_____

LEARNING FOR SUSTAINABILITY

Prof. R. S. Mani

ABSTRACT

     Learning has many definitions.Learning process has become complex. The learner has become more information oriented with the result the definitions of learning has become more varied. The perspective of learning is becoming more contextual, experiential and problem solving in nature.However,a few definitions are considered for the discussion.

KEYWORDS*: Learning process , experiential and problem solving in nature.*

INTRODUCTION

Learning is acquisition of meaningful information through actual involvement of the learner in the process of learning.

Learning is acquisition of receptive and expressive language skills, comprehension and development of vocabulary.(Pandya,R and A.K. Srivastava,2016)

Learning is modification of desirable behavior in the learner.

Learning is developing bond between stimulus and response followed by reinforcement of the correct response (B.F. Skinner).

Learning is a purposeful thinking for the sudden solution of the problem as insight (Kohler).

Learning is more purposeful perceptual organization of the immediate environment for developing concepts (Mani, R.S.2018).

Learning is the perception of stimulus and response in contiguity for meaningful organization. (Guthrie).

CHARACTERISTICS OF LEARNING:

Learning is an information processing process for acquisition of concepts.

Learning is purposeful, meaningful, organized, deliberate and guided (self or others) activity for achieving goals successfully.

Learning is a continuous process that shows more organization, sequence and development of the experience into a whole. It shows a relatively permanent change in the behavior of the learner. (Farmer, et.al. 2013; Loftus and Loftus, 1980).

Learning takes place in a hierarchical manner resulting in different outcomes for the efforts made by the learner.

Learning is a joyful process that is satisfying and it continues to take place when the opportunity comes to the learner for example, reading a story book, singing a song.

Learning is developmental that takes place by stages progressively in the order of inquiry.

Learning takes place in a continued and sustained way and not in jumps,the pace of learning may be slow but sustained systematic efforts brings success(Mani,R.S.2018).

Learning is holistic in nature that incorporates cognitive, affective, and

_____

_____

conative aspects in an integral and integrated way for the success of learner.

LEARNING AS A PROCESS AND PRODUCT

Learning is a process that takes place in every person, anywhere at any time for the period of attention paid to the learning material by the learner. Learning may take place in any one of these settings, namely informal setting for example,home,neighbourhood,Non formal setting for example, play group, library, laboratory etc,. and formal setting for example, school or college. Learning takes place from birth to death of the person continuously, progressively and in more reinforcing ways acceptable to the learner. It is an autonomous activity that the learner will be doing with freewill. Learning may be natural, artificial (virtual) and natural as well as artificial (virtual). There are different types of learning identified based on the type of the sensory capacity of the individual. There are 8 types identified depending on the individual difference of the child. Some children may be visual learners, some may be auditory learners, some may be more kinesthetic learners' etc.However, pedagogues believe that a good combination of all these sensory modes may help the learner in learning better and the resultant learning could be quality learning (output). It is also the belief that the focus of attention of teachers and parents need to be on the quality of the process of learning than the product. However, parents and society including the teachers have paid excessively more attention to the product of learning and emphasized the higher performance is the only means of progress.

Learning as a Process: Learning as a process could be observed in three dimensions namely, cognitive, affective and conative.

At any point of time, the learner will be using more than one dimension for learning. The attention and experience of the learner is positively correlated with the achievement of the learner. The number of rehearsals, practice and repeated performance will result in progress that is continuous, sustaining and permanent. The learning that is retained in the memory for few seconds is the temporary learning for example, remembering the telephone number of a friend. The learning that is sustained and retained for long period of time is permanent learning. Learning as a process is explained by the K.Fishers framework of learning. There are others such as Erickson, Kholberg, and Piaget etc.

K.Fisher's Framework of Learning: Learning is observed as a problem solving process. The learning process is presented in four stages in progression. They are as follows:

Zero Phase: This is first stage of the learning. In this stage the learner does not have any idea of the task to be learnt. He/she will not be able to describe the learning task, its characteristics and the various linkages. This is a 'No idea of task of learning' stage. For example, a person who does not know driving the scooter or scooty will have prior notion that it is easy to drive a scooty or scooter. When the learner starts learning scooty/scooter she/he finds that there is a need to learn balance.

