment to moment: it is visualizing the provocation being put into action from moment to moment. d) Positive aspects: it focuses on positives directly in the provocation, e) circumstances: “In the method of getting movement we look around for special circumstances that would give value to the provocation” (De Bono Serious Creativity :Using the Power of Lateral Thinking to Create Ideas 158).

Results of movement process: a) Negative points are observed and a conscious attempt would be made to move forward to a useful idea. b) Movement tracks take the mind back to the old ideas to develop other routes to form new ideas. c) It takes the thinker to an interesting point that builds creative thinking. d) Helps to notice that the idea produced is different from the previous stage of performance. e) Makes the thinker realize that he comes across an excellent valuable point. f) Movement helps to reach a different concept; attempts to move ideas to put in the concept g) Builds up the level of confidence.

2.10.8 Stepping Stone methods

The provocations can be set up mechanically with few plans. Provocation can be set in four steps such as reversal, exaggeration, distortion, and wishful thinking. The reversal, the first formal way of creating stepping stone method to form provocation. One looks at the situation in normal point of view and does his performance from usual direction. Then goes in the opposite direction or reverse to form the provocation. The exaggeration, the second formal way of creating stepping stone to form provocation. It is related to
measurements and dimensions such as number, frequency, volume, temperature, duration etc. This step is exaggerating the normal measurement and dimensions to form provocation. Exaggeration could be done in both upwards and downwards of natural measurements and dimensions. Distortion type of provocation can be obtained by taking the normal arrangements and changing the patterns. This is distorting the situation to create provocation. Wishful thinking provocation puts forward a fantasy wish knowing that the wish will not be fulfill in their life. The exercise of stepping-stones frees up the mind of the thinkers and tempts to use any stepping stone provocations. The purpose of this exercise was to make the learners to have creative focus.

2.10.9 The Escape Method

It is a method of leaving the old patterns and finding new patterns. It has two steps, The first one accepts all the patterns by following the principle, “take for granted”. The second step leaves all the patterns, escape from those patterns to find a new pattern.

2.10.10 Sensitizing Techniques

The aim of sensitizing techniques is to feed ideas into mind so as to allow the process of thinking to take new and creative tracks. Techniques belonging to sensitizing techniques are, stratals and filament techniques.

Stratals: “The strata is consciously formed by an unconscious idea, then the stratal may serve to bring that idea into consciousness” (Serious Creativity :Using the Power of Lateral Thinking to Create Ideas 186). The more disconnected layers may result in more sensitization.
The Filament technique: It put down the ways for thinking requirements to form creative process. “The basic requirements of the thinking situations are listed one under the other. Each of the requirements is then considered in a “filament” extending from this requirement” (319).

A sort of fundamental process of creativity was seen in each of the process.

2.11 Using Lateral thinking techniques practically

a) Six thinking Hats techniques in exploring lateral thinking skills:

It could be used as general frame work for a discussion. The green hat demands for specific creative effort, the yellow hat looks for positive view of an idea, the black hat demands caution and logical negative thinking.

b) Focusing on improvement

1) Clear focus on the process and choosing sub focuses,

2) Challenging the existing methods of thinking and existing concept,

3) Utilizing escape provocation to escape from the existing grooves of thinking,

4) Using stepping-stone provocations for the change in the system and

5) Using the concept fan method for major reconsideration of performance explores improvement in lateral thinking

c) Providing problem solving activity

1) Focusing on the problem to provide own definition.

2) Providing alternative definitions to the problem.
3) Challenging the definition, presentation of the problem, existing thinking, the shaping factors of thinking and basic concepts in the mind.

4) Using fixed points and alternatives for simple problems and concept fan for creative efforts.

5) Using escape type of provocation to escape from old approaches;

6) Using stepping stone provocation for radical thinking;

7) Using random word technique to find a different approach to solve the problem and to provide innovative new ideas.

d) Demanding to approach tasks with lateral thinking attitude

1) Using filament technique at the beginning may lead to use appropriate techniques to explore lateral thinking skills.

