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From the Chairman

Again I have the time to talk to you being another issue of CENBOSEC. If you recollect the theme of the last issue was '**Making Every School a centre of excellence**'. This time the theme is '**Constructivist Teachers**' and this is also one of the quality imperatives which will put the school on the path to excellence.

Amongst various learning theories in the educational process of teaching learning, Constructivism is unique in its attempt to develop the learners, knowledge by constructing the world around them through experience, observation, documentation, analysis and reflection. In the classrooms of today, learners are no longer passive recipients nor are the teachers the all knowing '**givers of information, knowledge and wisdom**'. Infact, the situation is quite the contrary with the ever spreading world of information available at the click of mouse. There is no denying the fact that children differ from adults not only in the quantity of knowledge they posses but also in the quality of their knowledge. It means that children think differently from adults. So when the learning involves active construction of knowledge by children, then the classroom environment must call for more synergies rather than mere individual participation. The teachers need to develop the ability to work with, children creatively to generate new ideas, new theories, new products and new knowledge.

Thus in the changed role of teacher a great many details have to undergo transformation such as the classroom environment, transaction strategies and the assessment framework. And most importantly, we should be prepared to break free from the shackles imposed by orthodoxy. The engagement of the learner in the construction of classroom activity requires inputs from a reflective teacher and meticulous pre-planning before a unit is transacted in the class. Strategies of peer learning through group work, small work and whole class work are important, again depending on task and the teaching objective. The teacher needs to be open minded, receptive and non-judgemental in allowing children to learn to formulate questions and answers depending on their own mental frame work and understanding. Learner autonomy and respect for individual learners is mandatory if real learning is to take place. Encouraging learners to reflect and question their own understanding further aids comprehension. In short, we must de-emphasize memorization and encourage thinking, understanding, exploration, problem solving, activity and innovation.

Now the question is how it can happen at the grass-root level. The Board has made certain innovative changes as part of new curriculum dynamics, by introducing new subjects and newer contents at various levels. But apart from rich content unless and until it is appropriately transacted by motivated and updated teachers, nothing concrete will be seen. It is essential to encourage learners to raise questions, to encourage brainstorming, to encourage experiments, explorations, novel ideas and initiative when learners reflect on their own learning, they would naturally like to externalize their thoughts, feelings, doubts and even concerns so we must provide ample opportunities for the learners to articulate their ideas and views. It will also help in improving their communication skills and self-confidence.

Supporting the Constructivist Teacher and in keeping with the philosophy of constructivism, the Board has brought out a series of publications on '**Learning by Doing' for Class VI** and' **Science is Doing' for Class VII**. These explore the application aspect in the learning of sciences which makes the subject interesting and challenging for the learner. The Mathematics Laboratory approach is another fine example of constructivist thinking in the teaching learning process. But again the question arises are we sincere about mathematics laboratory in the school? Are our students from Class III onwards

~ being given exposure in the mathematics laboratory? Are our teachers aware of 'the activities and projects to be done by the students from Class III onwards? Are our teachers confident in handling this relatively new dimension? We have to find answers to these and then, analyse where are we placed. The introspection is a must to find the right chord.

Then comes the curriculum plus activities as part of student enrichment programmes. By participating in Science Exhibitions, Heritage Quiz and in different types of Olympiads, the teacher facilitator learns to reflect, analyse and interpret in the process of knowledge construction. The Board has also brought out other interventions in the larger curriculum of the school such as integration of health promoting activities through the **'Health and Wellness Clubs'**, the environment friendly activities through the Eco Club and the Adolescent Education Programme to create awareness among adolescents so that they can face the emergent challenges confidently. The education for Life Skills is another intervention where learners are provided with entrepreneurial skills by making linkages with immediate environment. Thus the learner is involved in individual and group activities beyond the boundaries of the text books.

The shift towards constructivism cannot be complete unless it is supported by appropriate change in the assessment system. The assessment policy being adopted world over has been shaped over the learning methods and styles of the last century and has not adequately responded to the changing trends in learning and schooling for the current century. Most methods and tools of assessment are based, on traditional KUA (Knowledge, Understanding and Application) model which is highly structured, rigid and inflexible to cover all types of learners and all strategies leading to Learning. It does not favour extended learning and are highly inhibitive to generic learning processes. We need to shift to a system which is more open, creative, learner friendly, continuous and comprehensive, consisting of varied modes of assessment and should move beyond textbooks. Instead of circling around MOTS (More of the Same) can we make a gradual shift towards HOTS (Higher Order Thinking Skills)', - both in class-room transaction and as well as in assessment. , Our teachers must understand this and unless and until they practice it, constructivism will be far from reality. The ideal "One examination fits all" after a fixed periodicity is neither 'student centred' nor it is in keeping with rapidly changing nature of the Indian job market. The earlier it goes, the better for the Indian School System.

It is hoped that teachers following the Constructivist Approach in their classrooms will be non-judgemental while transacting lessons and framing questions for assessing comprehension within the class. The questions when open ended allow the learner to respond confidently and without fear of being ridiculed in front of their peers. Thereby these teachers encourage learner initiative in the classroom. They go to primary sources and much beyond the textbook to motivate and inspire the learners. Infact a teacher is in the current context just one of the many resources that the student may learn from and not the only or primary source of information.

It is hoped that some of the ideas brought out in this issue of CENBOSEC on the' Constructivist Teachers' will further lead to reflection on behalf of the teachers of this country in the schools affiliated with the Board.

ASHOK GANGULY
CHAIRMAN

अध्यक्ष की ओर से

सेनबोसेक का एक दूसरा संस्करण आने के साथ ही मुझे आप से संवाद करने का पुनः अवसर प्राप्त हुआ है। आपको याद होगा पिछले संस्करण की विषयवस्तु थी ''प्रत्येक स्कूल को उत्कृष्टता का एक केन्द्र बनाना''। इस बार की विषयवस्तु ''रचनात्मकवादी शिक्षक'' है और यह भी एक प्रकार की गुणात्मक अनिवार्यता है, जो विद्यालयों को उत्कृष्टता के पथ पर ले जायेगी।

शिक्षण अधिगम की शिक्षणिक प्रक्रिया में अनेक अधिगम सिद्धांतों के बीच अनुभव, निरीक्षण, प्रलेखन, विश्लेषण तथा चिंतर द्वारा छात्रों के चारों ओर संसार की रचना करके उनके ज्ञान का विकास करने की दिशा में रचनात्मकवाद अपने आप में अद्वितीय प्रयास है। आज की कक्षाओं में अब न तो छात्रा निष्क्रिय होकर ज्ञान प्राप्त करने वाले हैं और न ही अध्यापक सर्वज्ञ हैं अर्थात ''बुद्धि, ज्ञान व सूचना के प्रदाता'' हैं। यथार्थ ठीक उसके विपरीत है जहां माउस के एक क्लिक पर बढ़ती हुई सूचना उपलब्ध है। इस तथ्य से इन्कार नहीं किया जा सकता है कि बच्चे वयस्कों से न केवल ज्ञान की मात्रा में भिन्न हैं बल्कि ज्ञान की गुणात्मकता में भी भिन्न है। इसका तात्पर्य यह है कि बच्चे वयस्कों से भिन्न सोचते हैं। अतः यदि अधिगम प्रक्रिया में छात्रों द्वारा ज्ञान की सक्रिय संरचना को शामिल किया जाता है तो कक्षा का वातावरण केवल व्यक्तिगत सहभागिता में सीमित न होकर और अधिक सहक्रियाशील होगा। अध्यापकों को नये विचार, नये सिद्धांत, नये परिणाम तथा नया ज्ञान उत्पन्न करने के लिए बच्चों की रचनात्मकता के साथ कार्य करने की क्षमता विकसित करने की आवश्यकता है।