Phase One: In this stage, the learner has a rough outline of the task that the learning scooty requires balance, practice and understanding keys.

Phase Two: In this stage, the learner knows the problem. She/he tries to drive a scooty in a ground under the guidance of an instructor. Learner has fear and she/he holds the break tightly and becomes ready to apply break while running in the moment of difficulty. She/he also may try to keep ones leg near the ground

_____

_____

in the event of need of support. However, learner gradually learns to keep both the legs on the scooty foot board and drive confidently.

Phase Three: The learner feels little more confident and trys to drive fast and attain higher speed with accelerator. Later, the learner discovers that the speed has risk to cover and may meet with accident. The continuous and conscious practice will make the learner learn signaling left, right; using horn, light (dim/dip) etc, .The anxiety of using (running) scoot will gradually reduce. The learner may not know the exact sequence or cause for effective functioning. However, she/he could run a scooty in the event of need of running one.

Phase Four: Learner has mastered the skills of running the scooty/scooter. She/he has the knowledge of signaling. The learner knows that ignition is the beginning and manipulating the key will stop the scooty.Thus, the cause and effect relationship is established. The fuel need to be checked before starting the vehicle and the knob needed change of position while ignition in the case of a scooter (a geared vehicle).The problem of ignition may be due to the flow of fuel.

The knob related to the fuel flow need to be opened for a few seconds. Applying break in high speed will distort the balance, gives a jump to the vehicle and one may fall off the scooty or scooter. The effective learning comes with the learning of the cause and effect relationships and regular practice with more consciousness.

Learning as a Product: There are many products of the learning. It is described in many ways. It is considered as 'Learning result', it is described in terms of Output. It is presented as skills, or special skills, an attitude, an approach. The following is the list of learning products emerging from the modern learning in schools and colleges:

1. Knowledge for example, conceptual understanding resulting in a domain knowledge for example,physics,chemistry, biology,economics,psychology, history, etc,.
2. Understanding (Comprehension) for example, reciting mantras, poems, national songs.
3. Skills for example, tent making, candle making, driving scooty, swimming,yoga,computing, computer programming, use of language, laboratory skills, library skills (reading), etc,
4. Special skills (e.g. dance,drama,presenting skits, play, painting,drawing,singing,designing,fabricating,art work, glass work,enameling,embossing,fabric painting, copying,moulding, etc,.
5. Aesthetic appreciation for example, taking photographs of art work, reviewing the art work, reading history, writing poems.
6. Emotional understanding for example, empathizing others, feeling for others
7. Developing positive or negative attitude towards person, family, institution, or a society. It is a learned behavior. The learner expects more prestige in developing an attitude showing the belongingness to an association, society or an institution.
8. Altruistic behavior–feeling for the others and helping. For example, People in Cochin are affected by floods in Kerala. They need relief in many ways to come to normal conditions.
   The people with altruistic behavior voluntarily help the people affected by floods.
9. Students form groups such as learning organization, such as forums,create website,use broadcast modes for communication, mobile communication, use of tablets.
10. Students learn to use e-boards, read e-books, refer e-journals,
    Learn to Sing with Karaoke presentations, write poems, skits, drama, short stories, make a collage, Etc.
11. Prepare a picture story, story board; collect puzzles in physics, chemistry, biology, geology.

_____

_____

12. Students learn to upload the information, web posting, using internet protocols, send e-mail, send an e-mail attachment, read a e-message, download a document,read,print, scan and present.
13. Develop reference skills, elaboration skills, and organizing skills.
14. Learning products are the milestone in learning.

Learning may result in more than one product also.It is an integrative activity, integral to the person, integrated in result coming as a whole.

