

ABSTRACTS**SESSION 1: UNDERSTANDING OUR BRAIN****DR. KOTWAL** Science and spirituality

Modern living leaves us little time and choice to reflect on the most important questions in life. It leaves us ill-equipped to deal with obstacles to our health and happiness. Finding and creating a field of happiness for oneself is not just a selfish pursuit. Exciting new research has shown that happiness is contagious through social networks. Happiness has a huge impact on our family, friends and those we work with – even on people we have never met.

The challenges of a globalized and interdependent world necessitate a newer and broader vision that is not confined to geographical boundaries. It must encompass moral and ethical responsibility to humanity at large. Citizens coming of age in the 21st century will need unprecedented levels of mutual moral concern, creativity, intercultural cooperation and skill effectively addressing the challenges. They will need an education that will prepare them to become both compassionate and competent. World citizens cannot be measured only in terms of cognitive skills and knowledge, but must address the newer aspects of human development such as social and emotional skills, moral values, virtues that promote social health and well being.

The world's great contemplative traditions encompass a shared wisdom on moral and ethical virtues, as well as a vast array of specific techniques, including different forms of meditation and reflective practices. Studies are beginning to document how these practices promote better emotional regulation, improved attention, peace, resilience, better stress management, coping skills and deliberate cultivation of qualities such as compassion and empathy.

Unlike negative emotions of anger, lust, grief, and fear, positive emotions - like hope, love, joy, compassion, forgiveness, trust, gratitude and awe – free the self from the self. Unlike negative emotions, positive emotions are future orientated, and rarely “all about me.” Neuroscientists have recently demonstrated that we can actively develop positive emotions such as love, compassion and kindness - all essential ingredients for a happy and meaningful life in our becoming a responsible and caring citizen.

Some of the greatest scientific minds after taking cue from His Holiness the Dalai Lama are just beginning to understand Neuroplasticity - the extraordinary capacity of the brain to change in response to environment. The implications for how we learn, work and care for one another are profound.

These are fundamental questions at the heart of the revolution in neuroscience. The 1.2 kg lump of wrinkled tissue – with no moving parts, no joints or valves – not only serves as the motherboard for all the body's other systems but also is the seat of our mind, our thoughts, our sense that we exist at all. We now understand that the brain remains plastic for the duration of its lifetime. Brain physically changes in response to experience. Nevertheless, how does this understanding affect? How should we teach our future generations, manage organizations and maintain our own well being? This extraordinary potential of the human mind is a topic of intense public interest.

PROF. LOBSANG TENZIN An abstract from the Tibetan Medical Text relating to the established structural aspect of the body, the senses and the brain.

The Tibetan science of medicine is a traditional science of healing. With the advancement of the Tibetan civilization, the science of healing too has undergone development with enriching experiences coupled with the imported knowledge of healings from various countries which has formed the foundation of the present traditional Tibetan healing science and its practice.

The system consists of the object of healing, the remedy of healing, the method of healing and the healer's qualification. The subject matter here being the healing object, the brain is an important topic of the Tibetan science of healing.

It relates to the unification of the sperm, the blood and the mind at the time of conception in the mother's womb. From the second moment of the conception to the fifth week, gradual formation takes place, especially after the birth to adulthood. It is a gradual development of the body and the sense organs like eyes and the senses of emotional feeling, differentiating and experiencing. Similarly, the heart beat, the respiration and the movement of the limbs, the digestive system, the sperm, and the blood, the urine and the stool function takes place. Moreover, the combination of the white and the red elements gives rise to blissful state. Other functions entail sleeping, dreaming and the habitual experience such as memory and observation of right and wrong. One's investigative mind-set communicated to others through the speech becomes a natural phenomenon.

As for the brain's control over the rest of the parts of the body, the central nervous system co-ordinates with other organs of the body which helps to see and feel outer phenomenal objects and perform voluntary functions. Here, the main discussion is about the senses and, therefore, its functions are chiefly mentioned.

All these functions can be carried out when the nerves, the air, the sperm and the mind are present. In the absence of any one of the above factors, even the respiratory and the visionary functions cannot be performed. Hence, the feeling, the cognition, the power of memory, wisdom and the contemplation become baseless.

The structure of the brain is broadly divided into four parts according to the main Medical Text. It is briefly written as an introduction to Tibetan science of healing.

PROF. MADANMOHAN Functional areas of brain: a moral – spiritual perspective

Study of neuroscience is fascinating as it has scientific, philosophic as well as moral-spiritual dimensions. Our understanding of functions of cerebral cortex, human consciousness and behaviour is inadequate. We need holistic approach where scientific and spiritual research goes hand-in-hand. The conflict between science and religion is a Western notion. In ancient India, science and spirituality co-existed to enrich and ennoble human life. The ancient marvel of yoga is a classical example of spiritual science. Ayurved, the most ancient health science is called as "*Punyatamo Ved*". For research in spiritual domain, we need blessed gurus who possess penetrating insight. We are blessed to have as our guide *His Holiness the Dalai Lama* who has the insight to lay a practical and integral path for uniting leaders and students of science and spirituality.

Human brain surpasses the most advanced computer. It is made of 10^{11} neurons each connected with ~1000 other neurons. Every part of brain is connected to every other part directly or indirectly. Brain enables us to i) regulate our internal

environment subconsciously ii) control movements voluntarily iii) perceive internal and external environment iv) experience emotions and v) engage in higher cognitive processes.