इस प्रकार अध्यापक की परिवर्तित भूमिका में कक्षा–परिवेश, कार्य–सम्पादन योजनाएं तथा मूल्यांकन के ढांचे जैसे विविध तत्वों से समग्र परिवर्तन करना पड़ेगा और सबसे महत्वपूर्ण बात यह है कि हमें रूढ़िवादिता की बेड़ियों को तोड़कर स्वतंत्र होने के लिए तैयार रहना चाहिए। कक्षा में किसी भी यूनिट का कार्य–सम्पादन करने से पहले कक्षा के क्रियाकलापों की रचना में छात्रों के जुड़ाव के लिए चिंतनशील अध्यापक के प्रयास तथा पूर्वनियोजन की आवश्यकता होती है। जैसा कि कार्य तथा शिक्षण उद्देश्य को जरूर होगा समूह कार्य, लघु कार्य तथा सम्पूर्ण कक्षा कार्य के माध्यम से बच्चों को अधिगम की योजनाएं महत्वपूर्ण हो जाती हैं। इसके अंतर्गत छात्रों के स्वयं की मानसिक संरचना और समझ पर आधारित प्रश्न बनाने और उत्तर देने के योग्य बनाने के लिए शिक्षक को तटस्थ, अभिग्राही तथा निष्पक्ष होने की आवश्यकता है। यदि सही अधिगम सुनिश्चित कराना है तो छात्र को व्यक्तिगत स्वायत्तता तथा सम्मान देना भी अत्यावश्यक है। छात्रों को उनकी समझ के अनुसार प्रश्न पूछने तथा अपने विचारों को व्यक्त करने के लिए प्रोत्साहित करना उनकी समझ में अभिवृद्धि करता है। संक्षेप में, हमें रटने की प्रवृत्ति को हतोत्साहित करना और चिन्तन, समझ, खोज, क्रियाकलाप तथा नवीनता को प्रोत्साहित करना चाहिए।

अब प्रश्न है कि यथार्थ धरातल पर कैसे क्रियान्वित हो। बोर्ड ने नये पाठ्यक्रम के भाग के रूप में विभिन्न स्तरों पर नये विषय तथा नयी पाठ्यवस्तु को लागू करके कुछ अभिनव प्रयोग किए हैं। समृद्ध पाठ्यवस्तु के बावजूद भी जब तक इसे प्रेरित तथा आधुनिक अध्यापकों द्वारा उपर्युक्त रूप से क्रियान्वित न किया जाए, तब तक कुछ भी सार्थक नहीं होगा। छात्रों को प्रश्न पूछने, उनकी सूझ को बढ़ाने, आविष्कार तथा अन्वेषण करने तथा उनकी नवीन विचारों तथा पहलों को प्रोत्साहित करना आवश्यक है। जब छात्र स्वयं के अधिगम के बारे में चिंतन करते हैं तो वे स्वाभाविक रूप से अपने विचारों, भावनाओं, शंकाओं और यहां तक कि चिन्ताओं को व्यक्त करना चाहेंगे। अतः हमें छात्रों को अपने भाव तथा विचारों को व्यक्त करने का प्रचुर अवसर देना चाहिए। यह उनके सम्प्रेषण कौशल तथा आत्म विश्वास बढ़ाने में भी मदद करेगा। रचनात्मकवादी शिक्षक का समर्थन करते हुए और रचनात्मकवाद के दर्शन के साथ सामंजस्य रखते हुए बोर्ड ने विज्ञान विषय में कक्षा–6 के लिए "Learning by Doing तथा कक्षा–7 के लिए "Science is Doing" की सिरिज प्रकाशित की है। इससे विज्ञान के अधिगम में प्रासंगिक पहलु का पता लगेगा जो अधिगमकर्ता के लिए विषय को रूचिकर तथा चुनौतीपूर्ण बनाता है। गणित प्रयोगशाला का प्रस्ताव शिक्षण अधिगम प्रक्रिया में रचनावदी चिंतन का

अन्य उत्तम उदाहरण है। किंतु पुनः प्रश्न उठता है कि क्या हम विद्यालय में गणित प्रयोगशाला के बारे में ईमानदार है? क्या कक्षा–3 से आगे हमारे विद्यार्थियों को गणित प्रयोगशाला में प्रदर्शन का अवसर दिया जा रहा है? क्या कक्षा–3 से आगे छात्रों द्वारा किए जाने वाले प्रोजेक्ट तथा क्रिया–कलापों के बारे में हमारे शिक्षक अवगत है? क्या हमारे शिक्षक इस अपेक्षाकृत नये आयाम से निपटने के लिए सक्षम है? हमें इनका जवाब ढूंढना है और तब विश्लेषण करना है कि हम किस स्टेज पर है। यथार्थता का पता लगाने के लिए आत्मविश्लेषण करना अनिवार्य है।

इसके बाद छात्र संवर्धन कार्यक्रमों के एक भाग के रूप में पाठ्यतर क्रियाकलाप भी आता हैं। ज्ञान रचना की प्रक्रिया में विज्ञान प्रदर्शनी, 'हेरिटेज क्विज' तथा विभिन्न प्रकार के ओलम्पियाडों में भाग लेकर छात्र चिंतन करना, विश्लेषण करना तथा व्याख्या करना सीखते हैं। बोर्ड ने इस विस्तृत पाठ्यक्रम के अधीन विद्यालय में हेल्थ एण्ड वेलनेस क्लब' के माध्यम से स्वास्थय वर्धक क्रियाकलापों का एकीकरण, 'इको क्लब' के माध्यम से पर्यावरण अनुकूल क्रियाकलाप तथा युवाओं में जागरूकता पैदा करने के लिए किशोर शिक्षा कार्यक्रम जैसे अन्य हस्तक्षेप भी किए हैं ताकि छात्र विश्वास के साथ भावी चुनौतियों का सामना कर सकें। जीवन कौशल के लिए शिक्षा एक अन्य हस्तक्षेप है जहां तात्कालिक वातावरण के साथ संयोजन करते हुए अधिगमकर्ता को उद्यम संबंधी कौशल प्रदान किया जाता है। इस प्रकार विध्यार्थी पाठ्य–पुस्तकों की सीमाओं से ऊपर उठकर व्यक्तिगत तथा सामूहिक क्रियाकलापों में सम्मिलित होता है।

रचनात्मकवाद की ओर विचलन तब तक पूर्ण नहीं हो सकता जब तक कि मूल्यांकन प्रणाली में उपयुक्त बदलाव नहीं किया जाए। विश्वभर में अपनायी जा रही मूल्यांकन नीति पिछली सदी की अधिगम विधियों तथा शैलियों पर आधारित है और वर्तमान सदी के लिए अधिगम तथा शिक्षा में बदलती तस्वीरों के प्रति उपयुक्त नहीं है। मूल्यांकन की अधिकांश विधियां और साधन परम्परागत KUA (Knowledge Understanding and Application) मॉडल पर आधारित हैं जो सभी प्रकार के शिक्षार्थियों तथा अधिगम की ओर ले जानी वाली विधियों को समाहित करने की दृष्टि से अत्यन्त बनावटी तथा कठोर है और पर्याप्त लचीलापन भी नही है। यह विस्तृत अधिगम का समर्थन नहीं करता है और सामान्य अधिगम प्रक्रियाओं को प्रति अत्यंत अवरोधक हैं। हमें एक ऐसी प्रणाली में जाने की आवश्यकता है जो अधिक स्पष्ट, रचनात्मक, शिक्षार्थी अनुकूल, सतत् और व्यापक हो, मूल्यांकन की विविध पद्धतियां समाहिक हो और पाठ्य पुस्तकों से परे होनी चाहिए। कक्षाओं के क्रियाकलाप तथा मूल्यांकन दोनों में MOTS (More of the Same) के चारों ओर चक्कर लगाने की बजाय क्या हम HOTS (Higher Order Thinking Skills) की दिशा में क्रमिक बदलाव ला सकते हैं। हमारे शिक्षकों को इसे समझना चाहिए और जब तक कि वे इसे नहीं अपनाते हैं, रचनात्मकवाद वास्तविकता से दूर रहेगा। एक निश्चित समयान्तराल के बाद ''एक ही परीक्षा सभी छात्रों के लिए उपयुक्त है'', का विचार, न तो छात्र–केन्द्रित है और न ही भारतीय रोज़गार बाज़ार की तेज़ी से बदलती स्वरूप के अनुरूप है। इसे जितने जल्दी परिवर्तित किया जाये, भारतीय स्कूल व्यवस्था के लिए यह उतना ही अच्छा होता।

