



Psycho-Social Correlates of Education

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Abstract

Correlates are dependent relationships between aspects of education and other variables in the main. The objectives of this paper are identifying the psychological and social aspects that have useful bearings on education of an individual. Education is a continual process and we learn every moment in life. Sometimes our old values as well as old concepts are replaced by new enhanced knowledge in any field of study,

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Introduction:

Education is one of the oldest, if not the oldest of all professions in society. Much before the inception of civilization in human society, even during nomadic period, training of the human offspring was in vogue; though in an informal manner in the art. With the development of civilization the formal form came into existence.^[1] However, education depends on many factors, of which some are social aspects and some are concerned with ability, efforts and mainly the environment of the individual. Basically, education is a social process and a school is said to be the 'cradle of the society', or 'The school is a miniature society' and so on. It has been seen that any social change tantamount to a change in the educative system. For example, no discipline today can be successfully studied without the help of computer technology. So we find that the computer science and its application have been introduced in the school syllabus today. So any aspect of change in society is a correlate of education in the main. On the other hand, when we exclusively focus on the individual it comes under the purview of psychology so to say. Now

an individual is educated through the process of learning. Learning takes place when an urge develops within the mind of the individual; nobody else can make anybody learn.^[2] Others, mostly the teachers can at the most create an environment where an individual develops an intention to learn. In a Sanskrit verse pronounced by an economist and political theorist Chanakya, of ancient India, who observed, "Yasya Naasti Swayam Prajnaa, Shaastras Tasya Karoti Kim; Lochanaavaang Bihinashva Darpanah King Kariswati."^[3] Which means that, who does not have an inner urge to learn, no scripture or moral and sacred teaching can make him knowledgeable? It is like holding a mirror in front of a blind person only. That is why there has been a paradigm shift in the concept of teaching today. A teacher is called a facilitator now a days; he or she facilitates learning only. For example, if suddenly an unusual thing or incident happens, say the sound of a bomb blast is heard in the vicinity, people rush frantically to trace the source of the disturbance, without caring for any permission from anybody. It is the curiosity that engendered in them the energy to rush,

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in the perceived direction of the source of that sound. This curiosity is a factor of 'Motivation', a general term to indicate our intention to know something. Now another factor of motivation is interest in people. Now interest may be generated by our repeated attention to something. A child may develop interest in sports and games if it is brought up in a family or in an environment where frequently discussion or watching of sports and games take place. However, ultimately one feels like knowing something and learns. Therefore Motivation is a correlate, rather a psychological correlate of education. Let us now discuss a little about Education in general.

What is Education?

There have been quite a number of definitions put forward by Educationists. But out of these I would like to discuss one given by a world renowned social reformer and spiritual leader, Swami Vivekananda. He said, "**Education is the manifestation of the perfection already in man.**" This definition gives us the status of a person as regards to the attainment of perfection in any field of activity.^[4] Now perfection, like infinity is a concept that can never be attained in the absolute sense of the term. It is also a relative term and by this we indicate some degree of perfection only. So by education of an individual we mean the degree of excellence or perfection that has been attained by the person, in a particular field of knowledge. Interestingly the preceptor of Swami Vivekananda, Lord Ramakrishna said in Bengali, "**Jaabat Baanchi, Tabat Shikhi**" which means that 'So long we live we learn'. This is a scientific truth. Again another scientific finding may be there. By some scientific study relating to the human brains it is found that the brain has innumerable number of cells, of which a very limited number are used by us.^[5] The more exercise in the intellectual and academic pursuits we do, the more the numbers of brain cells are activated in the course. So our brain may be compared with a flower that has immense number of petals that bloom with intellectual advancement in life.

Human Behaviour: of According to psychological terminology any human activity is called 'behaviour' and can be classified into two broad categories: Overt behavior and Covert behaviour. Overt behavior is what we openly or explicitly show; whereas the Covert one is that we do not like to show. For example when we lecture in a class, our intention is to express things clearly so that there is no ambiguity and the students can understand with ease, It is an overt behavior.^[5] On the other hand when we lie, we never like to disclose our intention. Owing to fear or some other reason people adopt covert behavior. Behavior can be categorized into three other classes. The three categories are: Cognitive, Affective and Psycho-motor. Human activities the above mentioned types are considered as domains of activities.^[6]

Cognitive domain: All intellectual activities come under this domain or area. Activities like problem solving, debating, lecturing etc. are the examples.