2) Emphasizing on desires induces wishful thinking provocation that may assist the mind to tackle tasks differently.

e) Using designing technique to explore lateral thinking attitude

1) Stratals at the initial stages insists on the requirements of the task.

2) Filament technique as second step paves way to realize the requirements of mind to explore lateral thinking skills.

3) The random word gives fresh approaches.

4) Challenge the existing concepts; challenge to normal thinking during the creative effort

5) Using escape provocations leads to explore the different design.
f) **Providing green field situations in lateral thinking attitude**

1) The use of random word gives a starting point.

2) Use of stratals allows new ideas to emerge.

3) Wishful technique also provides a good place for lateral thinking in greenfield situations.

g) **Exploring opportunity to explore lateral thinking**

   Opportunity can be treated as other techniques providing Greenfield situations and task.

h) **Tasks Demanding invention**

   Opportunity, green field situation, and task determine the invention.

i) **Insisting blocked /stagnation technique**

1) When there is no new ideas random technique could be used to produce new ideas.

2) The escape provocation would be useful to move away from the old traditional thinking.

3) Wishful thinking steps help to open up new directions for people.

j) **Increasing conflict**

1) To tackle the conflict a number of techniques could be used.

2) Focus the creative needs, use the techniques used for problem solving, green field situation, design and task.

3) Design to move the thinker to move forward differently.
4) Initiate the fresh approach by using Random word to open up the new directions and new techniques. Challenge and escape provocation could be applied to the current thinking situational conflict and to locked-in-situations.

k) Implementing ideas regarding the future

1) Stratals at the beginning opens up the ideas

2) Random input technique provides discontinuities and thereby provide motivation too

3) Escape provocation technique forces new thinking

4) Conceptual analysis confirms the innovations in new idea.

l) Implementing Strategy

1) Strategical technique can best be treated as design and task.

2) Challenge is a powerful technique to treat planning situation.

3) Sub-problems and fresh focuses can be considered.

4) Fixed points and alternative techniques are valuable at various points in exploring lateral thinking strategy.

m) Inducing Planning technique

1) Planning for flexibility is taken into account. “one should plan to be in a position to change just as much as one should plan to be in a certain position”. (De Bono Thinking Course 120).

2) The plan is to maintain the flexibility to proceed the plan; plan to change the points; plan to achieve the change and plan to abandon the plan if things went wrong.
n) Initiating The Creative Pause

The creative pause is a brief silence within the mind of the person to consider the alternatives to do things. It happens when there is a willingness to provide creative attention on smooth flow of thoughts. It is an intentional pause for a flow of ideas.

To put it in a nut shell the focuses and sub focuses, alternatives and concept fan (elaborative alternatives), challenge to the existing thinking, escape from the existing situation, an initiation of stepping stone, random word an inducer of fresh ideas and new start, sensitization technique a stratal and filament technique are the essential tools and techniques to explore lateral thinking skills.

2.12 A Model for Lateral Thinking and second language learning

As the title indicates, lateral thinking is used as a tool to develop language proficiency in L₂ learners. The centrality of the model of this study is the combination of teaching language and lateral thinking skills. The first aspect of the model is the process of the acquisition of knowledge and language related to both the factors of language and thinking skills. The major factors that influence the acquisition process of language are cognitive maturity, the linguistic knowledge and learning contexts. The learning contexts include teaching methodology, learning environment and materials used for teaching. Learners bring the knowledge of social learning experience as background to the class. The next aspect of this model is the process of acquisition of the lateral thinking skills. Implementing lateral thinking skills to break the influence of background knowledge patterns. Lateral thinking skill has a number of sub skills. The prominent factors of lateral thinking ability is generating alternatives, changing patterns, creating new concepts and reaching the goal in an unusual way. The sub skills and methods of attaining these
features are discussed in the previous sections. The goal of lateral thinking is breaking the fetters of old ideas and attitudes and forming new ideas. All these skills are discrete in nature when applied to specific tasks. These skills influenced the unnoticed cognitive activities also. The final step to reach the lateral thinker state is reaching the objective by using a number of strategies and techniques that suit the demands of the situation. Finally everything that is learnt has to be applied in new/different contexts and only then the person can be called as lateral thinker.