यह आशा है कि शिक्षक अपने कक्षाओं में रचनात्मकवादी उपागम अपनाते हुए पाठ पढ़ाते समय तथा कक्षा में समझ का मूल्यांकन करने के लिए प्रश्न बनाते समय निष्पक्ष रहेंगे। प्रश्न इस प्रकार का हो कि वह छात्रों को सहपाठियों के सामने उपहास किए जाने के भय के बिना आत्मविश्वास के साथ उत्तर देने में सक्षम बनाये। इसके फलस्वरूप अध्यापक कक्षा में छात्र की पहल को प्रोत्साहित करते हैं। वे छात्रों को प्रेरित करने के लिए पाठ्यपुस्तक से इतर उसके मुख्य स्त्रोत तक जाते हैं। वास्तव में अध्यापक वर्तमान परिप्रेक्ष्य में ज्ञान के एक मात्र स्त्रोत न होकर बहुत से उपलब्ध संसाधनों में से केवल एक संसाधन है जिसकी सहायता से छात्र ज्ञान प्राप्त करते हैं।

यह आशा है कि सेनबोसेक के इस संस्करण में ''रचनात्मकवादी अध्यापक'' के संबंध में प्रकट किए गए कुछ विचार बोर्ड से संबंद्ध विद्यालयों के अध्यापकों को प्रतिबिम्बित करेंगे।

अशोक गांगुली
अध्यक्ष

Learning in the Constructivist Paradigm

***Shashi Bhushan**

There has been an unprecedented demand for raising the educational level of the people all across the globe. It is, however, still a bitter reality that around twenty five percent of children face some degree of difficulty and twenty five percent more struggle with severe difficulty in comprehending the learning tasks. Though the reason for this woeful state of affairs could be attributed to several factors yet the primary inadequacy of education system which has been based on Instructionist paradigm till recently, seems to be the most plausible factor. The Instructionist methodology is teacher centered, skill based, devoid of active interaction, paying more attention to the end product and prescribes highly inflexible curriculum and resources.

We in India are witness to some of the grave inadequacies of prevailing educational practices based on Instructionism as our educational product, though highly competent in performing various skills in almost all important fields like Medicine, Engineering, Management and IT, but when put side by side with their counterparts from other parts of the globe, pathetically lags behind in Innovative approach, Creative ability, Initiative taking ability etc. Consequently there has been a felt need in the education sector for switching over to some other more appropriate model to set straight the kinks in the overall development of personality of the child.

The Constructivist school of thought refers to a number of generic theories on the nature of reality (Knowledge). The commonality in constructivistic theories is the epistemological axiom claiming that any form of the knowledge could never be absolutely flawless and therefore humans need to construct (modify) their own time and place specific reality (knowledge) .A corollary to this belief therefore places the constructivistic theories in direct contrast to the idea of external reality or knowledge. *All knowledge is embedded in human beings*; this belief corresponds also with the ancient Indian thought of 'Aham Brahmasmi' .

Constructivism maintains that knowledge is constructed by learners through active interactions with their peers/adults and environment. The learning here is a value oriented subjective interpretation by the learner and could not be a passive acquisition of objective features. Learners draw inferences/ meanings from events/information, make & test their hypothesis and manifest the crux of a particular piece of information or situation in their own trademark approach. The key words in any constructivist theories may be *Student centered, meaning based, pracess oriented, interactive and responsive to individual interest and needs*.

Contemporary constructivism is not a totally new idea. On the contrary there is a long standing tradition of constructivist thinking in Philosophy and Theory and Practice of Education. Constructivism can be discussed broadly under two subtitles

(A) Cognitive Constructivism

(B) Social Constructivism

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Cognitive Constructivism

The pioneer name in the cognitive constructivism is of Jean Piaget, who demonstrated empirically that children's mind were not tabula rasa (blank states) rather children actively process their experiences. He concluded that children's plays were an important part in their intellectual development. Piaget was not interested in knowing only the right answer to a question rather he was more inclined to find out how did children arrive at a particular answer or how information is interpreted and processed by the learner. He argued that children construct new knowledge by the process of adaptation which is comprised of two different sub processes namely assimilation and accommodation.

Assimilation -When learners *assimilate*, they link the new experiences to already existing mental scaffolding without changing it. If the new experience is coherent with their own view of world they correlate it well and learning takes place. If it is not, in that case an imperfect idea of the information provided is retained. The important point in assimilation is that there is no change in the mental framework of the learner.

Accommodation, on the contrary, is the mechanism by which failure leads to learning. When things do not turn around according to our expectation then by accommodating new experiences and reframing our model of the way the world works, we learn from the experience of failure.

Later on **Jerome Bruner** viewed that learners select and transform information, construct Hypothesis & arrive at conclusion by using cognitive structures called schemas (mental models). The schemas provide meaning to experiences. Bruner suggested that the teacher should present information in such a format that it suits the learner's current status of comprehension and facilitate the construction of knowledge by creating an environment conducive to learning. Student may be allowed to work in collaboration with each other and sometimes if possible with the teacher also. Curriculum should be of spiral nature & continuously revisit important concepts frequently.

Social Constructivism

According to social constructivism, the social interactions of learners with each other as well as with their teacher are central for constructing new meanings by learners.It was put forward initially by Lev Vygotsky & later got worked on by many other eminent researchers. Social constructivism stresses the singularity of the individual learner's endowments. It utilizes the cultural / social background of the learner to encourage him/her to construct his/ her own adaptation of truth. According to Vygotsky, the onus for learning should be increasingly on learner. The learner should be intrinsically motivated to look for meaning & try to find regularity & order even in the absence of full information.

Lev Vygotsky's theory of zone of proximal development focuses on how far the present level of understanding of a learner can be stretched with the influence of a more learned peer / teacher. The theory explains that extra teaching influence the level of learning collaboration among learners a significant educational implication of theory of ZPD

1) Actual / current level of understanding

2) Potential level can be determined by problem solving under either guidance of teacher or in collaboration with more capable / senior peers that can be achieved

3) Through a process of information processing by scaffolding a learner can be extended beyond the limitation of physical maturation

Pedagogy

The teacher, in a constructivist situation, assumes role of an active facilitator, guide or moderator who seldom dictates rather frequently inquires, who could be the purveyor of information / sources of information and carefully steers the activities in school to help learners find the meaning of the information. Constructivism advocates use of multiple methodologies and resources, open ended questions, plausible hunches, which are common features in debates/ discussions in classrooms. How many questions could be framed for a particular answer is also a valid pedagogical technique for promoting divergent thinking. The methodologies worth mentioning here are 'Reciprocal Learning', 'Cognitive guided instruction', 'Cognitive Apprenticeship' most recently Pragmatic Constructivism (Muller, Klaus 2001) and Constructive Alignment (Biggs & Tang 2007)

In constructivist classroom - background material content information could be presented in a variety of ways like audio - visual clips, illustrations and brief oral descriptions, any event / scene could be re-enacted with the help of students. Presentation should be such that majority of students would find it easier to either relate or fit in to it. It should be preferably from real life situations.

The students observe the exposure to information carefully and analyse the information according to their previous knowledge. Teacher may provide a standard analysis and interpret the information in brief by acting like a model student. This is termed as Cognitive Apprenticeship. The cognitive apprenticeship has been researched in extensively by Collins ,Dugoid,and Brown(1989) (Cognitive Apprenticeship is most effective when skills and concepts are contextualised in real world scenario). The technique eliminates the inadvertent skipping of crucial implicit processes involved in performing a specific skill or analyzing an information by a teacher. When teacher actually provides a practical example by behaving as a student, chances of this kind of skipping are minimized. This model could also be related to the famous Theory of Modelling by Albert Bandura(1997). Quite often teacher encourages students to work in groups and teacher guides them through (Reciprocal learning). In the end multiple interpretations may result in multiple manifestations.

Epilogue

And irrespective of what one might assume in the life of a science, problems do not arise by themselves. It is precisely this that marks out a problem as being of true scientific spirit: all knowledge is in response to a question. If there were no questions, there would be no scientific knowledge. Nothing proceeds from itself, nothing is given all is constructed...

