FOREWORD

Governance relates to all the tasks and processes that lead to an improvement in the quality of life of the citizens of the country. This requires good quality human resources for the rolling out of processes that constitute governance. Similarly, creating good quality human resources to prepare the soil for all different sectors is also an important component of Governance. Hence, education in general and higher education in particular assumes great significance in Governance. E Governance is a strategy and a tool to enhance the effectiveness of Governance using ICT.

Higher and technical education is also extremely important for a country and the community as it is where the professionals, thinkers, future teachers, researchers, economists and knowledge professionals are created, who will be both inhabiting and creators of a Knowledge Society. It also has a direct correlation with GDP, health indicators and many other indicators of development.

The current scenario of higher and technical education is marked by many problems of access, equity and quality. The ills and constraints that afflict higher and technical education in the country as well as the states suffer from outdated and rigid curricula, large number of vacant faculty positions, poor faculty quality in terms of commitment and competence, almost complete absence of research, very minimal and poor extension work, very low levels of skill development, low employability, flawed and rigid system of examination, poor methods of teaching and learning, presence of strong vested interests, poor management and educational services and problems of governance in the ecosystem of higher education. As we grapple with all these problems including the core
issues of access, achievement and equity in higher education, ICT comes as a possible silver bullet which can address all these issues.

Simultaneously, if the global scenario of higher and technical education is examined, it reveals that there are developed countries of the world which have been able to significantly address the concerns and problems highlighted earlier. Countries like the US, Japan, South Korea and UK have much higher GER as also better systems of choice based curricula, better research output, educational management and automation, skill incorporation into curriculum and better systems of examinations including project work and such activities.

However, in a world ridden with conflict at various levels, which in modern day manifests as stress, discord and conflicts at family, community and national levels over land, commodities, power, religion or trade the basic issue of peace requires greater attention. The basic constituents of the world we live in are human beings who inhabit it. The conflicts in the minds of these human beings based on discords, greed, anger, hatred, jealousy and such feelings are at the root of the absence of peace at various levels. This conflict in individual minds is what manifests as the collective madness in the form of wars, indiscriminate use of resources leading to environmental catastrophes, extreme poverty, hunger, violation of basic human rights, etc.

If we were to limit ourselves to the Freudian definitions of Eros and Thanatos being the basis of the human being, our limited and poor world view would mean that every human being is mainly driven by desires and pleasures, enjoyment related to senses and flesh at one end and driven by the desire to kill or die at the other end. However, as one has observed time and again, even against feelings of hate, fear and narrow
mindedness, what has preserved the fabric of homes, families, communities, societies and the country at large is faith and presence of the forces of love, harmony, compassion, empathy of suffering and sacrifice. These probably constitute the load bearing fibres that keep people together, despite differences and divisive forces. This is seen even in the most humble of homes and communities of India and almost stands for the soul and spirit of India.

Further, in numerous cases of outstanding men and women who have inhabited the earth across time and space and strode in almost all walks of life, they are driven to act and work by angelic and divine forces, aspirations of the highest kinds which inspires them to seek excellence, beauty, joy and make difference in the lives of their fellow men and the world. For various issues that plague our current system of education, the remedy may be integral education which not only nourishes the body, mind and intellect but also the spiritual dimension. This has, in recent times, found expression in the efforts of agencies like the UNESCO which has acknowledged ‘learning to know, learning to do, learning to live together and learning to be’ as the four pillars of education.

Equally significant is the move by the Government of UK to include spirituality as an important component of education. The concept of spirituality quotient coined by Dana Zohar and Ian Marshall, following the coining of the term Emotional Quotient by Daniel Goleman assumes great importance as it has facilitated the incorporation of a very important dimension of education and human development into our present day discourse, which is greatly influenced by and primarily based on the western method of education, prevalent globally. This inclusion would facilitate the students by preparing them to receive that knowledge with which all other knowledge can be known, as postulated in the Chandogya Upanishad. This is
particularly of great relevance in today's world of the internet and globalization, marked by continuous explosion of knowledge.