Cerebral cortex is most prominent part of human brain. Functional part of the cortex is 2-5 mm thick grey matter, a layer of neurons on the surface. 4 pairs of cortical lobes are specialized to perform different functions. *Occipital lobe* processes and interprets visual information from the opposite visual field. *Temporal lobe* receives and interprets auditory and olfactory information and shares language area with parietal lobe. *Parietal lobe* integrates sensory information. Much of it is association area. *Frontal lobe* performs executive function and sub-serves movement of opposite half of body, speech and behaviour. In addition, following 3 areas perform higher functions:

Parietal-temporal-occipital association area receives and integrates somatic, auditory and visual sensations for complex perceptual processing to get “complete picture” of relationship of our body with external world. For example, we can see correct position and orientation of an object from any posture we assume.

Limbic association area or limbic system consists of several cortical and subcortical structures and has close functional connections with hypothalamus, thalamus and pre-frontal cortex. It is involved in regulation of emotions, automatic behaviour, motivation, basic desires, endocrine secretion, visceral activity, circadian rhythms and recent memory. In humans, cerebral cortex has developed tremendously and sits on top of limbic system. Logically, humans should have a conditioned and conscious control over lower, limbic emotions. Lower emotions and desires like hunger, anger, sex and fear are common between animals and humans. What distinguishes humans is noble emotions and dharma.

Prefrontal association area or prefrontal cortex is concerned with emotional behaviour, personality, discrimination, judgement and creativity. It stores information and decides about our voluntary action by reasoning and planning. Thus, it is the “hardware” of mind and important for elaboration of thoughts. Disease or injury impairs intellect, judgement, problem solving ability, moral sense and social behaviour.

SESSION 2: UNDERSTANDING OUR MIND

PROF. ROBERT THURMAN

I: The Buddha discovered that ‘the mind’ (citta) is the central processing unit of sentient experience, and the main determiner of the quality of the life of a being. Famous Dhammapada quote: “Things are led by the mind, ruled by the mind, made of mind. Who has a corrupted mind, trouble follows him, like the wheel follows the foot of the ox.” etc.

He also discovered that this mind is free of any non-relational core or soul-essence (ātmā), what most mind teachings then and up to now think of as an “immortal and immaterial soul.”

This was a scientific discovery, not a religious belief. How the Buddha defined the “mind” varied from one student to another, as the Buddha was a dialectical teacher who always focused on the need of the specific disciple before him, not a dogmatic preacher imposing a single dogmatic absolute truth on everyone. In fact, through his discovery of the absolute truth of voidness, he founded a tradition of empirical science, asserting that ultimate reality transcends anyone’s relative description.

Reality is thus only to be known by the knower non-dually becoming it, experientially (empirically), not through conceptually manipulative dualistic knowledge. Indeed Buddha himself became a perfect, omniscient buddha by so doing, knowing everything by becoming everything, in his Dharmakāya ultimacy.

II: I consider the division between Theravāda or Nikāya Buddhism and Mahayana Buddhism is only the result of the two traditions basing themselves on recordings of teachings given to different groups of disciples, and also, perhaps more radically in modernist scholarly context, the division between the exoteric and esoteric Mahayana has the same source. Thus, approaches to the mind in all three levels of tradition are mutually complementary. The mind in Nikāya Buddhism is analyzed into numerous categories, "mind itself" understood as pure consciousness, six-fold, visual, audial, olfactory, gustatory, tactile, and mental.

Mental consciousness itself is painstakingly analyzed and its clarity and knowingness is highly elaborated in Mahayana sūtras and śāstras. Its functions are its organized expressions. For example, in the Abhidharma system of Asanga's Compendium, there is a scheme of fifty-one functions: five ubiquitous functions, five determinative functions, eleven virtuous functions, six root addictions, twenty derivative addictions, and four variable functions.

III: The Abhidharma collection is the textual base of the higher education in wisdom (prajña-adhiśikṣā), and thus the Mahāyāna treatises (śāstra) by the great pandits of Nalanda really should be considered further elaborations of the Abhidharma, along with the numerous Tantric śāstras still extant in Tibetan translations in the Tantric section of the Tengyur.

In the Tantric context, the above-mentioned Abhidharmic analyses of mind deal only with what might be called the "coarse" level of mind. The Tantric Abhidharmic treatises elaborate what they call "subtle" and "extremely subtle" levels of mind and body. Thus we have the following schema,

	body	mind
coarse	elemental body	five sense-consciousness
subtle	nerve-channels	three luminance/intuitions
	neural energies	involved with eighty
	endocrine drops	natural instincts
extremely	indestructible	mind of clear light
subtle	drop energy	transparency

IV: This fine analysis of the subtle and extremely subtle levels of being is particularly germane today, in the context of bring the Buddhist "Inner Science" into a fruitful dialogue with modern physics, neuroscience, and psychology, so I will unpack a few of the implications of this in my conclusion.

PROF. ASANGA TILAKARATNE Search for yourself! (attaanam gaveseyyaatha)

Addressing a group of youth who were going in search of a missing female companion, the Buddha punned over the word 'search' and said to them to search for themselves instead. In a system which denies any substantial existence behind the word 'I', the admonition to search for oneself could sound paradoxical. What is meant, however, is not a self which is one's but oneself in reflexive sense.

The inward search referred to here is nothing other than understanding one's mind. To see one's mind is to see oneself. But what is mind? A way to approach this question is to examine some key terms used in the early discourses of the Buddha to refer to mind.