Gaston Bachelard (La Formation de esprit Scientifigue, 1934)

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The Constructivist Teacher

***Mrs. C. Gurumurthy**

The Human Beings (*Homo sapiens*) are the highest evolved of all species in this world. There is an inherent potential in each child to learn. It is in fact very interesting to watch an infant grow. Many a time he surprises even his own parents, with a new skill in the learning of which there is no conscious contribution of these adults. That is why Swami Vivekananda says "Man is the Taj Mahal of God's creations." Endowed with the unique power called the mind the infinite knowledge is in one's own mind. Swamiji is emphatic about this. According to him,

"No knowledge comes from outside: it is all inside. What we say a man 'knows', should, in strict psychological language, be what he 'discovers' or 'unveils'; what man 'learns' is really what he discovers by taking the cover off his own soul, which is a mine of infinite knowledge. You have to grow from the inside out. None can teach you, none can make you spiritual. There is no other teacher but your own soul." He further asserts "You cannot teach a child, you can only facilitate his/her learning, just like you cannot grow a plant, you can only facilitate its growth by loosening the soil allowing sunlight and providing water."

Does it mean then that the teacher is non existent? That the child is left to fend for himself in constructing his own knowledge?

Let us consider the following two views:

- Constructivist view: is based on the idea that the dialectic or interactive process of development and learning through the student's active construction should be facilitated and promoted by adults.
- Maturationist view: is based "on the idea that the students' naturally occurring development should be allowed to flower without adult intervention in a permissive environment"

In a way, in my personal opinion both the views really converge if we elaborate on the features of the maturationist's permissive environment to include teachers, parents and equate it to the adult component of the constructivists and call all such contributors in a child's active learning as facilitators. Then the "constructivist teacher" emerges as though a butterfly from its cocoon of the indefinitely many roles in which a traditional teacher had been hitherto cloaked.

Though one dare not think that one has grown a plant from its seed, yet without proper facilitating it will be wild growth! Education is about refinement. Allowing wild growth will be only detrimental. Thus a teacher as facilitator is what a constructivist teacher is about. Such a teacher's purpose is not to create students in his own image, but to develop students who can create their own image. The following two quotes on education succinctly prescribe the essentials of educational commitment

"The only purpose of education is to teach a student how to live his life-by developing his mind and equipping him to deal with reality. The training he needs is theoretical, i.e., conceptual. He has to be taught to think, to understand, to integrate, to prove. He has to be taught the essentials of the knowledge discovered in the past-and he has to be equipped to acquire further knowledge by his own effort." -Ayn Rand

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"The aim of education should be to teach us rather how to think, than what to think-rather to improve our minds, so as to enable us to think for ourselves, than to load the memory with the thoughts of other men." -Bill Beattie

It is all very well to propound lofty ideals but a down to earth, thread bare analysis of ground realities is what would assist in turning these ideals into functional models.

The philosophy of constructivism being child centric, what the constructivist teacher has to contend with is individualized instruction.

The task of a teacher in a class room is very beautifully described by Donald D. Quinn. He says,

"If a doctor, lawyer, or dentist had 40 people in his office at one time, all of whom had different needs, and some of whom didn't want to be there and were causing trouble, and the doctor, lawyer, or dentist, without assistance, had to treat them all with professional excellence for nine months, then he might have some conception of the classroom teacher's job."

Add to this a rigid curriculum to be transacted in a limited time for facing a rigorous examination that is faceless, followed by an even more faceless evaluation for which ultimate accountability is to be borne in 1: 40 ratio not to speak of cumulative deficiencies contributed by other factors, a teacher conveniently adopts the middle course of monotonously addressing the average. The individual is lost in the average be it the higher order or the lower order extreme. Whether the rich become richer or not, the poor definitely become poorer and the individual differences widen further, making the heterogeneity more pronounced. **The mass education has come to stay in centuries to come and hence except providing limited choices a common philosophy is very much inevitable in deciding the nation's education policy and hence at least up to secondary level solutions to individualized instruction cannot be sought as much in diversification as in reconciliation.**

A constructivist teacher therefore should be adept in reconciling the infinite variables into a viable class room solution. It is important to know your child, everyone of them. This pedagogically speaking would require understanding how each child constructs knowledge and forms concepts. Every time a child internalizes some knowledge it is an outcome of a process involving repeated observation, correlating to construct an emerging pattern, drawing inference, adopting and applying, questioning for further discovery and expansion. The algorithm of the process of learning may be presented thus:

- Each child at any stage starts with some knowledge
- Accommodates new experiences by reconciling /assimilating with the existing and reframes. Thus accommodation is the process of reframing one's mental representation of external world to fit new experiences.
- The child is not isolated but works in an interactive environment.
- The instructor is not absent, his role is to facilitate, create environment, to assess, to orient if the learner wanders or goes beyond.

It is often associated with pedagogy approaches that promote learning by doing.

Accepting therefore that children are unique and differences a natural consequence, constructivism advocates freedom to choose learners' pace. In providing for this should a constructivist teacher have

40 different paces for a particular task? Just as one cannot force a mango tree out of a tamarind seed, there are inherent interests and aptitudes in each individual. Does it mean learning beyond one's interests is impossible? **But then there have been those who preferred to be musicians but ended up as mathematicians!** There are other questions that are pertinent to context. Does Constructivism expect reinvention or invention? Is construction of knowledge ultimate at any stage or it may be revisited? When does it start? Does a constructivist teacher not instruct?

In trying to answer these questions one realizes that not only the teacher but also the administrator of an institution who should adopt a constructivist approach ! First we accept that if students are individually different so are the teachers. **Hence let them be empowered!** There may not be a need to set as many learning paces as there are students if a teacher can effectively use the underlying philosophy of continuous comprehensive evaluation. It is a powerful tool to determine minimum number of levels of learning. **Understanding that learning takes place unconsciously, formally, informally through several agents is very important to a constructivist teacher.** Only then he/she can effectively reconcile the variety of resources available in peer group, family, society to which the students belong in facilitating their construction of knowledge. Understanding that integration across disciplines is a very powerful tool to turn weaknesses into strengths is yet another tool in the hands of a constructivist teacher. That there is a vertical integration in the construction of knowledge is a very important input to the constructivist teacher who would then be flexible enough to interact in his/her own peer group to ensure smooth transition from one class to another. Instruction is modified to make arbitrary exploration a guided tour by providing just enough milestones that would lead to the target. In the process the teacher himself/herself may gain new insights, new inroads for his/her own evolution.

The teacher still works with the syllabus and plans curricular activities which involve

- Targeting an expected outcome
- Dividing into learning stages in a logical sequence from known to unknown
- Planning activities for each stage
- Facilitating construction of knowledge by the students at the end of his experience of each activity and
- Helping to express in a discipline specific language
- Assess at the end of each stage
- Make good shortfalls if any
- Have a mind set to facilitate further exploration, if additional knowledge more than expected by the teacher emerges
- Provide platform for exchange with fellow mates and experts
- Not to curb but to ADD is the motto.
- Facilitating summing up for holistic understanding which may require generalization of hypothesis constructed

Several attributes are gained by children that are more useful to society. Some of these are:

- More focused ability to observation
- Inclination to pattern seeking
- Improvement of power of correlation, comparison, reasoning, spirit of enquiry and discovery
- Ability to construct meaningful knowledge
- More creativity and imagination
- Ability to innovate and invent
- Communication sharpened
- Ability to concretize the abstract through the medium of language
- Deductive process takes over from Inductive process and the child can glide smoothly from one to the other.

Thus the constructive teacher is empowered to devise activities that optimize output for different calibers. Hence he/she is not repetitive. Rather he/she improvises and innovates and becomes a repository of wisdom to handle the most complex process of creating fine human resources. If every teacher is motivated thus, excellence will be a natural product.

The happiest people surround themselves with family and friends, don't care about keeping up with the Joneses next door, lose themselves in daily activities and, most important, forgive easily .....

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Constructivist Teacher : Paradigm Shift from Teaching to Creative Collaboration

*Dr. Sadhana Parashar

Let us look at the two scenarios being described here

Classroom A

A history class is in progress. The teacher announces the topic, `*The 1857 Revolt'*. The students open their books to the page announced and follow in their own books what the teacher is reading. The teacher pauses from time to time to write a word, a phrase or a date on the board. The students copy these into their own note books. At times the teacher explains a few sentences which the teacher thinks the class has not understood. After a few paragraphs the teacher asks a few questions and if the students cannot answer she provides the answer.