A 40-hour classroom experiment, undertaken for the present research, is assessed systematically to observe the improvement in lateral thinking skills and subsequently to view the development in language production.
Fig. 2.1 Application of model framework

Acquisition of language and knowledge

Cognitive maturity
Linguistic ability
Integration of communication skills
Explorations in learning

Second language
Lateral thinking

Challenge
Provocation
Design

Challenging old perception
Possibilities of success
Invention of idea

Confident in thinking (I am right)
Possible inventions through alternatives
Innovative concepts

Innovative ideas

Application

Linguistic knowledge
Integration of skills

Cognitive maturity
Exploration in learning

Acquisition of language
Application of the model framework in the classroom in a systematic way would be fruitful. The above mentioned model framework for developing lateral thinking skills in L2 has been taken for the present research work. The language learning aspect of the model framework in relation to the thinking process is presented in the following section also.

Cognitive theories gave different perspective to understand the process of language acquisition and cognitive development in relation to second language learning. Information Processing Model: Mc Laughlin proposed that the complete process of language learning is based on two processes namely automatization and restructuring. The process of learning takes place without any external effort of language user is known as automatization. The process of change and restructuring of existing cognitive structures also leads to automatization process. From the view of second language teaching, the learners take a resort to control the process that is constrained by short-term memory. The process turns to be automatic because of repeated activation of the process and at the end patterns stores in long-term memory. Though the learning takes place in the process of automatic states, constant restructuring of linguistic system takes place that supports the learning ability of the learner. The model for this study explains the internal process of learning. Thus, it is assumed that the input given to the learners in problem form leads to the hypothesis formation. The training and reinforcement of strategies to learning language become conscious effort at the beginning. The constant practice leads to automatization and that restructures the pattern at higher level. It becomes an unconscious effort. If this process is initiated in the minds of learners, they can cope with the tasks, form content and new patterns automatically. It is a fact that none of the strategies could be registered in the cognitive process in short time. (Oxford Research on Second Language Learning Strategies)
The same theory supports Indian context of second language learning. In Indian context of education and in Indian educational system, ESL learning activity outside the classroom is impossible. In this context the present study was undertaken to establish that cognitive exercises would help the Indian learners to learn and perform the process of automatization faster.

2.13 Role of a teacher

Language ability is an implicit form of knowledge where development occurs as an internal continual growth process. The real growth of knowledge occurs when there is a potential for the further growth. Mechanical teaching may not help learners to possess the potential for future growth. N.S.Prabhu (There is no Best method why?) insisted on following the natural method of teaching than the mechanical teaching of over routinization. Perdue insisted that “acquisition is pushed by the communicative tasks of the discourse activities which learner takes part in”(53). Teacher’ ‘sense of plausibility’ (N.S. Prabhu There is no Best method why? 175-176) plays the best role in practicing innovative methodology of teaching. The factors that influence the teacher’ sense of plausibility is subjective understanding of the teaching, experience in the past as a learner, exposure to use one or more methods etc.

2.14 Assessment of thinking skills, tasks and language ability

At present there is no standard model for measuring the effects of thinking skills (Lynsey A. Burke, Joanne M. Williams Developing Young Thinkers: An intervention aimed to enhance children’s thinking skills). Some evaluations utilized the standardized I.Q tests (Blagg Can we Teach Intelligence?; Trickey&Topping) but the tests do not relate specifically to the skills learned and failed to involve the active application of those
skills. Hence this method was found to be inadequate (ASP; Beyer Practical Strategies for the Teaching of Thinking; Burke Performances to Assess Standards and Intellectual Growth; Costa, Kallick; Fisher Assessing Thinking Skills; Kirkwood 2005). Aspects of thinking were analyzed by researchers. Fluency in thinking was assessed by noticing the quantity of unconventional and associated ideas generated on a specific issue. Flexibility in thinking was evaluated by noticing the association of ideas related to different fields in response to a stimulant. A number of studies defined fluency and flexible thinking aspects. The general idea mentioned in the studies were that fluency is the number of responses to a stimulant and flexibility is the number of various categories that fall into the responses and originality is the number of rarely seen responses in the application range (Martindale; Gancalo, Staw; Mouchiroud, Lubart; Preckel, Holling and Wiese; Runco).