OECD's recommendations based on PISA's findings that 'countries where schools have greater autonomy over what is taught and how students are assessed, students tend to perform better(OECD 2011) and McKinsey reports shows that the 'most improved school systems' around the world achieve and sustain improvement by increasing the responsibilities and flexibilities of schools and teachers to shape instructional practice (Mourshed, et al. 2010). Countries such as Finland individual schools have full authority across a broad range of issues perform best on PISA, that indicates it positively affects performance of students on such tests.However, along with this authority goes the need for appropriate regulations and pre service and in-service teacher and administrator preparation. The current question of sustainability for progress of the mankind needs concerted efforts made by the teacher, teacher educator, students and the environment to bring into focus the sustainability, and construct the environment for sustainability. A figure given by the UNDP in the recent human development report 2016 is adapted for the graphic presentation of learning in progression towards the goals of humanity. Sustainable development comes as a measure of thinking of resources and planning for the present and future. For example, the persons have to protect their environment, forest, rivers and seas and ocean for development. The bio diversity needs to be sustained, protected, nurtured and promoted for the present and future.

Sustainable Development as Learning

> Sustainable Development:
>
> Indentification of Key Sectors: Agriculture, Dairy, Transport, Power, Communication, Health, Education and environment.
>
> Sustainable Initiatives- Self sustaining processes, cycling, regeneration, product appreciation-maintaining and sustaining quality and standards, perceived sustainability practices.
>
> Sustaining innovative practices and institutional mechanisms, sustainable leadership.
>
> Promoting innovative indigenous ideas and creation of knowledge. Developing skills and attitude to sustain the resources for the present and future for example, maintaining heritage structures, green planning and implementation

⬆

> Voice and Autonomy: Freedom of Expression, Creation, Representation, Harmony, Humanity

_____

_____

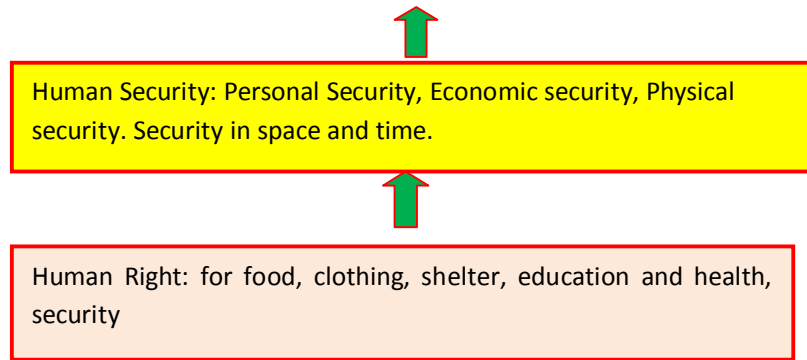| Human Security: Personal Security, Economic security, Physical security. Security in space and time. |
| Human Right: for food, clothing, shelter, education and health, security |

Figure No. 1 Showing the sustainability according to the human development report 2016 HDRO.WEB@UNDP.ORG.2017 adapted the sustainability as a learning process.

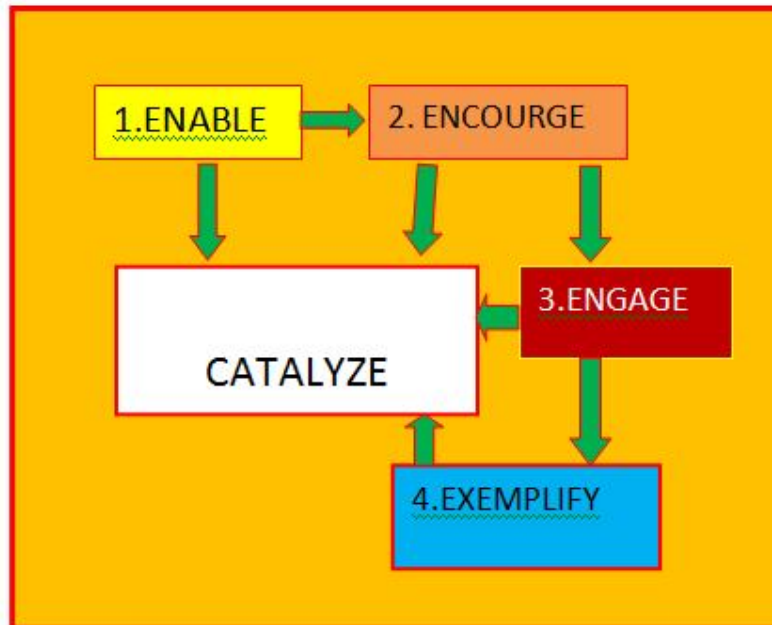**'4 E' Model may help in sustaining the present and future.**