Citta is used when mind is described as something that can be and must be developed. The concept of 'citta bhaavanaa' articulates the idea of cultivating mind. The Buddha often talks about the undeveloped, untamed, raw character of mind which can cause havoc in one's life. Such a mind is worse than one's worst enemy (The Dhammapada 42). Well placed mind, on the other hand, is more helpful than one's own parents or the best of relatives (The Dhammapada 43). Mind needs to be tamed, trained and purified. In all these contexts, the discourses refer to 'citta'.

Mana is basically spoken of as a faculty (indriya) like the rest of the five sensory faculties. Like other faculties have their specific objects, mind too has its specific object, namely, the mental objects such as concepts, views, ideologies and the like. The other important use of mana is to denote its function as the coordinating agency for the rest of the five sensory faculties. Mana is also the psychological basis behind human action, moral or otherwise (Ref. Dhammapada verses 1 & 2).

Vinnana derives from vi+ jna to know, and refers to the knowing function manifest particularly in the process of sensory experience. According to the early exposition of perception, depending on eye and visible form, eye-consciousness arises (likewise for the rest of the five faculties including mana). This is the beginning point of sensory perception, on the unfolding of which process, the Buddha has much to say. It is vinnana that connects one's present existence with that of future. In addition to its role in the process of sensory perception, vinnana is also that which connects this existence with the next.

Is there a mind over and above these various functions, qualities and states? According to the Buddha, no. Nevertheless, one must see the continuity and interconnectedness of phenomena. There is a problem of language. Ordinary language assumes a gross form of realism. By mere use of a word we tend to give some kind of ontological status to what is meant by that word. The very fact that the teaching of the Buddha uses many terms to refer to mind suggests that it tries to catch not a thing but a complex process.

Developing mind means developing good qualities, virtues, and attitudes. Associated closely with this development process are two important concepts, visuddhi (purification) and vimutti (release), the former being the process whereas the latter is the goal. The first concept assumes that mind is defiled. These defiling factors are described in the Dhamma as 'asava' (influxes) or kilesa (defilements). One has to clean one's mind of these defiling factors (which is exactly like cleaning the mirror!). Vimutti anticipates that we are bound or enslaved. One has to be liberated from such factors. Ultimately defiling factors and enslaving factors, both refer to the same phenomena. Through purification one achieves release/freedom.

In a revealing statement, the Buddha says that suffering, its origin, its cessation and the path leading to its cessation are found within this fathom-long body of ours. The Buddha's statement has to be understood as having reference to our mind. One does not need to go far to find solution to problems which ultimately have their origin within oneself alone. The unsettling truth is that the world is protector-less and god-less (*attaano loko anabhissaro*: Majjhima-nikaya 82). One is one's own refuge (*attaa hi attano naatho*: Dhammapada 160).

One could interpret this emphasis on mind as undermining social action. Although social action is very important, ultimately, there is an important part to be attended exclusively by oneself. This is the meaning of understanding our mind.

PROF. J.L. GARFIELD

Enthusiasts for the scientific character of Buddhism wax eloquent regarding the insights that the Buddhist tradition can deliver to Cognitive Science, and the contributions that meditative technique can make to understanding cognitive and affective processes. To be sure, there are contributions in this direction, though their significance may be overestimated. Less attention is paid to the value of cognitive theory for developing Buddhist insights in the 21st Century, and the role of science in the dissemination of Buddhism in the modern world. I will pay some attention to that value, emphasizing the importance of recent research for understanding the deep phenomenology of human experience which is also the target of much Buddhist psychology and philosophy of mind. I conclude with some remarks on the potential value of Buddhist psychology to the development of moral psychology, an area in which Buddhism has a great deal to contribute.

SESSION 3: BRAIN PLASTICITY AND MENTAL TRANSFORMATION

PROF. ADELE DIAMOND Ways to Achieve the Goals of Education: Insights from Neuroscience, Psychology, and Teaching

The importance of learning through doing: We can lecture on compassion and have students meditate on compassion, but if we want to produce compassionate students, our students need to practice compassion day in and day out, throughout every day. To understand the deep truth of “if you want to be happy, practice compassion,” students need to practice compassion and experience *for themselves* the joy it brings them. Repeated practice is the way to make compassion a ‘habit,’ second nature. This applies also to cognitive skills. An early childhood program called *Tools of the Mind* emphasizes the development of cognitive skills dependent on prefrontal cortex called “executive functions.” The program was initially tried as an add-on to existing curricula. Children improved on what they practiced in that module, but it didn’t generalize. For benefits to generalize to other contexts and other executive function skills, supports for, training in, and challenges to executive functions had to be part and parcel of what the children did all day long.

Prefrontal cortex (my specialty) is over-rated. To learn something new, we need prefrontal cortex (PFC). But after something is no longer new, persons who recruit PFC *least* perform best. Older brain regions have had far longer to perfect their functioning; they can subserve task performance ever so much more efficiently than can PFC. A child may know intellectually (at the level of PFC) that he should not hit another, but in the heat of the moment if that knowledge has not become automatic (passed on from PFC to subcortical regions) the child will hit another (though if asked, he knows he should not do that). The only way something becomes automatic (becomes passed off from PFC) is through action, repeated action. Nothing else will do.

2. Children learn what they live. A teacher’s humanity is more important than the teacher’s knowledge or skill. Also, children learn from role models. If we want kind and considerate children, we need to be kind and considerate role models. The most

basic and powerful way to communicate to our students that we care about them is to listen to them. Simply listen. The quality of our listening, rather than the wisdom of our words, is often what has the most impact.