Classroom B

A history class is in progress. The teacher announces the topic, `the 1857 Revolt'. The class has been divided into six groups. Each group is working on the task assigned to them. One group is working on a map of India. They have to mark the extent of colonial India and the uprising of the 1857 rebellion. The teacher has asked them to refer to the relevant pages of the textbook and the list of relevant websites available on the internet which she has provided them. Another group is working on the letters and other memoirs, *authentic primary sources* that the sepoys made with their friends and families. The teacher has again provided the resources to the group. Still another group is working on a pictorial representation of the Mutiny and a list of resources is given to them. One group is working in plotting on the map, the list of places where the uprising took place in May, June and July 1857. The last group is working on the aftermath of the revolt in consultation with the teacher.

A close understanding of the two classrooms reveals the following points of difference between them.

	Classroom A	Classroom B
Materials	Primarily textbook	Includes Primary sources and other resources.
Learning	Based on repetition, explanation by the teacher.	Interactive and builds on what the student already knows.
Knowledge	Seen as inert, to be passed on from teacher to taught	Seen as dynamic, ever changing, to be constituted by the learner.
Teachers' role	Giver of information, rooted in authority	Creative collaborator, facilitator, mentor, guide **who** moderates, suggests, coaches

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Students' role	Passive recipients of knowledge	Interactive, construct their own knowledge based on previous experiences, ask questions, explore, experiment, reflect, discuss
Transaction Strategies	Teaching facing class,	Group Work and Pair Work, using peers as resources,
Approach	Lecture method, teacher asking questions as well as answering them,	Construction of meaning by learner by formulating their own questions – inquiry allowing multiple interpretations and expressions of learning – multiple intelligencies, encouraging collaborating learning.
Learning Process	Teacher led class, Students are not used as a resource for learning.	Students' full participation in learning activities such as projects and hands-on experiments. Collaboration among students, peer teaching helps them to review and reflect on their learning processes and pick up strategies and methods from one another.
Assessment	Marks at the end of term examination sole criterion of evaluating learners. Objective is to score higher in the written mode. Summative assessment dominates. Paper setting is difficult and their level often differs.	Multiple forms of assessment. Teacher and learner come together – Journal writing. Goals of assessment: • the new knowledge that student has created • how the student learns best • the learning environment and the teacher's role in it. Formative and diagnostic assessment. Databank of graded exercises can be formed.

Historical perspective of Constructivism

Constructivism is a learning theory based on scientific observation and research and explains how people learn. They construct their own knowledge of the world around them through reflection on their experiences. When we are faced with new knowledge, we tend to relate it to our previous experiences and either modify our ideas or discard the new information. In the process we tend to create new knowledge by asking questions, explaining and assessing what we already know.

Constructivism as applied to education is a more recent development derived from the work of development psychologist *Jean Piaget (1973)* and Russian psychologist *Lav Vigotsky (1978).* Its underlying principles are also influenced by the developmentalist ideas of the French philosphaer *Jacques Rousseau* and later the theories of *John Dewey, G Stanley Hall* and *Arnold Gessell*.

Developmentalist educational practice assumes:

- Human beings have a natural inclination for learning which is the result of Darwinian process of natural selection.
- Learning experiences should emulate those natural processes to the extent possible.
- Teaching is thus a matter of providing context for the child which would optimize the learning potential for each child.

Dewey held that since the educational process was by definition, a function of naturally occurring developmental process unique to a given child, the child's educational development had to emerge from the child rather than from an external agent (such as teacher or parent) (Stone, 1996) . It is the process of education which is more important than performance.

National Curriculum Framework (2005)

In this path breaking document by NCERT, the constructivist approach and its implications for practice have been brought out in great detail. Some of the key principles are summarized below:

- In the constructivist perspective, learning is a process of construction of knowledge
- Learners actively construct their own knowledge by connecting new ideas to existing ideas on the basis of materials/ activities presented to them (experience).
- The structuring and restructuring of ideas are essential features as the learners progress in learning.
- The engagement of learners, through relevant activities, can further facilitate in the construction of mental images of the relationships (cause-effect)
- Collaborative learning provides room for negotiation of meaning, sharing multiple views and changing the internal representative of external reality.

The Constructivist Teacher:

The teacher as opposed to a traditional classroom becomes a facilitator, co-creator of knowledge and a collaborator. Her role in relation to the process of knowledge construction in which the children are engaged becomes more active. Some of the features that characterize a teacher engaged with a constructivist classroom are:

- Seek and value student point of view
- Allow children to formulate questions
- Encourage children to answer in their own words and from their own experience.
- Allow children to guess intelligently and use it as a pedagogic tool.
- Engage children through well-chosen tasks and questions so that they are able to realize their developmental potential.

- Refer to raw data, primary sources and interactive materials to provide learning experiences for their learners.
- Encourage learner autonomy and be willing to let go of class control.
- Function more as a facilitator who coaches, mediates, prompts and helps learners assess their understanding and learning.

The Constructivist Classroom:

The focus tends to move away from the teacher to the learners. Knowledge here is not just information and facts to be memorized but a dynamic ever changing world view and the ability of the learner to explore that view.

In a Constructivist Classroom learners are not blank slates on which knowledge can be etched. They come to learning situations with already formulated knowledge, ideas and understanding. The previous knowledge is the raw material for the new knowledge they will create.

The main activity in a Constructivist Classroom is solving problems. Learners use inquiry methods to ask questions, investigate a topic and use a variety of resources to find solutions and answers.

The Constructivist Classroom relies heavily on collaboration among learners. Peer learning is hugely successful because learners review and reflect on their learning process and pick up strategies from one another.

In a Constructivist Classroom the teacher respects learner's autonomy and encourages independent thinking by asking open ended questions. These allow learners to reflect, co-relate concepts by analyzing, predicting, justifying and defending their ideas.

Going Beyond and Pushing the Limits:

Learning tasks influence the value and quality of teaching. Challenging tasks encourage independent thinking, multiple ways of problem solving, creative and flexible solutions and higher order thinking skills. When High Order Thinking Skills are emphasized in the teaching learning process the understanding is deeper and long lasting.

Scaffolding is a technique to help learners perform just beyond the limits of their ability. It means that the learner needs to be guided from what is presently known to what is to be known. Scaffolding is an important feature of constructivist teaching and learning. It helps learners to acquire content while carrying out tasks requiring higher order thinking.

Learning Tasks need to move beyond the textbook and beyond the authority of the teacher. Learners need to be encouraged to seek out knowledge from sites other than the textbook, in their own experiences, in other's experience, from the library , the community and from authentic primary sources so that they can construct their knowledge.

Designing of tasks and creating learning experiences for learners help them understand concepts and create and 'own' the knowledge that they acquire. In moving away from the focus on 'factual knowledge', cramming, memorization and recall there has to be a parallel focus on planning for classroom transaction, teacher empowerment and holistic ways of assessment. Varied modes of assessment, (CCE), oral testing, testing of higher-level competencies such as interpretation, analysis and problem solving skills need to be encouraged.

Central Board of Secondary Education : Perspective

The Central Board of Secondary Education has undertaken a number of innovative steps in curriculum design, pedagogy and assessment design. Some of these are summarized below:

- The Board has revised its question paper design on the basis of recommendations of National Curriculum Framework 2005.
- The question types include open ended questions which allow for personal response and test higher order thinking skills.
- The Board is proposing to initiate a Project on student assessment in Mathematics for CBSE affiliated schools in order to find the learning gaps and provide interventions.
- Practical components in Science are being tested through a practical skill- based Multiple Choice question paper.
- Language testing is skill based and all the four language skills, Reading, Writing and Listening –Speaking (in classes IX and XI) are being tested.
- To promote learning of Science through experiments and Projects the Board has published Manuals titled '**Learning by Doing**' (Class VI) and '**Science is Doing'** (class VII)
- The Board is continuously involved in engaging with learners through enrichment activities such as Heritage India Quiz, National Informatics Olympiad, National Science Exhibition, Group Mathematics Olympiad and National Sports Programme.
- Curriculum plus intervention by the Board provide adequate experience and space for dialogue and discourse within the school by addressing the issues of Adolescence Education, Health Concerns, Environment Issues, Consumer Awareness and Value Education. Eco-clubs, Health Clubs and Literary Clubs are recommended as a take off point to conduct relevant activities.

Conclusion

Constructivism in a classroom can be designed to resolve around 5 E's.