Figure No. 2: 4 E Model Adapted for Sustainability Learning

1. Enable: The sustainability enables the person to accomplish the task successfully and continue to maintain standards. It also acts as a motivator of development. There may be comparisons made concerning development. The individual differences are clearly perceived in the sustainability.

2. Encourage: This is the second stage as a sequel to the first stage enable. The individual needs encouragement to lead on to the goal and perceive the goal clearly. The motivation makes the person to prepare for the events, focus on the sustainable factors, concentrate on the development that increases the value addition to the process and product. For example, one may encourage use of biofuel in the place of the use of petrol or diesel.

_____

_____

3. Engage: The person needs to engage in the activity of sustenance and development then the experiential learning leads to more of opportunities for developing capacities. The Colombo plan of Sri Lanka has actively developed model for sustainable skills development at the polytechnic stage or higher secondary stage. The model is under experimentation. The research is of considerable interest to many scholars in the globe. The micro credit programme was a relative success in Bangladesh and in India also some agricultural rural areas have been able to sustain on the micro credit model of development, for example, Bihar, Karnataka etc,.The co-operative Endeavour of contracting for the fertilizer by larger farmer group and buying good manure with adequate measure to distribute it at the time needed has been accepted as a practice.Anand Diary farming and co-operative network of milk distribution has brought more development to the region. The white revolution is one of the successful programme in India.Nai Taleem of Wardha, Maharashtra has accepted sustainability model of education. They have incorporate the project approach, Shram dhan,learning by doing, experimentation,observation,analysis, and thinking together has brought more credence to the education as a meaningful Endeavour in India as well as Sri lanka(Sarvodaya movement).Rambhadra University, Chitrakoot, Uttar Pradesh has tried to evolve such a model indigenously and implement it in higher education(including teacher education).Industries have recently tried to develop green processes that enables the production of chemicals that is more useful for development and less harmful to the environment.

Engage is a very meaningful, purposeful, goal oriented activity that takes place when the individual actively interacts with his/her environment. The individual gets experiential learning and when he/she discusses the problems and issues, the clarity of thought developed is a relatively permanent learning.

4. Exemplify: There is a need to provide example as a model. For the activity is perceived as an innovative way of performing the task. A better way of organization and more meaningful way of performing the task. Examples are the products of the effort and imagination, way of living, challenge met towards the goal, in agriculture drip irrigation has been accepted in the hilly areas for growing plants, crop. In Kashmir a person has drawn long pipes and transported the water to the hill top and used the water through sprinkler method and drip irrigation. Many grape orchards have accepted this method of irrigation. The renewable sources of energy is generated through solar energy, wind energy and it is used for many developmental purposes for example,Gujarat,Tamilnadu,Kerala(solar panels are built in the Cochin Airport and the electrical needs of the entire airport is taken care of by the solar energy).There are two air ports in India that have developed technology for the solar energy and use it for the electrical needs of the airport,etc,.The quality or value developed is self reliance, self support and developing linkages for the goal oriented performance of the task. In Andhra Pradesh one of the greenovators developed two wheeler that is based on bio fuel and it may be run on the alcohol. This model had a slow take off in the market however, at present there are around 8 countries marketing the two wheelers of this kind.

Catalyze: It involves all the other components such as Enable, Encourage, Engage, and Exemplify. All the components of the model are sequential, integral, integrative and work towards the goal of sustainability.Sustainability comes as a process and product. It is a learning process and product. Sustainable is one who is educated, trained, motivated, learned and work with devotion to accomplish the task in a given time. Sometimes, the person may be creative. The sustainability is a catalytic process of enhancing value, addition of quality, increase in the capacity of the individual, develop skills, empower men or women for work, work ethics, positive attitude and quality mindedness. Sustainability is a planned effort of change, carried out by the experienced persons towards the goals of development.