3. Children see who people look up to. They see who gets praised and held up as role models. If we want children to grow up to be compassionate and civic-minded, they need to see concretely that that is valued.

4. Appreciate the role of luck: Sure I work hard, but others might not look favourably on my work or my experiments might come up with null results. Everything I have achieved is a gift. It is not that I would have received the gifts had I not worked hard, but my efforts could easily not have borne fruit. That they bore fruit is a gift for which I am deeply grateful. How can one be arrogant or condescending if one remembers this? Also, our luck could change and then we'd welcome a helping hand, a compassionate soul. Remembering the many things we have to be grateful for makes it easier to cultivate generosity toward others.

5. The different parts of the human being (cognitive, emotional, social, spiritual, and physical) are fundamentally interrelated. Programs that address the *whole child* (all those parts) are the most successful at improving any one of them. If your goal is *only* to improve cognitive performance, the best way to achieve that goal is *not* to focus narrowly on academics, but to address all aspects of children's development. Traditional activities that have been part of every culture throughout time—storytelling, dance, crafts, music-making—can be immensely helpful here. They challenge our executive functions, make us happy and proud, address our social needs, and help our bodies develop.

PROF. PARTHA GHOSE, MR. SAJAL BANDYOPADHYAY AND DR. INDRAJIT ROY Evidence of gyrosonics induced brain plasticity in humans

A non-invasive method of recording novel global signal patterns that are present in all parts of a human body (surface and interior) will be described. The method consists of probing a human system in steady ambient conditions with a very low constant current (0.5 μA) generator, using a data acquisition system (DAQ) and using a standard software package for analyzing the data. When four pairs of electrodes from the constant current generator are attached to the right and left hand fingers and toes of volunteers, four pairs of response signals are observed, showing *lateral asymmetry*. The signals from the fingers and the toes, and indeed from all parts of the human body, have been found to be similar in nature and strength, and hence distinct from hitherto known single organ related signals like EEG, EKG, MEG etc. Polynomial fits of the signals to the logistic function have been made and their goodness of fit (R^2) and standard deviations (σ) have been measured. We have noticed that greater the standard deviation, or "error", the more the likelihood of the individual's homeostasis being adversely affected.

We have also developed a method of minimizing the errors by uploading an ultra-low frequency inaudible (hence non-sensory) signal to the brain with the help of an audible carrier sound signal through stereo headphones, resulting in the perception of a rotating sound source (hence the name "gyrosonics"). The device has been patented. It is our contention that the signals, being universally present in the whole human system, can only be related to the entire control system in human bodies (the nervous system and the hormonal control system).

The lateral asymmetry of the signals has been observed to reverse and oscillate over different time scales for different individuals and even for the same individual at different times. Since a lower "voltage" corresponds to higher "conductance" of the signals, the signal with a lower voltage will be called the 'lead' signal. The changes in the pattern and dynamics of the signals pre-, during- and post-gyrosonic inputs will be shown and discussed. The errors in these signals can be used to predict the future state of the system. Evidence for this will be presented.

All these results strongly indicate that the signals are cognitive in character, and that they are emergent properties of a complex dynamical system.

Mental states of individuals can also be measured with the help of this method, and evidence for that will also be presented and discussed.

A neurological basis of gyrosonic induced brain plasticity through EEG and MEG studies will also be presented.

Long term changes occurring in the signals with the application of gyrosonics therefore indicate changes that can only be ascribed to brain plasticity.

A suggestion for future research is to conduct a comparative study of brain plasticity induced by deep meditation and gyrosonics.

SESSION 4: INTERACTION AND PARTICIPATION WITH H.H. THE DALAI LAMA

PROF. B. ALAN WALLACE

The teaching of ethics in modern education poses a unique challenge, for in a religious context ethics always rests on a foundation of belief. The situation facing modernity is that science and materialism appear to have undermined many of the beliefs of traditional religions. However, there is a common ground that may play a crucial role in reformulation ethics in the modern world, and that is the ancient notion of "genuine happiness," or "human flourishing," which can be found in various guises in the wisdoms traditions of the East and West, ancient and modern. Behaviour of body, speech, and mind that is detrimental to one's own and others' genuine happiness may be deemed "unethical," whereas that which is conducive to one's own and others' genuine happiness may be deemed "ethical." Genuine happiness is that quality of wellbeing that stems from what we bring to the world, in contrast to hedonic wellbeing, which stems from what we get from the world. Such a vision of ethics lends itself to spiritual, philosophical and scientific inquiry and has a direct relevance to the cultivation of exceptional mental health and balance.

DR. LYNNE LAWRENCE

It is certain that if we wish to help children along the developmental continuum educationally from Early Years to Adulthood, education must help with the formation of the whole human being, intellectual, social and moral. It is important to examine what steps must be taken in an educational setting to ensure that what makes sense scientifically and educationally for the development of a human being is embedded into the fabric of experience open to children within a school setting. To understand what is possible, a change must take place in the adult/child relationship – we must explore the ways in which children can experience teachers who are authoritative not authoritarian, collaborative and not seeking submissive students, who allow children to

become self-disciplined rather than externally controlled. A change must also take place in the way the curriculum is planned and in the transmission of responsibility for learning from adult to child. We must also explore ways in which the school can be structured to create a social environment in which each child is able to contribute to the other and to their environment; where doing what is right is a natural consequence of daily life in the educational setting. Unless these practical elements are understood we are in danger of treating social and moral education as another subject on the curriculum.