- **Engage** – students encounter the material, define their questions, lay the groundwork for their tasks and make connections from new to known.
- **Explore** – students directly involved with material, inquiry drives the process, teamwork is used to share and build knowledge base.
- **Explain** – learner explains the discoveries, processes and concepts that have been learned through written, verbal or creative projects. Teacher supplies resources, feedback, vocabulary, and clarifies misconceptions.
- **Elaborate** – learners expand on their knowledge, connect it to similar concepts, apply it to other situations- can lead to new inquiry.
- **Evaluate** – on-going process by both teacher and learner to check for understanding. Rubrics checklists, teacher interviews, portfolios, problem- based learning outputs, CCE and other multiple tools of assessment. Results are used to evaluate and modify further instructional needs.

A good educational system should provide all who want to learn access to available resources at any time in their lives, empower all who want to share what they know to find those who want to learn it from them. (Iillch, 1972 & 75)

A constructivist teacher is a well informed, aware and sensitive teacher who is able to engage children through well chosen tasks and questions so that they are able to realize their developmental potential. We hope that this volume of Cenbosec will help them to explore the constructivist perspective in all its multiple dimensions and encourage learning with care, love and devotion.

Place of Teacher in a Constructivist Approach to Learning

*Pramod Kumar T.K.

To have a child centric educational system ,we have to move towards a constructivist approach to learning. This approach refutes the myth that a child is a vacant tumbler which can be filled with knowledge. According to 'Constructivism' we construct our own knowledge of the world, through experiencing things and reflecting on those experiences. In this view of learning ,a teacher understands the student's preexisting conceptions and guides the activity to address them .Learners actively construct their own knowledge by connecting new ideas to existing ideas on the basis of materials / activities presented to them. Constructivists believe that child is a creator of his own knowledge.

We believe that a child learns mechanically and learning is simply a response to an external stimulus. Thus teacher's role is to provide necessary stimulus for progressive change in behavior .We think that extrinsic motivation leads to learning .Thus Punishment, rewards and repetition becomes the important components of our 'teaching methodology'. The emphasis is on teaching than 'self learning' by students. Even today many of us boast to have best results in the examination by practicing these age old methods. Our strong belief in Behaviorist Approach to teaching is evident when we stick to these teaching methods. For us training is equivalent to education. We consider that Teacher's role is very important and he/she is the one who decides the content and methodology of learning/teaching in the classroom.

But according to ***Cognitive Constructivists*** the content and activities should be decided both by teacher and taught. Teacher's role is limited to creation of learning situations. Through continuous exposure to different situations the child creates his own knowledge and the same is evaluated by either the teacher or taught. The four important factors effecting such a cognitive development are ***Maturation, Experiences, Social Environment and equilibrium***. According to Cognitive Constructivists, experience plays an important role in cognitive development. Though the child has innate potential, the learning can only take place with proper maturation. And the teacher should be aware of this, and the learning should match the child's age. The cognitive Disequilibrium is the cause or motivating force for a child to learn. The child learns when a cognitive challenge is posed. Instead of just giving information to a learner, a teacher should create situations through which the children will be able to investigate and find an answer for themselves. Thus as teachers we should understand that child is an ***investigator***. Teacher has to create a dis-equilibrium by creating situations from where the child learn to solve problems and learn new things.

Though Cognitive Constructivism has paved the way for a new mode of learning the most accepted Constructivist approach is ***Social Constructivism***. In this approach the teacher and taught together determines the area of learning and activities. Though the child learns through activities the teacher interacts and have dialogue with the learner frequently and assists wherever required. This continuous dialogues help in forming mental constructs which are evaluated further by the teacher or taught. Though these are the two main approaches to constructivism both these approaches are based on fact that children learn from their own experiences and create their knowledge.

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It is high time that from rigid Behaviorist approach we need to move towards Constructivism. One need to understand that teacher has to change from one who is 'teaching' to a mediator between the learner and knowledge. This can happen only by a new way of learning called as ***collaborative learning***. Teacher and learner in a classroom are going to share their experiences and knowledge. This focus on ***'Collective Knowledge'*** helps to transform a teacher to a learner and in turn teacher and taught becomes one entity. The student in such a classroom has the freedom of expressing his/her disagreement on any aspect of learning with teacher. Moreover the heterogeneous grouping of children in a class for collaborative learning helps for the development of affective and psychomotor aspects of learner's personality.

Thus Constructivist approach totally changes the role of a teacher in a classroom. Teacher now becomes a ***facilitator*** rather than a ***'teacher'*** in the conventional sense. An autonomous learner is the hallmark of any constructivist classroom. Hence the teacher should encourage and accept autonomy of learner. Developing the art of questioning is another area where teacher may emphasize upon. The terminologies used can be classify , analyze , predict ,create etc instead of routine terms like define, name etc used in normal classrooms. Though lesson planning is important, he/she should allow student- response to drive lessons and change instructional strategies and content accordingly. Wide variety of experiences (mostly contradictory to his/her earlier experiences) may be given so as to arouse curiosity among learners. The ***constructivist teacher*** provides tools such as problem solving and inquiry based learning activities with which students formulate and test their ideas , draw conclusions and inferences. This can only happen if an atmosphere for dialogue is provided in the classroom. For this a teacher should be open-minded and nonjudgmental towards learners.

In short constructivism does not dismiss the active role of the teacher or the value of knowledge. This approach modifies that role , so that teachers help students to construct knowledge rather than to reproduce a series of facts. It is important that teachers go for this approach as it leads ultimately to joyful learning . It promotes social and communication skills by continuous exchange of ideas among peer learners. The learning elevates its status from rot memorization to thinking and understanding. We may be using this approach to some extent in our classrooms . If we can extend this further so as to accommodate all kinds of learners in a classroom then it shall be a great service to the 'learners'. Instead of finding excuses in prevailing system of education let's be the torchbearers for a change in Pedagogy.

Happy people have complete control over how they want to think and feel.

The Constructivist Teacher

*Bri. Pavitramrita Chaithanya

Sukdev: Madam, my son is asking me about death! He wants to know if I have seen anyone dying. When I questioned him why he wants to know this, he explained that it was his teacher who asked him to collect some information. Tell me madam, why is a teacher of Std 1 students speaking about death? Especially when it is not even in their textbooks!

Rajesh: Not only that Madam, my daughter has been asking me, why am I not making coffee for her mother when she comes home from the office because she sees that her mother always prepares coffee for me when I come home. My daughter says that it is her Arya Miss who prompted her to ask this question! Why Madam, is a teacher creating problems for us at home?

Mallika: Madam, you should go through the students' class workbooks and their homework. Practically nothing is being taught. The term exams are coming up and I'm afraid that my child is not going to be able to write anything in the exam. Last week, I personally met the teacher during her lunch recess, and explained to her the problem. Even so, she has changed nothing.

Arjun: I have noticed the same problem. My neighbour's son who is in Std I A, has all his class work entirely up to date. His teacher is regularly giving some kind of activity or project for homework and the sections for the first term are almost covered.

Rajesh: Madam, why did you allocate her to teach all subjects? If different teachers had been allocated to different subjects, my child would have at least studied those subjects.

Abhilash: The funny thing is—my kid adores this teacher! As soon as my daughter comes home from school, she starts telling us all her adventures in class, and which song Arya Miss sang with such and such boy or girl, or how she made a shy girl like Anu dance in the class. But Madam, what are these small kids going to learn through group discussions and brain storming sessions? Is Arya Miss thinking that these Std I students are college students already or what?

Urmila: Apparently she often takes the students to the school ground and God knows what they do there. My Arun now collects all kinds of plants from our premises, and has even started asking me whether this or that plant is used as a herb or not. He is always pestering me with these kinds of questions. But I have to admit that there is a big improvement in his behaviour. And he does n't litter the house with the plants he collects but replants them, saying that he will not destroy their lives. For his each and every action he quotes his Arya Miss. I really believe all the kids love her very much because she gives so much freedom to them.

Vivek: Yes, yes, she looks after the kids just like her own. She showers them with motherly affection. But I doubt that a teacher who acts like this can she teach much? Her students may start playing truant or staying out without our permission. Instilling some fear and discipline in children is a must.

Vanaja: I disagree with you sir. As far as my child is concerned, I'm finding a tremendous change in his character and behaviour. He was such a naughty child that I had to request his kindergarten teacher

*Bri. Pavitramrita Chaithanya, Co-ordinator, Amrita Vidyalayam Schools, Kerala

to give him the cane? But now! What a difference! He touches our feet and seeks our blessings as soon as he gets up; he obeys us promptly, and is a wondeful boy. Only with regard to his studies am I little worried.