Affective domain: Activities that are concerned with our feelings like sympathy, empathy, love, hatred, anger etc. are the contents of this domain; and Psycho-motor domain: Includes activities where our thinking and muscular as well as motor nerves are well coordinated.^[7]

But all our activities pertain to all the three domains simultaneously in proportions. For example, when we lecture our thinking as well as muscular and other motor nerves of our face and tongue are at work. Here also our feelings are concerned with the reaction of the audience. So, all the three domains of behaviours are involved in certain proportions. Mainly the cognitive domain is involved but our feelings as well as muscles of our tongue are well coordinated.

Constitutional components of education: These components are indicators of our educational status, at a point of time. These components are, Knowledge, Skill and Attitude.

1) Knowledge: This is included in the cognitive domain. Only some information does not constitute our knowledge. The information must be understood. Unless something is well

understood it cannot be remembered for long. Memory is of two kinds, short-term and long-term memories. Even understood things cannot be remembered for long unless it is practiced well. Also there is another type of memory called, rote memory. By this kind of memory something can be remembered for long even without understanding, only by reciting repeatedly for some time. Lastly, one more variety of memory may be our sound-memory, by which some non-sense syllables even, say like, NAL, SOK, PAB, KAZ etc., can be remembered for a short period. Even this can be remembered for long by using rote memorization.[8] But understanding, the very crux of our knowledge, can be effective only when we can mentally picturize the information received. Say for example, as soon as we receive an information like, "it is a cat sitting in the room", we immediately picturize in our mind's eye the figure of a cat. Even some idea can be picturized by some feature of the idea concerned. For example say, if the name of a kangaroo, a foreign animal is uttered; then only those can understand who have seen a kangaroo's picture in books or have seen it in a zoo. Therefore, our understanding depends on our previous knowledge. That is the reason why all of us cannot understand Greek, Latin or Sanskrit. Our differences of opinion also crop up, similarly. We should know that, no two things are alike in all respect in this universe. There may be difference in shape or size, or difference in the material content. Even if these two are identical, say, two electrons are taken yet they can never occupy the same space simultaneously. So, our understanding which depends on the experience of our previous concepts is quite likely to differ in nature. A crude example may be cited. If we talk of a cat, different people may imagine different colored cats of which one maybe white, another black or brown in color. Though it is not that simple so far as mental processes are concerned yet, these are the roots of differences in opinions and feelings in people.

Now knowledge may be of different levels; there is hierarchy like Comprehension, Application, Analysis, Synthesis and Evaluation. If the level of

the knowledge attains evaluation, the knowledge is in the mastery level. A teacher is supposed to reach the evaluation level of knowledge in a field. The more we attain the hierarchy the more we approach perfection in the field or area. These are all correlates of education.

2) Skill: Skill mainly belongs to the psycho-motor domain. Skill may be looked upon as a better competency in the use of our knowledge. Skills are of two kinds; the intellectual skill, also called soft skill and physical or motor skill, may be called hard skill. Logical thinking, lecturing, playing chess or debating etc. are examples of soft skill. Whereas, driving a motor car, typing etc. are physical skills. Skill is a valuable correlate of education.[9]