LOPEN LUNGTAEEN GYATSO Education for Happiness

Education as per the Oxford English Dictionary is defined as “a process of teaching, training and learning to improve knowledge and develop skills”, while others such as the Wikipedia defines it as, “any act or experience that has a formative effect on the mind, character or physical ability of an individual”. Therefore, our education system is accordingly designed to produce capable and competent people. But interestingly the definition and understanding of words such as capable, competent, knowledgeable, skilful and for that matter human development and its measure, is different from people to people, community to community, society to society and country to country. Our education system is, by and large dictated by our belief system which is not necessarily supported by true value system. In this confused world of the 21st century, especially when most of us live a life filled with overwhelming stress amidst unprecedented physical comfort, it is critical that we redefine the role of education system succinctly so that it guides our journey towards true human development in every sense of its meaning. While mathematics, physics, chemistry, geography, economics etc. are indispensable disciplines of knowledge, the experience should not be just acquisition of new knowledge and skills but also should trigger transformation of our being as humans with values that foster everlasting inner peace and happiness of not just oneself but also the world around. I will talk on the importance of the need of a paradigm shift in the way we look at, and treat the education system that will ensure mindful, knowledgeable and happy world citizens.

MS. TENZIN PELMO Ethics, education and the environment

This short talk will illustrate the relationship between ethics spiritual education and concern for the environment. I will describe how in my role as English Resource Person for TCV I have tried to bring together the content of our teaching with the concepts of ethical and spiritual awareness. TCV schools and homes are refugee communities established throughout the 1960s to educate children of dispossessed Tibetans following the invasion of Tibet by the Chinese regime.

I have tried in practical ways to combine the ethical and the spiritual in encouraging civic responsibility. Being an educator, I have always felt the need to instil in our children what His Holiness the Dalai Lama calls basic spirituality of goodness, kindness, compassion and caring. For the educators to do this job, they need to have these positive human qualities themselves. The first project I shall discuss “Book Buying and Book Reading” was designed to encourage teacher-trainees to be aware from the start of the importance of their role as spiritual guides for our young people. Using books by His Holiness the Dalai Lama while teaching English has a two-fold benefit in enhancing English language skills among the children and their teachers at the same time giving them a feel of value for moral ethics. The success of this first project led me to run it again among different groups of students with the result that more than 380 books by His Holiness were bought by students themselves.

Increasingly in my work I became aware of the need to spread the message of concern for our planet, believing that it was ethically important to create awareness among our students for the fragility of Mother Earth. To this end I began to work creatively using recycled materials as resources. I believe that it is particularly important that, as Tibetans, we follow His Holiness' guide in caring for our environment. I combine my teaching about English with teaching about recycling and teachers and students have joined me in my efforts. I hope these illustrations will demonstrate that caring for our environment is an ethical duty and a practical example of spiritual awareness.

MR. BUNKER ROY

The Barefoot College is the only College in India built by the poor for the poor and for the last 38 years managed and controlled and owned by the poor following the life-style and work-style of Gandhi. It is based on very simple living, eating, living, and working on the floor where people come for the challenge rather than the money. No one in the college can earn more than \$150 a month.

It is the only college in the world where paper degrees, diplomas and doctorates are a disqualification because the worth of the person is judged by his or her honesty, integrity, compassion, practical skills, creativity and their ability to work with people without discrimination.

The Barefoot College of Tilonia, India demonstrates that illiteracy is not a barrier to poor communities developing themselves and that the most sophisticated of technologies can be disseminated by poor rural men and women who can barely read and write. The Barefoot College strongly believes that it is a myth that the development of poor rural communities requires people with formal degrees and qualifications. The Barefoot College has extended its informal training programs to empower a growing number of female solar power engineers, and the Barefoot approach to development has spread across India and around the world.

Today over 100 illiterate rural mothers and grandmothers from 15 countries in Africa have solar electrified nearly 6,000 houses and shown it is possible to have technically and financially self sufficient solar electrified villages-the first of its kind in the world.

The Barefoot Approach of the College has been replicated in 20 different remote village locations in 13 states of India and 21 countries all over the world.

**SESSION 5: DISCUSSION ON IMPLEMENTATION OF THE VISION:
INTRODUCING MORAL ETHICS IN THE MODERN EDUCATION SYSTEM**

DR. BRIDGET HAMRE The Central Role of Teacher-Student Interactions in Children's Learning and Development

Many children spend more of their waking hours in classrooms than they do at home; within these settings they are exposed to experiences that, for better or worse, shape their development—they may learn to read, write, and think critically; they make friends and have to face the inevitable challenges of peer relationships; and they are oriented increasingly to become productive members of a larger society.

There is now clear evidence that the experiences that children have in these classrooms contribute to their long-term development. Observational studies

conducted in thousands of U.S. classrooms reveal the central role that teachers' moment to moment interactions with students play in fostering (or hindering) students' social, self-regulatory, and cognitive development. It is teachers, rather than curriculum or materials that are responsible for students' learning. The types of interactions that promote development include: positive teacher-student relationships, teachers' awareness of and responsivity to individual students' needs, and teachers' abilities to scaffold student learning and provide timely and effective feedback.

It is worrisome in this age of high-stakes testing of students that national studies in the U.S. report exceptional variability in the nature and quality of everyday interactions offered to students. Some children experience warm, sensitive, and supportive teachers while others have teachers who are unable to provide this type of support. Very few children are exposed to effective teachers for multiple years in row.