Mallika: Exactly! If Arya Miss is not giving any notes, how are the students going to write the exams?

Sukdev: I think my Sujith's knowledge of maths is still the same as his upper KG standard. When I asked him if the teacher taught any maths, Sujith started explaining a movie Arya Miss had showed them.

Arjun: Madam, why is this teacher putting all the burden of teaching onto us parents? As you know Madam, we are staying in a flat, and we don't have an open space. The other day, Akash wanted me to show him the sky at night. Where can I take him to show this? He was so persistent that I had to come down all the way from our flat to the road. On seeing the sky, he launched off a volley of questions!! He said that Arya Miss wanted all the students to speak about what they saw in the sky at night!

Urmila: Absolutely! I made my husband buy a DVD instead so that Arun could watch it on our PC. Who has time to spend on frivolous things like this?

Abhilash: My girl told us that this Arya Miss made their class sit with some higher-class students to do a project! Will these Std I kids learn anything if they are mixed with higher-class students?

Vanaja: But the good thing is, my boy doesn't fight with his younger brother anymore. He shares his toys with him and takes good care of him. I think this kind of mixing of groups is good in a way to inculcate some social values in the students.

Principal: All right. I can see now, there was really a mistake on my part. I should have convened a meeting for all of you at the beginning of the session. In my opinion, Ms. Arya is a wonderful teacher of fine caliber, with a unique approach to teaching. I have personally visited her class on occasions and have gained a very good impression of her teaching methods. She does not limit her teaching to chalk and talk but extends her vocation through a lot of other techniques. For example she uses 'child centered' pedagogy where importance is given to the students' experiences, their opinions and their active participation. Her students are dynamically engaged in observing, feeling, reflecting, acting and sharing. She keeps a beautiful potted plant in her classroom, which the students are taking care of. She is continuously providing activities that generate knowledge so that the students are moulded into life long learners. Her colleagues used to complain that her class was always noisy and that her students lacked discipline. But my feeling is that when we impose silence we actually stifle the students.

When you come for the next parents' meeting, I'll show you her classroom. On one wall she displays the students' work, their drawings and paintings, so that the students feel proud of what they do. It's as if her students own their classroom. They keep it neat and tidy. The teacher is acting not only as a facilitator for learning but also as a catalyst for creative processes. We are looking forward to recruiting such teachers for the whole school. For them, teaching is a passion, not merely a profession.

Don't worry about your child's performance in the exams. Actually, Arya Miss doesn't want to give scheduled exams for her class. She prefers to evaluate each child individually. She conducts evaluation in such a way that the students are not even aware they are being tested. This takes away a lot of unnecessary stress, from you and the children. You need not worry that your children are not learning.

Actually their performance is better than their counterparts in other divisions. Be happy! Your children are not spoon-fed. They're able to talk about themselves, the members of their families, and people in their surroundings. It's just that the expectations of the curriculum are being carried out in a more interesting way. The students enjoy her classes and find them thrilling. Surely you'll agree with me—none of the students want to be absent from school now, not even for a day! In fact they are delighted to come to school. It is we who have to change our mindset. Rote learning is of no help in the long run.

Parents: All right then Madam. We have faith in you.

The next Parents' Meeting day:

Parents of Std IA & other classes: Madam: We want Arya Miss to teach our children also. She's such a wonderful teacher—her students now prefer being at school to being at home! She's really an asset to our school. Madam, we simply must have teachers like her, people with undying devotion to their profession and a burning love for teaching.

Parents of Std IB: Yes Madam, we now understood our mistake of not recognising Arya teacher's efficiency and noble attitude. We are convinced. If we want an A1 nation, we must have A1 teachers like Arya Miss. May there be more teachers like Ms. Arya who can act as torch-bearers for mankind.

Habitually happy people are kind, caring, and compassionate. They do not speak ill against anybody. Having a clean conscience gives them long-lasting happiness.

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Cenbosec
Quarterly bulletin of the Central Board of Secondary Education

Constructivist Teacher

*Dr. Jaya Bansal

What is Constructivism?

Constructivism is a view of learning based on the belief that knowledge isn't a thing that can be simply given by the teacher at the front of the room to students in their desks. Rather, knowledge is constructed by learners through an active, mental process of development; learners are the builders and creators of meaning and knowledge. Constructivism draws on the developmental work of Piaget (1977) and Kelly (1991). Twomey Fosnot (1989) defines constructivism by reference to four principles:

1. Learning, in an important way, depends on what we already know;
2. New ideas occur as we adapt and change our old ideas;
3. Learning involves inventing ideas rather than mechanically accumulating facts; and
4. Meaningful learning occurs through rethinking old ideas and coming to new conclusions about new ideas which conflict with our old ideas.

Constructivist Teaching and Learning

A secondary language arts classroom exemplifies the following attributes of constructivist teaching:

1. Learner-centered instruction in a democratic environment;
2. Active learners who build and create meaning and knowledge;
3. Learners who hypothesize, question, investigate, imagine and invent;
4. Learners who reflect and make associations with prior knowledge to reach new understandings.

The Constructivist Teacher

A constructivist teacher and a constructivist classroom exhibit a number of discernable qualities which are markedly different from a traditional or direct instruction classroom. A constructivist teacher is able to flexibly and creatively incorporate ongoing experiences in the classroom into the negotiation and construction of lessons with small groups and individuals. The environment is democratic, the activities are interactive and student centered, and the students are empowered by a teacher who operates as a facilitator/consultant. Teachers need to recognize how people use their own experiences, prior knowledge and perceptions, as well as their physical and interpersonal environments to construct knowledge and meaning. The goal is to produce a democratic classroom environment that provides meaningful learning experiences for autonomous learners.

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This perspective of learning presents an alternative view of what is regarded as knowledge, suggesting that there may be many ways of interpreting or understanding the world. No longer is the teacher seen as an expert, who knows the answers to the questions she or he has constructed, while the students are asked to identify their teacher's constructions rather than to construct their own meanings. In a constructivist classroom, students are encouraged to use prior experiences to help them form and reform interpretations.

In a traditional classroom, an invisible and imposing, at times, impenetrable, barrier between student and teacher exists through power and practice. In a constructivist classroom, by contrast, the teacher and the student share responsibility and decision making and demonstrate mutual respect. The democratic and interactive process of a constructivist classroom allows students to be active and autonomous learners. Using constructivist strategies, teachers are more effective. They are able to promote communication and create flexibility so that the needs of all students can be met. The learning relationship in a constructivist classroom is mutually beneficial to both students and teachers.

A crucially important aspect of a teacher's job is watching, listening, and asking questions of students in order to learn about them and about how they learn so that teachers may be more helpful to students. Calkins (1986) notes that there is a thin line between research and teaching. At the same time that we teach children, they also teach us because they show us how they learn; we just have to carefully watch them and listen to them. This kind of watching and listening may contribute to a teacher's ability to use what the classroom experience provides to help him or her create contextualized and meaningful lessons for small groups and individuals. The ability to observe and listen to one's students and their experiences in the classroom contributes to his or her ability to use a constructivist approach. Paradoxically, a constructivist approach contributes to one's ability to observe and listen in the classroom. Thus, the process is circular.

Constructivist teachers encourage students to constantly assess how the activity is helping them gain understanding. By questioning themselves and their strategies, students in the constructivist classroom ideally become "expert learners." This gives them ever-broadening tools to keep learning. With a well-planned classroom environment, the students learn HOW TO LEARN. It is like a spiral. When they continuously reflect on their experiences, students find their ideas gaining in complexity and power, and they develop increasingly strong abilities to integrate new information. One of the teacher's main roles becomes to encourage this learning and reflection process.

For example: Groups of students in a science class are discussing a problem in physics. Though the teacher knows the "answer" to the problem, she focuses on helping students restate their questions in useful ways. She prompts each student to reflect on and examine his or her current knowledge. When one of the students comes up with the relevant concept, the teacher seizes upon it, and indicates to the group that this might be a fruitful avenue for them to explore. They design and perform relevant experiments. Afterward, the students and teacher talk about what they have learned, and how their observations and experiments helped (or did not help) them to better understand the concept.