Sustainability comes as a measure of stability that sustains the present and future. Sustainability is a quality of tolerance for the work, work ethics, process of change, product of quality and changes in the environment for the transformation. Sustainability is the positive transformation of the individual in gaining knowledge, understanding, attitude, skills and work ethos. Sustainability is a product of developing linkages between the agencies of change, co-operation among the stake holders for the development for change. It is the self improvement programme that is sustained as the self growth and development. The self efficacy,

_____

_____

self confidence, self esteem are the qualities that are developed in the individual for change. The mutual interaction among the stake holders, change makers (participants such as students, teachers, administrators etc,) bring more cohesion in the thinking, process and product management.

Sustainability refers to:
- Increase in self efficacy
- Positive attitude
- Harmony with the environment
- Developing skills for developing harmony
- Solving problems
- Be co-operative
- Gather authentic knowledge of the process
- Develop ability to hypothesize
- Develop ability to experiment
- Develop ability to analyze data systematically
- Draw results, inference
- Discuss in constructive ways of development
- Draw alternative paths of development
- Develop alternative paths of interactions or transformation
- Build safety measures, safety rules, safety standards
- Communicate with others with clarity, purpose, and visibility
- Build skill sets for attending to immediate problems
- Be innovative, open minded, transformative in character
- Compare values, systems, configurations, and developmental structures for congruence with the sustainability principle.
- Draw sustainability maps (specifications) for building, structures, processes, products.
- Develop the sustainability groups for attending to the emergencies in different sectors, education, health, environment, industry, and society at large.
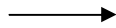
Sustainability also refers to the climate change, and larger issues of environment such as global warming, weathering, leeching, sea ingression, soil erosion, salinity of soil, survival of endangered species(plants and animals), rain harvesting, conservation of land, resources and managing energy in a given time and space.

Sustainability also refers to the developing ability to survive in different conditions of life, environment. It also refers to the developing capacities to adjust to the environment for change, produce the required energy, food, water and other facilities for survival. United States of America gave oil, wheat flour, to Nepal as an aid. It was a package for survival of children, and education. More than nine states in India have mid day meal programme for school children. It is an effort to prepare children for meeting the hunger and study in the schools with attention. The enrolment rates in most of the states have shown improvement. The retention rate also shows consistent improvement.

Sometimes, in severe cold conditions of winter, the people of Punjab and Jammu and Kashmir have sent blankets and sweaters to people in Pakistan to bear the problems of winter cold. It is a survival effort to withstand the cold and perform better in life. The Government of Gujarat has shared the Sadder Sarowar dam water with other states for agriculture, irrigation, drinking water and other purposes. This has increased the sustainability. The digging of the new canal has been encouraged, laying pipe line to cover longer distances has benefited mankind in reducing the leakage, increasing the supply and effectively meet the needs in time.

_____

_____

Stage 1

Physical Well Being   →   Mental Well being

Pranayama–Breathing exercises that help in promote feeling of calm and relaxation.There are three ways of Pranayama practiced.They are :(i) Sama Vritti or Equal breathing. It involves inhaling continuously, counts four and exhales continuously and counts four. It has to be preferably done with empty stomach and in conscious state.

(ii) Abdominal breathing- in this method one hand has to be on the chest and the other on the belly, take a deep breath in through the nose, ensuring the diaphragm (not the chest) inflates with enough air to create a stretch in the lungs. 6-10 deep-slow breaths per minute for 10 minutes to overcome stress. This relaxes the person and helps in coming to meditative state.

(iii) Nadi Shodhana or Alternate nostril breathing: Take padmasana position or any comfortable position. Hold right thumb over the right nostril and inhale deeply through the left nostril. At the peak of inhalation, close off the left nostril with the ring finger, and then exhale through the right nostril. Continue this pattern. This helps in regulating breath. It also relaxes the person by making the mind calm.