Clearly any systematic attempt to improve educational systems needs to attend to training and support for teachers. This presentation will provide an overview of research on the types of interactions that appear to be most important to children's development and learning and discuss promising interventions designed to enhance teachers' abilities to interact most effectively with students.

PROF. MEENAKSHI THAPAN Bringing secular morality into educational practice: possibilities in contemporary India

My work has focused on how the spaces of secondary schools in different cultural and regional contexts seek to develop national identities. I am particularly interested in the lived experience of young people as they negotiate their way through school texts, pedagogic practices, and interactive processes, including peer cultures, in the making of their identities as citizens in a changing world. In these contexts, what binds the experience of young people in these cultures? What makes them so similar even as they rest in different cultures, languages and indeed civilizations that are distinctive in their markedly dissimilar social and cultural realities? Without being unduly alarmist, I can categorically state that I find an all-pervasive culture of violence present in the spaces that are part of and surround educational spaces in different parts of the world.

I am concerned also with an understanding of the psychological dimensions of citizenship, experienced through emotions such as belonging, as to belong contains the experience of an emotional tie or even love for the nation and how this is produced in young minds, through bodily practices and emotional bonds. Such practices in schools tend to create ideas about difference as it is only through processes of 'othering' and exclusion that a common identity is sought to be established in schooling spaces and processes. Such a process of creating difference results in the creation of a distinctive identity for some students and alienation and exclusion for others. Undoubtedly, this leads to the development of a culture in which difference, conflict, and violence are celebrated and become the norm.

In this context, it is vital to bring about a completely novel way of engaging with difference which is no doubt an essential part of everyday life in the diverse, multicultural societies we are all a part of. In developing a possible framework for building an ethical dimension into contemporary educational practice, I think it is important to move away from all aspects of the 'religious' as it presently constitutes the moral in schools in contemporary India. Such religious discourse has only resulted in creating conflict and violence through the deeply troubling practices it has given rise to. The possibility of therefore building an ethical framework that is located on the premises of a secular morality that lies outside religious discourse needs to be

considered to transform educational practice. In my presentation, I will consider some important dimensions of such ethical practices and its secular components that can be developed in schools to move away from a culture of violence to one that builds on a culture of 'sameness' and unity. In moving outwards, from an inner core that is divested of a purely 'religious' content but exists within a secular frame, towards those we see as 'others' and the seeing the others as ourselves is where we can hope to see the beginnings of change.

SESSION 6: THE ART AND SCIENCE OF MEDITATION

H.E. MINDROLLING JETSÜN KHANDRO RINPOCHE Meditation Methods in Buddhism

The word 'meditation' is very commonly used in today's world and there is a wide range of ideas about what it is, from very stereotyped exotic images to all sorts of new popular notions. However, when we examine the origin of the literal term, we find that the meaning is quite simple. In the context of Buddhist 'meditation' it is a translation of the Sanskrit term *samadhi* - defined as "maintaining a state of detached equilibrium." In Tibetan Buddhist terminology, the term *ting nge dzin* can be defined as "holding concentration without fixation." The term *gom* is also used colloquially and means "becoming familiar." The English term 'meditation' is of Latin origin and can be defined as "a continuum of balance."

As human beings we are endowed with a brilliant ability to see things, to hear, to taste, smell, feel and particularly to create mental thoughts with our minds. But this brilliance sometimes turns enemy to itself. While we are able to see external things, we are quick in judging them and blaming them for experiences we go through. The brilliance of our mind and senses, combined with stubbornness - referred to as ego - and our habitual impatience creates a state where we always demand quick fixes and fast answers, subsequently we segregate everything into 'what I like' and 'what I do not like.' We spend half of our life chasing after what we like and the other half running away from what we do not want to encounter.

The Buddha called this suffering. Buddhist philosophy talks about suffering not because it is something very profound but because it is what we do. Meditation techniques are oriented at breaking down this habitual process. Through meditation we understand that we are responsible for our own perceptions and for creating our experiences. All Buddhist techniques consist of three basic approaches of stillness, silence and non-thought. The stillness of the body is the ground basis, allowing the body to contain the powerful mind in a nurtured and protected environment of awareness, and silence includes both verbal speech and mental chatter. Becoming familiar with stillness and silence brings about the experience of non-thought – when we are able to watch the enormous display of our senses and yet remain detached from generating opinions and judgments about them.

As we become familiar with this watchfulness, we see that the mind is our intrinsic power and its expressiveness lies in perceptions. We observe that it is up to us how we articulate every concept, feeling and emotion. We could become like artists with colours and brushes and an open canvas in front of us, splashing it with rainbow colour or making it dark and bleak. That is the power of mind and perception. If we recognize our own unique responsibility in the perceptions we produce, the next step is very simple and it is what the Buddha taught. Liberation is in the palm of your hand, dependent entirely on how you look at it.

DR. GESHE LOBSANG TENZIN NEGI

Modern education has generally focused on the acquisition of knowledge and intellectual skills, but to a great extent has neglected emotional and social skills training as well as moral and ethical development. The negative effects of this can be seen across society, but also particularly in schools themselves, with children engaging in aggressive behaviour, bullying and “acting out.” A number of recent suicides among bullied children in the U.S. have highlighted the urgent need for educational approaches that address this problem.