Contrary to criticisms by some (conservative/traditional) educators, constructivism does not dismiss the active role of the teacher or the value of expert knowledge. Constructivism modifies that role, so that teachers help students to construct knowledge rather than to reproduce a series of facts. The constructivist teacher provides tools such as problem-solving and inquiry-based learning activities with which students formulate and test their ideas, draw conclusions and inferences, and pool and convey their knowledge in a collaborative learning environment. *Constructivism transforms the student from a passive recipient of information to an active participant in the learning process*. Always guided by the teacher, students construct their knowledge actively rather than just mechanically ingesting knowledge from the teacher or the textbook.

Professional Development of A Constructivist Teacher

Constructivist classes reveal a shift in thinking in which the underlying assumptions about what knowledge is, about how people learn, and about what is important are different. One can grow from a traditional view of teaching in which one seeks to control one's subject area and students to becoming comfortable with a subject area that is less predictable and more ambiguous. This enables one to make the shift in thinking that may be necessary to be a constructivist teacher.

Teachers are individuals who are often drawn into teaching by a love of kids. Perhaps some of what a constructivist teacher does is intuitive. Constructivist teaching also requires intelligence, creativity, patience, responsiveness, and the ability to live with ambiguity permitting one to spontaneously abandon a plan in order to accommodate specific individual or classroom situations. And while the job of being a constructivist teacher is demanding, its value is evident in the impact on students' learning and personal development.

Being habitually happy takes a lot of practice and effort. We have to develop certain attitudes and behaviors to be able to achieve happiness all year round. We can do this gradually by becoming more discipline and determined in choosing to make happiness part of our lifestyle.

Constructivist Teacher

*Ms.Chitra Nakra

Constructivism is a view of learning based on the belief that knowledge is not something that can be disseminated by the teachers to the students within the four walls. Knowledge is constructed by learners through an active mental process of development. Learners are the builders and creators of meaning and knowledge. A constructive teacher adopts a child –centered approach with experiences that allow them to hypothesize, predict, manipulate object, pose, questions, conduct research, form opinions, investigate, imagine and invent. Further more critical thinking and cognitive development are also imperative .

A Constructivist teacher and a constructivist classroom exhibit a number of discernable qualities markedly different from a traditional or direct instruction classroom. She is able to flexibly and creatively incorporate ongoing experiences in the classroom into negotiation and construction of lesson with small groups and individuals. The goal is to produce a democratic classroom environment wherein the activities are interactive and student- centered thereby providing meaningful learning experience for the autonomous learner. The instructional practices also include discovery, learning and hands on activities.

Students are empowered by the teacher who operates as the facilitator. In a constructivist classroom the teacher and the students share responsibilities in decision making and demonstrate mutual respect regardless of gender, class, race or the social and cultural context in which the learning takes place

A constructivist teacher encourages students to work in groups and view students as thinkers behaving in an interactive manner mediating the environment for students. Teachers seek the students' point of view to understand student learning for use in subsequent conceptions.

Constructivism is often misconstrued as learning theory that compels students to reinvent the wheel. In fact, constructivism taps into and triggers the students innate curiosity about the world and how things work. Students do not reinvent the wheel but, rather, attempt to understand how it turns and how it functions.

Class room rewards can be an effective tool for a successful teacher . Constant importance to reward by the teacher is imperative till such time it becomes an established habit. Eventually a constructivist teacher can help children to internalize the behaviour so that they will not need a reward.

She will also encourage the KWL (H) chart What we *know*, what we *want* to know, what we have *learned*, *How* we know it.

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Digital age proficiencies should be the priority of a constructivist teacher. The teacher should be able to use World wide web and the convergence of voice, video and data into common digital format which increases visual imagery. The teacher needs to have good visualization skills to be able to interpret think and reason logically and solve complex problems. The teacher should encourage the use of White Board. She should prepare students to develop Learning skills that enable them to think critically, analyze information, communicate, collaborate realize the essential role that technology plays in today's knowledge. The teacher should be able to identify the changes in attitude and pedagogical practices needed to enable teachers to use information technology. 21st century learning should include supplemental curriculum activities for K-12 students, professional development opportunities for teachers and administrators and extend learning programs for parents. Only face to face, video and print based resource should complement the learning styles and deliver rich learning experiences for all participants and students.

The teacher should prepare students to interact in a global economy. The teachers should also be able to collaborate globally. They should have online relationships which provide opportunities for classrooms to connect. They should be able to tackle new technological innovations and be able to solve them on their own. The tech-teacher should also prepare students for digital citizenship.

Learning activities in constructivist settings are characterized by the *goals and actions of a constructivist teacher*:

- Become one of the many resources that the student may learn from, not the primary source of information.
- Engage students in experiences that challenge previous conceptions of their existing knowledge
- Allow student responses to drive lessons and seek elaboration of students initial responses. Allow students some thinking time after posing a question
- Encourage the spirit of questioning by asking open-minded questions. Encourage thoughtful discussion among students.
- Use cognitive terminology such as classify, analyze and create when framing tasks
- Encourage and accept student autonomy and initiative, be willing to let go of classroom control
- Use raw data and primary sources, alongwith manipulative, interactive materials
- Do not separate knowing from the process of finding out
- Insist on clear expression from students. When students can communicate their understanding, then they have truly " learned"
- Emphasize on personal understanding based on experiencing things and reflecting on those experiences.
- Educate them so that they realize their own learning experiences so that the children become responsible and autonomous.

- Motivate students to present their finding, projects and research
- Encourage audio visual teaching pedagogy
- Should ensure co-curricular activities or indulge in education on personality development, trips/visits, films etc.

Privileges of a constructivist teacher

- Teaching is Student- Centered
- Knowledge exists with the student
- Gets Class Co-operation
- Has Active learners
- No right or wrong answers in the class
- Conceptual change in students
- Students construct meanings
- Uses Alternative assessment
- Develops Healthy spirit of competition
- Scope for Extrapolation

Independance Day functionist Regional Office, Allahabad

Teachers on Being `Constructive Teachers' share their views .....

Together We Ramble Into Perpetuity

A constructive teacher is one who can usher the ability of initiating 'Flow Activity' in a classroom situation. A 'Flow Activity' is state where a child is engrossed by the activity and is totally oblivious of other thing. Flow Activity is vital for our well being. It envisages that state when optimum concentration envelops the individual as bliss sets in with self-realisation of knowledge. In such a mental state unconsciously we are managing time rather than time managing us. In recent times, students are cramped into a time zone like a shoal of fish swimming from one end to the other by instinct rather than desire.

A constructivist teacher emerges from being a mere organizer of knowledge to a simulator. Until the beginning of the last century the glory of western intellectual history rested on the ability of a teacher to organize the knowledge of the world in a rational and logical way independent of almost all involvement of learner. All this was viewed as a huge mechanical machine in which each component could be explained in terms of their relationship to the other component, each of which further contributed in making the whole machine work smoothly. Apparently in such a scenario the learner was just moving on a 'Conveyor Belt' as it were. The constructivist theory refuels the idea of an all encompassing machine. The constructivist teacher believes that the learner creates his or her own model of learning. In-order to facilitate this a teacher must give the learner the opportunity (a) to interact with sensory data. (b) construct their own world.

Constructivism in a Progressive School: A constructive teacher breaks barriers and builds bridges between ground reality and societal expectation. Today when India is providing perhaps the largest workforce to the world, we can say with near certainty that one of the reasons is that we have never allowed our education system to slip away from our cultural ethos. For example, in our school teachers do not teach History, they help students to touch History, fathom History and construct History. We have a small school museum which is a repository of the past. Over a period of a few years contribution from parents, teachers and students has resulted in a collection of old newspapers dating 1921, coins as old as the East India Company and some punch marked coins too. When students see these and touch them they are transported to an era well niched in our text book. The constructive teachers work begins now – she helps the child to construct his/her history by periodisation of major events in their family. Each child in this manner gets the essence and fragrance of History.

A constructive school does not just instill leadership qualities but gently ingrains and constructs these qualities in the students. One cannot just frown and say that there are scarcely any role models in the society. In the formative years by far the best role models are students themselves. The student council of our school is delegated responsibility in a manner that they practically run the day to day activities of the school. The winds of change heralded by 'globalization' and 'liberalization' set the 'think tank' of our school to adopt strategies in pedagogy that would allow every child to develop his/her thought process that could be translated to concerted perception.

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