Lynsey A. Burke, Joanne M. Williams (Developing Young Thinkers: An intervention aimed to enhance children’s thinking skills) mentioned that standardized assessments of thinking skills are too broad to generate meaningful data ex. De Bono (Teaching Thinking.).

Christopher StillWell et al. assessed the transcribed language according to simplified measures of fluency, accuracy and complexity. For evaluating the accuracy corrections were done based on few categories as grammatical corrections, editing, reformulation, fluency and complexity level. For grammatical corrections learners were noticed errors with subject-verb agreement and plurals. Editing consists of elimination of redundancies, repetitions and false starts. Reformulation demanded to find extra information added to clarify the meaning comprehended. Fluency was measured by
noticing number of syllables uttered for a minute, presence of repetitions and frequency of pauses. Complexity was analyzed by comparing the ‘idea units’ repeated in multiple iterations of the task.

2.15 Learning Outcome

1) Shaping ideas: Availability of the real life constraints as cost, legality, acceptability are considered under shaping factors. It sees whether the ideas are fit into these constraints.

2) Tailoring ideas: It analyzes the fitness of idea in the resources and the usefulness of idea for the resources. The resources include people, time, motivation, money etc.

3) Strengthening ideas: The effort to increase the power of the idea is calculated.
   The focus is on the value of the idea.

4) Reinforcing ideas: Though some ideas are not actual defects sometimes they look weak. It focuses on reinforcing those weak points.

5) Take-up of ideas: The attention shifts from the idea to the person who is taking up the ideas. The person who is deciding the idea, whose cooperation and good will plays a major part in the success of the idea is noted in this part.

6) Comparison: There is a comparison between the idea already proposed and the new idea. It focuses on points of difference, points of value, and points of difficulty.

7) Faults and defects: The aim of this factor is to improve the idea and to anticipate the evaluation stage. The black thinking is used to find faults and defect of the idea. AN effort is taken as second step to correct those faults.

8) Consequences: The factor is used to find out the need for changes in the idea. The consequence of putting idea in the action in the followed future. The expressed expected consequences of this idea is noted.
9) Evaluation: The emphasis is on the use of the values of ideas, feasibility of thoughts, resources and fit. The real value would be given importance.

2.16 Rating Tasks

Roger Nunan (2000) showed that rating scales guide the teaching process, defines the principles for constructing class room tasks with achievable goals. Rating scale was proposed to address the difficult tasks; assess the level of particular communication; assess the performance level and the general ability in small group conversation of the learners. It assesses the communicative performance by using a number of descriptive bands for a particular skill. Patsy M. Lightbown clarified the difference between accuracy, fluency and complexity. Accuracy is concerned with learners’ capacity to handle the level of inter-language complexity. Complexity is the process of restructuring related to the situation and elaborations of underlying inter-language system. Fluency concerns with the capacity of learners to mobilize the inter-language system to communicate meanings in reality. It is the capacity of a person to mobilize his own linguistic service of real time communication. Fluency depends on the capacity to use implicit knowledge systems in actual performance.

2.17 Evaluation of lateral thinking – A check list

It is useful to have a check list at hand to strengthen the process of lateral thinking. It is not possible to apply every single idea in all the situations. This is a matter of need, circumstance and choice. When the idea seems to be perfect, they have to be subjected to treatment in order to see further possibility of improvement. It is necessary to evaluate whether the activities such as shaping, tailoring, strengthening, reinforcing and take up of ideas were done to give a better performance. The emphasis on the use of the values of ideas, feasibility of thoughts, resources and fit could give an appropriate check list.
Conclusion

This chapter provided a brief review of literature on thinking skills and the role of thinking in the process of learning. A model for developing lateral thinking attitude was presented.