Figure No. 3 Showing Pranayama for physical and mental well being

_____

Stage 2: Techniques of Meditation: Foundations of Meditation

1. Concentration Meditation: The person has to concentrate on an object or light, count (using Rudraksha) and meditate.
2. Mindfulness Meditation: It involves ignoring distracting thoughts and feelings but to acknowledge and observe them in a non judgmental way. This will create detachment from those thoughts and emotions and will allow you to gain insight on them.
3. Reflective Meditation: Contemplate on a topic and focus on your analysis upon it. Keep away distractive and irrelevant thoughts and focus on the choice. This allows solutions to problems that may help to understand conflicts more holistically.
4. Creative Meditation: The attributes that will cultivate strength and creativity such as compassion, fearlessness, humility, joy, divinity, appreciation, etc. Nurture them by mediating on them as if they were fully alive with you.
5. Heart-Centered Meditation: Be loving and compassionate. Meditate with love and compassion, kindness.It helps to become more empathic, more forgivable and be kind.

Figure No. 4 Showing Techniques of Meditation

Heart Centered Meditation is a combination from concentration meditation, deep listening from mindfulness meditation, insight from reflective meditation and cultivated traits from creative meditation. The effect on the body and mind is relaxation, energy conservation.

Phase 1 emphasizes mostly the body and its relation to mental proceses.The phase 1 leads to Phase 2. Phase 2 focuses on the mental health. In both Phase 1 and phase 2 a distinction has to be made

_____

_____

concerning the social status of the person namely, the person is a sanyasi or a man of family (worldly in life).The training and prescription for the sanyasi is harder, scrict and continuing. The person who is more worldly (man of family will have more flexible practice, shorter duration and easy practice).The sustainable practices of yoga is needed for everyone. There is no gender discrimination. The emphasis on harmony of the body and mind with nature and harmony of body with mind is pertinent for development. India has a very big number of Rishi's, Sanyasi's and Muni's, and Yogi's who have gathered a large number of practices for centuries. This vast knowledge and practice of yoga has to be practiced with a measure that is capable for the person. Moreover, the yoga is a practice with guru. It is always advisable to contact a guru to teach yoga and preferably while practicing yoga also. There are several yoga practices. Patanjali yoga is mostly practiced by majority of the people.The Yoga provided by Kapila is also equally important. However, many try to prefer the Patanjali yoga.

Majority of the rishis have given importance to Bhakti and the yoga practices. There are various other ways of relaxation given by foreign scholars such as Johnson's technique of relaxation. It may be roughly compared to the Shavasana.

Indian sages such as Panini have given a model of learning. It could be presented in the form a paradigm with the figure No. 5
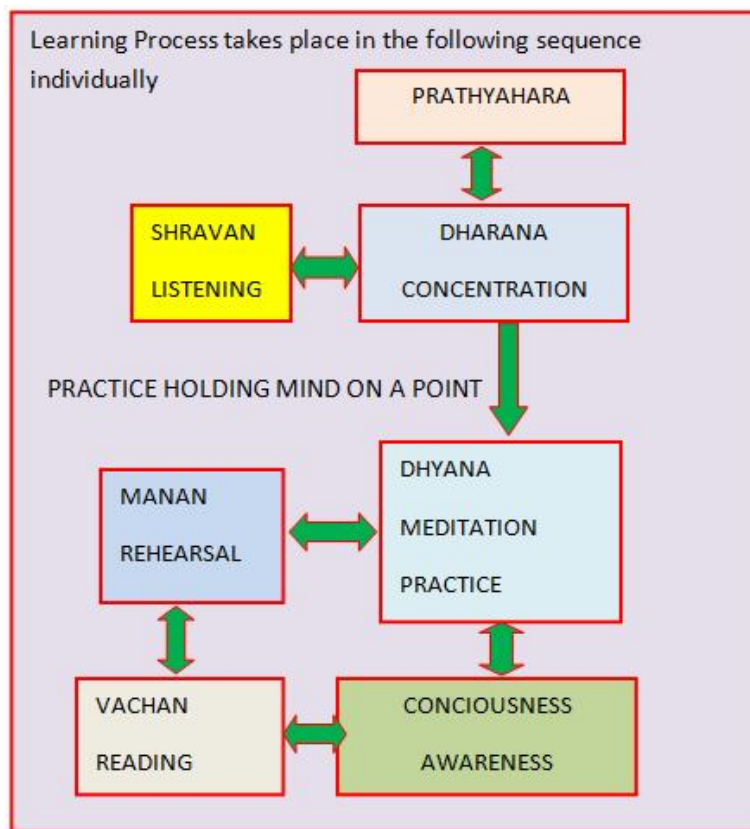