Now, as we go back to the issues plaguing higher and technical education in India, can we adopt the knowledge of academic advances made by developed countries and integrate with it the Indian system based on self knowledge?

Various experiments that have been carried out across the world on open education resources and use of ICT in education have clearly demonstrated the dramatic effects that this new method of technology enhanced education can have on systematically addressing the various problems of higher education. The opportunities and challenges of open education have also been pointed out by leading, cutting edge experiments of OER across the world such as the OCW initiative of MIT and OLI of CMU. A study of over twenty five such world class efforts has also raised many serious questions.

The current study is based on a study of the National Program of Technology Enhanced Learning (NPTEL) as studied across eight engineering colleges located in Gujarat. A systematic understanding of the transformative potential of technology enhanced education has been attempted to understand the needs and demands as perceived by students and faculty members. These would be towards achieving a significant improvement in the quality of education as defined by curricular choices, faculty quantity and quality, research orientation, examination methods and the physical, aesthetic, ethical and spiritual dimensions of life.

The possibility of instituting innovative ways of leveraging resources and relationships have been examined by taking inputs from respondents on mentoring, teaching and research work by students in lieu of credits. The
possibility of opening up a wide range of choices in terms of courses and faculty members has been examined. The options of having various modes of course enrolment ranging from face to face mode, online mode and blended mode have also been examined. The need to include inputs on nationalism and studies of biographies through a variety of learning modes ranging from films, lectures, dramas, visits and other activities has also been studied in detail.

In order to make education more relevant in the local context, the possibility of extension work with local communities including the sharing and dissemination of research findings with local people have also been examined. Preferences and need of apprenticeship and internship with industry and such organisations has also been examined.

A variety of Open Education Resources (OER) efforts, have spawned across the world and have introduced the paradigm of 'boundarylessness' across various dimensions. Appreciating this fact, the need to tie all these together in a structured way with tight scaffolding has also been examined to make these efforts sustainable, viable and truly open the benefits of all these transformational efforts for easy use by students. This scaffolding will have to neatly and systematically bind the efforts in individual colleges, universities and institutions that currently function as 'silos'; these offerings that are so widespread in terms of space, disciplines, methodologies and contexts can be collectively gathered into a comprehensive system that leads from enrolment to certification.

The possibility of tying up all these Open Education Services (OES) using a Service Oriented Architecture provides a solid, dependable, yet loosely coupled system for aggregating various services. These can then be searched by users from anywhere at any time. The users can find, bind and invoke these services without worrying about platforms, interoperability and such
other issues. Seven national programs for addressing the various aspects of education have been proposed in the model. These will enable the mapping of knowledge and practice to make it shareable in an SOA frame. The service providers, process engines, service level agreement etc would all be clearly defined and put in place. This has been proposed in the 'multiversity' model.

At the other end of the model, given that a country like India does not still have the required IT penetration at the grassroots level, Halls of Culture and Training has been proposed. This will be a brick and mortar structure with computers, spaces for various activities, games, sports, learning and physical interaction of students provided with the basic-amenities and facilities. These will be collectively owned and have dedicated teams to mentor the learners. Importantly, these centers will have a silence room and offer curricular inputs on life enrichment, physical excellence, as well as wide range of standardised courses offered through the online mode. These, it is hoped, will pave the way for truly well governed and well networked, quality education.

With this model in place, the autonomy of universities is not being affected. On the contrary, universities and colleges can become a very active part of the community which creates course ware and all the components of various programs. The current system obtained is also not foreclosed. It is hoped that with this architecture and model in place and the content of the various programs all held together neatly by the SOA framework and the infusing of excellence, freedom, choice and life enrichment, students will be inspired to excel. This can bring about a silent yet powerful transformation of the education system. Such a framework, it is hoped will harness the energy of the youth of the country to lead India to be a world leader based on Peace, Progress and Harmony.