3) Attitude: Attitude is the way of thinking about or looking at a thing, person or even at an idea. Attitude is developed by the association of the members and relatives residing in a family. Also the environment around the child is responsible for its making. Attitude is the product of our belief system. The information coming from a credible source like the parents, the teachers or some respectable senior and even intimate friend, constitute the base of our attitude.[10] According to the theory of 'Transactional analysis', propounded by Dr. Eric Berne, a follower of Edmund Freud; a child develops a 'life-script' quite early, within six years of its age.[11] This also influences the child's attitude in later life. Attitude may be positive or negative in nature, so to say. Any creation on earth is mainly an outcome of our positive attitude. People with negative attitude can make use of innovations in a destructive or negative purpose only. The nuclear bombing on Hiroshima-Nagasaki in Japan, is a glaring example. Some examples of positive attitude may be cited. Once Shri Aurobinda Ghosh, who was later known as Rishi (a sage) Aurobinda, was standing in a court campus with some of his clients and juniors; when four people were taken past by them with handcuffs and ropes tied around their waists, because they were convicts and were inflicted capital punishment. Suddenly, Aurobinda bowed down from a distance with folded hands to those

convicts. All were astonished at this and one of his followers asked the reason for doing so. Aurobinda replied that they were our teachers. They show us the consequences of evil deeds by their own lives. We common men never look at things in this way. This is an example of finding good part in every event. Philosophically speaking this is also an example of 'eclecticism'. This should be the philosophy of a teacher. The Indian concept of a teacher is expressed as 'HANSA', means a duck; that can separate milk from a mixture of milk and water. This HANSA is the vehicle of the Goddess of learning and wisdom. Because a teacher can pick up the good part from the mixture of good and bad. This is called eclecticism, the philosophy of a teacher. Another wonderful example of positive thinking, which can transform our life just poles asunder, can be cited from the great Epic 'Ramayana'. The heinous criminal Ratnakara, in the epic of Ramayana was transformed into a sage by simply chanting and reciting continually the word 'Rama', which means 'beautiful'. The attitude of Ratnakara was highly negative, as he used to see the dark side of our life, all the time. It is said that on being initiated by the heavenly priest Naarada, Ratnaakar was lost in ecstasy and in course of time was covered by a termite-hill. He was later rescued by a passer-by. When he came to his senses eventually he witnessed two herons, engaged in a courtship on a tree, when one of them was struck by an arrow of a hunter. On seeing that, Vaalmiki (the new name of Ratnakar, as he was named after the termite-hill, called Valmik) was very much pained and uttered a verse composed in the then language, Sanskrit as below:

"Maa Nishaad Pratishthaang Tamagamah Shaashwati Sama / Yat Chrounchamithunadekamabadhik Kaamamohitam."^[12] Which means, 'Oh! Hunter! You will never have any recognition in society; since you are so cruel as to kill one member of the couple of innocent herons, when they were engaged in courtship.' Also this verse is supposed to be the first composition of a poet and as it was an outcome of utter grief, it

was named 'Sloka', because 'shoka' is the word meaning grief in Sanskrit.

However, we see that positive attitude can bring tremendous change in life. A hard-core criminal could be changed into an empathetic angel. Therefore, a change in attitude, an important correlate of education, can play marvel. Moreover, knowledge and skill may suffer obsolescence, but the attitude becomes a part and parcel of our character and is auto-renewable toward positive (or negative) goal in life. In fact the proper attitude formation may be the real education in life. Next, let us consider the functional components of education, which are Teaching, learning and Evaluation. We shall take up the case of learning at first, because the learning and the learner should be at the centre of education system.

1) Learning: Invariably, learning is the starting point of education in life and it is out and out a personal affair. Learning is a change in some activity of a person; psychologically speaking, a change in behavior. A child can recognize A, B, C etc. after a treatment of teaching by teacher. But we should note that only change in behavior does not ensure learning. That is if the change does not last for a considerable period of time it cannot be called learning. For this two things are essential. One is confirmation of the behavior acquired and the second is practice "which makes a man perfect", an age old saying. Now the confirmation (both positive and negative) helps learning. The activity of confirming is called 'reinforcement' in psychological version. Now, confirmation may be positive or negative and both are very much essential for proper learning. This confirmation stating whether the acquired knowledge is correct or not is also called 'the knowledge of result' (KR). As soon as this confirmation that is reinforcement (positive or negative) is received the confusion about the knowledge is eliminated. If negative, it also inspires the learner to know the correct one and when reinforcement is positive the correctness is assured. At the end of this discussion we shall dwell on the difference between negative reinforcement and punishment; which is crucial

to the process of learning, Now the definition of learning amounts to following:

Learning is:

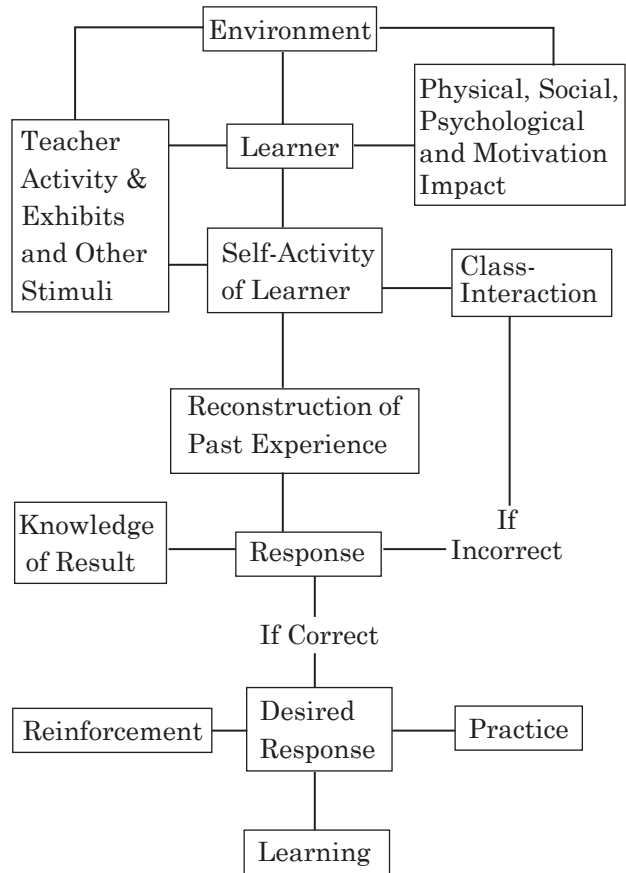
- Change in behavior,
- Relatively permanent change in behavior,
- The functions of reinforcement and practice,
- Life long process ^[13]

2) Teaching: Now let us take up the component, teaching. It is said that teaching causes learning. But who is a teacher? Our teacher is mainly our environment. At the time of birth a child develops two types of fear; one is loud sound, because in the mother’s womb the child is not used to confront loud sound. The other thing of fear is the fear of weightlessness, for before birth the baby remains secured with proper balance. As soon as it is outside, that balance is lost. These two are called birth- trauma. So right at birth we learn to protest against loud sound as well as loss of balance by crying. So initial teacher of the child are its own senses and the influence of the environment. Both for informal and formal education, there may be a human teacher. But the concept of teaching has undergone a paradigm shift today. A teacher is thought to be a facilitator of learning of an individual. One learns only when he or she feels an urge to learn; the teacher can only set the stage by creating the urge in the tught. So the teaching can be defined as below:

- i) Teaching is manipulation of the environment of the learner;
- ii) as a result of that, the learner feels like doing something on his/her own, leading to self activity.
- iii) Consequently, the past experience of the learner is reconstructed by such self activity and
- iv) a new behavior is emanated.
- v) This new behavior is confirmed immediately called reinforced and
- vi) thereafter, a practice is arranged to make the new behavior relatively permanent in nature; which is called learning.^[14]

So, from the above it is clear that the teaching is an activity of facilitating learning of an individual. Therefore, there is a paradigm shift in

the concept of the teacher as a facilitator. See for teaching-learning (Diagram 1) below:

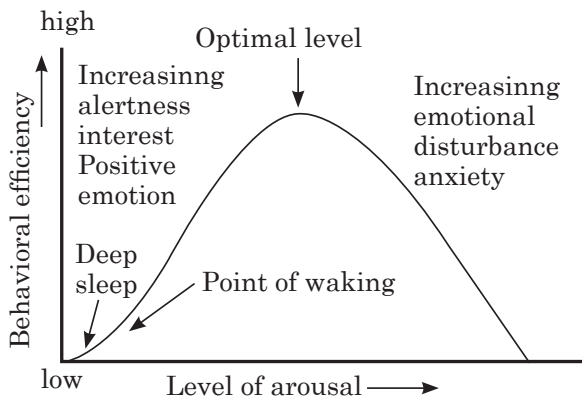


Gupta’s model of Teaching-Learning

Again, as a result of teaching an arousal of the senses of the learner results, what we usually call motivation. This motivation may be aroused from within the learner like, curiosity, interest or a feeling of need. These are intrinsic motivations; whereas the rewards or punishments are extrinsic motivation. The figure-2 explains the effect of motivational arousal in the learner against the behavioral efficiency or the performance of the learner. Up to an optimal level of arousal by motivation when the alertness and positive emotions are increased the behavioral efficiency or the performance of the learner increases. But if the arousal surpasses the optimal level, some anxiety and emotional disturbances are engendered which affect the performances and the behavioral efficiency decreases consequently.

So the level of motivation should be controlled and proper. This is a very important correlate of education. (diagram-2)

Hypothetical inverted U-shaped relationship between behavioral efficiency or level of cue function and level of arousal. (after Hebb 1955)



3) Evaluation: By evaluation we mean a measurement of an entity together with value judgment. Measurement is nothing but description. Such descriptions may be nominal, ordinal, interval or ratio type. These all pertain to a general concept of evaluation. But for educational purpose we use two types of evaluation, one is formative and the other summative evaluation.

i) Formative evaluation: The term itself suggests that we use this type during a course of formation of something; here we mean concepts, principles or some idea etc. These are the outcomes of learning. During the course of teaching-learning process the teacher wants to evaluate the learning by conducting verbal assessment which is known as formative evaluation and the process is monitored by this.

ii) Summative evaluation: When a formal test is held after the completion of a course of teaching; it is usually called summative evaluation. Evaluation is conducted to find the status or the level of learning. It is an essential correlate of education.^[15]

Some important positive correlates of education:

i) Meaningfulness: If we find something quite

meaningful in life we are attracted to know about that. This motivates us to acquire knowledge which leads to education. So it has high correlation with the educative process.

ii) Pre-requisite: For any activity, some pre-requisites in the art are needed. If an illiterate person is said to read a book, he will not be able to do so, it is obvious. It is a fact that without some previous knowledge or exposure one cannot be interested in any job. This is also true for educational pursuit.

iii) Modeling: Modeling may be interpreted in two ways. One is that a person should perform personally what is said by him. For example say, a teacher should show the way of solving a problem, before posing a similar one to a student. Secondly, a teacher should also be a role-model to his/her students. This kind of becoming a role-model can instill proper attitude in the pupil or the follower. For our ideal we must have to follow a personality as a role-model. In ancient India, teachers were called 'Aachaaryaas', who used to teach the students by showing the proper behavior. The word Aacharya is derived from the Sanskrit word 'Aacharan', meaning, behavior. So, modeling is a valuable correlate of education.

iv) Distributed Practice: By distributed practice we mean a spaced and limited period of practice in small steps in a sequence, distributed over days together. Such a practice to acquire any kind of skill is very helpful. Usually, people start practicing to acquire a new skill ceaselessly over a considerably long period of time. As a result, initial failure goes on occurring repeatedly which de-motivates the learner. When such a series of de-motivation follows the individual becomes permanently fatigued and de-motivated and leaves the job. Had he practiced for a small period of time over a series of days together, his/her motivation would be sustained and would continue till its mastery. Every skill takes some time to be mastered. Also it is a proven fact that over a time when the same practice is resumed some betterment however small it is can be noted. This encourages the learner by achievement motivation. Such

motivation leads the learner on and on, finally mastery in the skill is attained. Such a practice is very effective correlate of education. Last but not the least at all the following mentioned:

v) Pleasant condition and consequences:

E.L.Thorndile's law of effect in learning states that, "when a modifiable connection between stimulus and response is made and is accompanied or followed by a satisfying state of affairs, that connection's strength is increased. When made and accompanied or followed by an annoying state of affairs, its strength is decreased." This is a law and a law unlike a theory is more or less invariant. Because, it stands exhaustive trails. So, a bonding between stimulus and response, say between a question and the answer is strengthened when the connection is followed by a satisfying condition and is weak when followed or accompanied by a dissatisfying state of affair. So for learning the environment should be pleasant and satisfying. In this context, the aspects like, punishment and negative reinforcement may be discussed. These two activities are closely associated with learning of an individual and thereby with education. Now, reinforcement is of two kinds; one positive and the other negative. When the response of a stimulus is correct, a positive reinforcement is provided, whereas to an incorrect response a negative reinforcement is given. Now negative reinforcement should be extended in a very normal fashion. Some teachers cannot control their emotion; particularly if the teacher develops somehow or other a bad notion about the learner. As a result either the teacher frowns or comes out with some derogatory comments. This is a highly unwanted behavior. This is nothing but a punishment. On hearing a wrong response the teacher should keep quiet and with a smiling face look to other students around or give a signal by body language casually. This will generate some kind of eagerness in that learner and the learner would immediately understand his mistake. But on being punished, the learner becomes immediately apprehensive and tries to withdraw and if such things are repeated over and over,

the learner loses interest in learning. One thing should be noted here that the parents, teachers as well as seniors in society are revered highly in our country, which is a part of our culture. These comments may work as some hypnotic suggestions that play havoc in life. Though these are mainly orthodox superstitions, yet it has some effects in the unconscious mind. Lastly, punishment cannot be eliminated altogether and it is essential at times. But before punishing the child or a learner, he/she should be convinced about the misdeed they have committed. Just like the judge in a trial, who clearly explains the nature of the mischief done and justifies the punishment inflicted, under specific law. Punishment should be avoided as far as possible, to keep the environment of learning congenial to the learners.

The Psycho-social correlates have immense bearing on education of an individual. So, these factors should be considered with due importance.

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Supercomputer: Computation made Virtual Reality

Anil Kumar Ghosh

Computing: At the entire supercomputer centre in Stuttgart complex factual situation is simulated still more here the future is experimentally anticipated. Uwe Wössner scaled the tiniest injecting beam high with few clicks. Even the thin finally 0.4 mm wide beam as the whole to be seen on the projection surface and now Wössner suddenly appears right within the middle. The interior of the beam reduces in numerous bubbles and is right just exploded. Smallest bubbles bulge out in a moment next to the huge virtual balloons. Wössner is a graduate engineer and director of the department at the supercomputer centre in Stuttgart (HLRS). He moves around one of the balloons at least he seems to appear so. With the help of 3-D spectacles which Wössner carries in the so-called cave, the small beam not only works monstrously, it shines now also directly in order to fly right through the middle of the space.

The "Cave" – an abbreviation for Cave Automatic Virtual Environment renders possible what is otherwise only in children's dream. People appear to diminish to miniature size and can look at things in a space which is otherwise almost invisible to human eyes and look at striking water drops as for example or in

expanding injected jet in the ignition chamber of a motor. It is a computer of which there are only three samples in Germany: a machine with its capacity can calculate everything which people want to and that too in the shortest time. For this the computer consists of many encased computers connected together with one another. In total more than 185000 processor cores share the computing assignments. It is hardly conceivable that this supercomputer dubbed as 'Hazel Hen' can perform 7.4 milliard per second computing steps. Technical people speak of flops instead of computing steps – 7.4 peta (Peta: P-10¹⁵) flops are that is therefore the 'Hazel Hen' made a sure 17th position of worldwide fastest computer among the top 500 one conspicuously formulated. 8 milliard people must compute barely for two years uninterruptedly in order to achieve the results. With this concentrated computing power we can simulate the things which we cannot perform experimentally. 'These are for example long range climate evaluation or elementary cell processes' explains Michael M Resch, Manager of the supercomputer centre, Stuttgart.

Supercomputing: It is the kinglike discipline of modern computer on account of complexity of the set assignments. The 'Hazel Hen' in the