Figure No. 5 Showing the Panini paradigm of Learning (Adapted)

The Indian concept of learning believed in the oral method of teaching and learning (Refer Figure No. 5). The learner is expected to exercise control over his/her senses in order to engage in learning. This process takes place in Prathyahara. The learner listens and concentrates on the learning task. These processes are simultaneously taking place for the learner to process the information more systematically. When the

_____

_____

Dharana is not properly done,the attention process is disturbed. The learning is also disturbed. The effort to hold the mind on a point continues to take place through various means such as Manan-Rehearsing many times, practice, and sometimes write notes and references. The Dhyana(Meditation) is a process of sublimal activity. It is a self organization process. The entire totality of the experience, learning, and its organization is sequenced and integrated on a question, concept or a problem. This concentrated meditation leads to more attention on the details, structure, linkages, functions and overall organization of the phenomena under study. This learning process is cyclic in nature. It repeats, continues, and reappears, reorganizes and hierarchy is formulated on the basis of the complexity and sequence. This leads to the consciousness and awareness. The learner becomes more aware about the learning and his/her environment.The reading plays a important role in comprehension of the theme, theory and problem.It raises the consciousness of the learner. The conscious learner becomes selective in experience and learning.Selective perception (Asthana). There are other ways of learning as a sequel to this process such discussion, debate, questioning, comparison, and developing insight.

The believers of Gestalt psychology have given more importance to the insightful learning. Buddhists also have given more importance to the insightful meditation. It is considered as the higher form of meditation. In this sense, meditation is itself learning.The question that would this type of learning facilitates sustainability of learning and problem solving? In India almost 95-98 percent of the schools are using the oral method of teaching. The oral method of teaching is lacking in the visual methods of presentation. However, the oral method of learning is more practiced for learning any subject matter. The modern methods of teaching and learning such as multimedia learning,multimodal learning,tele learning, mobile learning, learning from broadcast modes such as virtual learning, blended learning, web learning, needs to be supplemented. There is a need for more informal conversation, discussion, and focused small group discussion on topics interest. The story board, bulletin board as story or incident, episodic presentation enhances the recency of learning through contextualizing the current events.The video, tablet, 'U'tube could be used for using mobile technology for learning.Then, comes the question that 'how do we enhance the learning?'The strategies for enhancing the learning are many.Each individual uses the strategies that are compatible for him/her.The preference for the strategies depends on the learning capacity, interest and preference.

REFERENCES:

Abhedananda, S, (2009) Yoga Psychology, Kolkatta: Ramakrishna Vedanta Math, ISBN No. 978-81-88446-98-8

Biswas,U.N.et.al.(2018)Human resource and marketing consequences of socially responsible organizations, Connecting Science to solution: 29th International Congress of Applied Psychology (ICAP2018) Montreal

Brumfit,C.J.1980 Problems and Principles in English teaching, Oxford: Pergamon press.

Dandapani,S(2001) A textbook of Advanced Educational Psychology, New delhi: Anmol publications

Dansereau,D.(1978) The development of a learning strategies curriculum in O'Neil, H.F.(ed.), Learning strategies, New York: Academic press.

Dunn,R(1983) Can students identify their own leaning styles? , Educational Leadership,40:60-62

Education of Yoga Awakening the World Within, 12(6), June 2018.

Fontana,D (1995) Psychology for teachers,3rd ed. , British Psychological Society, London: Mc Millan in association with BPS books.

Gentile,R.J. and Lalloy,J.P 2003 Standards and Mastery learning, CA: Thousand Oaks, Corwin press Inc.

_____