Recent research suggests that programs that foster emotional and social skills development in children may help to reduce such behaviours and even improve their physical health. Further, results from a recent study conducted at Emory entitled, “Compassion Meditation as a Strategy for Reducing Depressive Symptoms and Psychological Stress Reactivity in Freshman College Students,” showed that compassion meditation training prevents and reduces depression levels in undergraduate students. Taken together, this work suggests that a secular, Cognitive-Based Compassion Training (CBCT) program may be an effective model for integrating secular social, emotional and ethical training into educational curricula. Indeed, based on the preliminary outcomes of this study, a team of researchers at our university is studying the efficacy of this training for children in an elementary school in Atlanta as well as adolescents in Atlanta’s foster care system.

The CBCT program, based on the Tibetan lo-jong tradition, is a systematic compassion training program that combines the stability of mind and attention that arises from meditation training with certain concepts and lines of reasoning that radically alter one’s perspective of a given situation in order to promote altruistic thoughts, emotions and behaviours. In essence, this system rests on the view that self-centred thinking and behaviour is a cause of suffering for oneself and others, while other-centred, altruistic and compassionate thoughts and behaviours are ultimately beneficial to self and others.

There is emerging scientific support for the view that compassionate and altruistic thoughts and behaviours are not only beneficial to self and others, but also necessary for survival. In stark contrast to the popular view that humans are necessarily selfish and that only the fit and strong survive, new research emerging from the fields of neuroscience, psychology, anthropology and even economics reveals that the opposite view is true: cooperation, and other-centred behaviours are key. In this talk, I will review this recent research and suggest that this emerging data may help us reconfigure the domains of the secular and the religious in ways that can facilitate the promotion of secular ethics. I will also discuss ongoing work at Emory University aimed at developing such programs for educational settings.

VEN. DR. KHENPO NGAWANG JORDEN Meditation on Dependent Origination

In modern educational systems, physical science has a firm place of importance, whereas studies towards an understanding of the mind and how to care for it through the use of mind-training, does not seem to have very much priority.

As a neglected educational resource, I consider meditation to be effective not only in achieving the short-term goal of mental stability, but more importantly, as the most skilful way of making the mind familiar with core Buddhist teachings vital to our long-term transformative potential as human beings on a spiritual path.

The meditation on dependent-arising, for example, is a template for understanding the processes which we undergo in our human experience. My paper concerns the forward-sequence and reverse-sequence meditation on the twelve links of dependent-arising, based on Gorampa's exposition of this topic.

"The skilful means by which one may scale the imprisoning walls of saṃsāra and ascend the highest reaches of the mountain of liberation, is none other than the realization of dependent-arising", the Buddha has said.

The way of meditating on the defiled links of dependent-arising in a sequential way, reflects the order in which those links appear in the practitioner's mind. This way of meditating is consistent with the order of appearance of the defiled links and leads to realization that suffering is the final result of karma and defilement.

The twelve links of dependent-arising, which have the nature of cause and result, and are defiled in nature are: ignorance, karmic formations, consciousness, name-and-form, the six sense perceptions, contact, feeling, clinging, grasping, becoming, birth, aging/death.

Until one realizes one's aggregates, which are the basis of grasping to self, are non-existent, one will always grasp to things as truly existent. Every moment of this conceptualization of true existence generates grasping to the person as truly existent. This grasping to the person is the ignorance of the twelve links of dependent arising.

Aryadeva, in his Four Hundred Stanzas says, "Just as the sense faculty of the body pervades the entire body, likewise, ignorance exists everywhere. Therefore, when ignorance is destroyed, all the defilements are destroyed." Pure dependent-arising manifests where the defiled links of dependent-arising cease.

Everyone interested in meditation, should pay attention to Vasubandhu's statement: "Abide in sound moral conduct, endowed with much learning and contemplation. Then engage completely in meditation."

In particular, one should first meditate on the twelve links of dependent-arising, focussing on their forward-sequence of arising. Having become familiar with the identities of each link and how each arises from causes and conditions, yet having no intrinsic nature, one will have a firm experience of how dependent-arising and emptiness are inseparable.

Once this is established, one should meditate on the reverse-sequence of the twelve links of dependent-arising with all one's focus on the reverse-sequence of the cessations of each of the twelve links, to gain a good understanding of how we wander in saṃsara, endlessly. Yet, intrinsically, saṃsara neither arises nor disintegrates, and this is the clear portrait of the non-differentiation of saṃsara and nirvana.

SESSION 7: SOCIAL EMOTIONAL LEARNING (SEL) AND EDUCATION

DR. JEAN MILLER Social Emotional Learning and Education

This presentation describes Montessori in general and then education for elementary aged children (6 to 12 year olds) in a Montessori class in order to set a context in which two experiments were conducted. This is necessary because there is no control over the use of the word, Montessori, with the result that Montessori is practiced in many different forms in different parts of the world.

The experiments were held concurrently in Dr. Miller's classroom. This was the first elementary class in that small private school in the United States. Classes for three to six year olds had already existed for a number of years. Most of the children had attended those classes at the school. Some of them had then transferred into other Montessori schools so they could continue in Montessori for the elementary years. They transferred back to their original school when the new elementary class began. A few children who were new to Montessori were also admitted to the class.

One experiment began on the first day of the school year with the children describing the kind of a school experience they would like to have. The children were then invited to make suggestions on the kinds of class rules that would be necessary in order for their suggestions to become a reality in their classroom. With this process the children took ownership of the rules. As time went on, rules were broken and the children had meetings to discuss and refine the rules. This process was later introduced to a Montessori public school in Milwaukee, Wisconsin. The school had a population of 400 children from ages 3 to 11. The elementary classes at the school adopted the procedure for establishing and maintaining their classroom rules and, when the administration of the school system requested copies of the rules of behaviour for each of the schools in the school system, the student council of the school combined and consolidated the rules from the classrooms and sent those to the school system as the official rules of the school.

The second experiment was designed to test whether having individual conferences with the children would help them learn to judge their own readiness for a new lesson and whether having them choose some of the lessons they would receive would help them feel ownership of their educational process. The procedure used in the conferences is described.

With this process the children seemed to develop a feeling of ownership of their work. They became co-evaluators of their work and they participated in planning which lessons they were going to receive. Education for them was not just something that was done to them by other people. By the seventh or eighth week of the school year, the children voted to extend the school day by one hour. From then on, the school day was one hour longer.

GESHE DORJI DAMDUL Social Emotional Learning from a Buddhist Perspective

The whole teaching of the Buddha is grounded on transforming ones emotions. One is expected to be with wider perspective of the world, integrated, and caring of others and the environment for the good of oneself and others and to be socially adjustable.

Learning about and transforming the emotions take place most effectively through seeing examples, for which the teachers have incredible responsibilities. The roles the teachers have for that matter, in Buddhism, is summed up in four points known as the Four Means to nurture disciples - meeting the material needs of the disciples, giving proper guidance, monitoring the disciples into the implementation of what s/he learned and being a proper example in action from the side of the teacher. How effective the four practices will be is determined by what extent of knowledge, integrity and compassion the teacher has.

Without knowing which emotions drive and govern ones life, one will easily fall prey to the negative emotions thus depriving oneself of a quality life socially. It is thus very important to introduce the taxonomy of emotions along with offering the skilled ways of

encouraging the people and particularly the children to nurture and live with the positive emotions and undermine the destructive emotions.

As in other traditions, one finds in Buddhist psychology, a rich description of emotions, their functions and their respective consequences when engaged in.

Some of the emotions which play a great role in fostering quality-life are unconditional compassion, holistic perspective, integrity, optimism, skilfulness.

Respite: Breathing Meditation

While the destructive emotions are at their peak, the remedies might not work efficiently. The emotions need to be neutralized at first for which breathing meditation would be one of the ideal means.

Usually emotional-attacks happen when there is discrepancy between the belief one has of the world one is interacting with and the reality of the world. The individual must be well informed that the world we live in is not perfect. At times of friction with ones neighbour or at work place and the like, the individual should be encouraged to take the adverse situations as sources of lesson and opportunity through which one learns and matures.

There are cases where some emotions in some individuals are abnormally active and intense such as anger and depression. While there are medicines nowadays, more reliable would be if treated through changing the mental perspective of the patient. It can effectively be tackled by personal reflections on the demerits of those destructive emotions and the merits of cultivating their counterparts. Whereas from the side of the third person, the victim can be helped through showing empathy and compassionate understanding.

PROF. K.P. PANDEY Social-emotional learning and education

Education is basically a process of transformation. It effects changes in the cognitive, affective, psychomotor and perceptual dimensions of the person as a whole. It is for this reason that the basic character of education is defined as holistic and the ancient sages and seers have been laying stress on holistic development of man and holistic education.

It may be observed at the very outset that any judgment about the qualities and capabilities of children is made in a social context, and is affected by that context. Today's social context is impacting on today's children and our judgment of them is dramatically distinctive in new ways.

For example, the technological and electronic 'revolutions' have had vast effects upon society and its people throughout the world. They have not only made mammoth changes to work, work pattern and the labour market, but even in the way we think and the way we are currently interpreting human nature- we even talk about 'artificial intelligence' because of it.

As many countries free themselves from the legacy of colonialism and confront themselves with questions of national identity, the implications for society and the educational systems become particularly important. In this framework social and emotional learning becomes especially pertinent for ensuring desired social and cultural transformations. The concept of EQ and SQ recently reported has a direct bearing on the design of educational systems and the various programmes and activities which figure under the rubric of instructions.

In this context it will also be pertinent to indicate that the democratization is full of implications for society and education as well. For example, should society (and the educational system) adapt to the legitimate needs of minorities and to the emergence of bi-culturalism and multi-culturalism? How should it adapt to the disadvantaged? How should equity be achieved?

In the wake of globalization, national boundaries have become more open, and people move more easily throughout the world, and evils of the 20th century have also impacted, and are bringing strain and stress to many countries and the children in them. Drugs and AIDS come readily to mind but many other examples are likewise easy enough to be found.

In the educational world of today, much greater emphasis is being placed on excellence. While the quantitative aspects of education have received considerable attention for some decades, recent attention has turned to its qualitative aspects. Schools and teachers are now expected to provide high quality education and children are expected to achieve better quality of performance.

Finally, in this catalogue which could have been much longer, there have been advances in the social sciences that have led to enhanced knowledge about societies and the lives of individuals in them. Most relevant to the present discussion is the growth of knowledge about the attitude formation and value inculcation and the relationship between attitude, value and behaviour. Knowing the significance of attitude and values in the development of motivation to generate effect to achieve success, there is now a better understanding, that given the proper atmosphere, more and more children can achieve greater success.

In the context of 21st century, therefore, the concern for education has to firmly articulate the need for social and emotional learning with a vision for radically reorienting the content and the process of education at various levels. From this perspective change in 'affect', attitude, values and mindset of learners has to be the main focus of educational interventions through adoption of dynamic teaching-learning strategies and personalized systems of instruction.

