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Innovative Education for Sustainability

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ABSTRACT:

Today's students are the first generation to grow up with digital technology and this technology has changed the way we view knowledge, access information and relate to our world. The whole Globe is passing through turmoil while technology has touched the sky. Hearts are falling apart and chaos is increasing. Are we really true human beings with human qualities? Does the present system of education form an individual into a good human being with adequate skills to fit into a challenging and ever changing world? Where have we gone wrong in our education system? **Over the years we have been teaching our children how to walk but our education system has failed to innovate and teach them where to walk.**

What is Education for Sustainability? Societies worldwide are facing multiple challenges which are shaping prospects for quality of life in the future. As David Orr (1994) reminds us, our educational systems have contributed to these unsustainable scenarios. Innovative Education seeks to address this through educational change. Teachers and stakeholders have a particular responsibility and role to play, by equipping learners with the capabilities   they need to take on these challenges. The term **'sustainability literacy'** *is in common use at policy and organizational level.   It signals the aim of helping people to develop their knowledge and capacity to engage effectively with sustainability challenges. Different agencies and educators have   developed their preferred pedagogies and competencies associated with sustainability literacy. Educating for a sustainable future is indeed a formidable challenge.*

Innovative education *has the potential not only to improve education, but also to empower people, strengthen governance and galvanize the effort to achieve the human development goal for any country.* **Sustainable education is an engine for the growth and progress** *of any society. It not only   imparts knowledge, skills and inculcates values, but is also responsible for building human capital which breeds, drives and sets technological innovation and economic growth. In today's era,* **information and knowledge stand out as significant pillars for critical input for growth and survival.** *The new vision of Education for Sustainable Development places education at the heart of the quest to solve the problems threatening our future.*

Education for Sustainability is a concept concerned with shifting mindsets as well as changing unsustainable practices. It does not interpret the term literally, as the ability to simply maintain current scenarios. Instead its educational activities are aimed at contributing to more promising futures, underpinned by a more socially just, healthy, prosperous and biodiversity world. (Sustainability Strategy - Promising Futures 2009-2015)

INTRODUCTION:

Moving towards the goal of sustainability requires fundamental changes in human attitudes and behaviour. Progress in this direction is thus critically dependent on education and public awareness. The concept of innovative education for sustainable development is not a simple one, and there is no road map to prescribe how we should proceed. Yet time is short, and we are called upon to act without delay. We must move ahead <u>now</u>, in a spirit of exploration and experimentation and with the broadest possible help of stakeholders so as to contribute through education to correcting trends that place in jeopardy our common future. Innovative education will assist in developing a generation with the confidence, capacity and determination to help shape their local and global communities.

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1. Sustainable Development through Trans-disciplinary Problem-solving Approach

Sustainable development and the interplay between its ecological, social, and economic dimensions can be regarded as a highly complex task. As a logical consequence, educating for sustainable development also has a complex character. Mutual learning based on real-world cases requires an interdisciplinary point of view, trans-disciplinary problem-solving processes, and self-regulated and self-responsible learning. Within trans-disciplinary case studies students, teachers and researchers have to abandon the role paradigm of the teacher as provider of information and the students as "consumers" of the provided information. Knowledge and competences imparted in university classes need to be applied simultaneously within the real-world case to allow a demand-driven process of mutual learning in which students are self-responsible and decide which tools to apply in the process of attaining sustainable development. Because of the dynamics of this process, students experience the process of sustainable development instead of purely memorizing its characteristics. The process of educating for sustainable development and practical applied sustainability therefore, becomes sustainable.

2. Innovative Education & Human Development

Innovation is being seen as a means of creating sustainable and cost effective solutions for people at the bottom of the pyramid, and is being viewed as an important strategy for inclusive growth in developing economies. **Innovative education has the potential not only to improve education, but also to empower people, strengthen governance and galvanize the effort to achieve the human development goal for any country.** Sustainable education is an engine for the growth and progress of any society. It not only imparts knowledge, skills and inculcates

values, but is also responsible for building   human capital which breeds, drives and sets technological innovation and economic growth. In today's era, information and knowledge stand out as significant pillars for critical input for growth and survival. The new vision of Education for Sustainable Development places education at the heart of the quest to solve the problems threatening our future.

Innovation is so critical to our nation's scientific enterprise; we must place great emphasis on teaching it. Teaching innovation must be innovative in its own right. Analyzing case studies or using current knowledge is not innovation. Providing creative tools and using hands-on exercises, teaching new perspectives and breaking through ideas of common thought – those concepts instruct students via innovative practices giving them tools to truly challenge current thought processes. Innovative education trains students to think out of box.

Basically teaching must include two major components sending and receiving information. Ultimately, a teacher tries his best to impart knowledge as the way he understood it. So, any communication methods that serve this purpose without destroying the objective could be considered as innovative methods of teaching. The purpose of education is not just making a student literate but adds rationale thinking, knowledge power and self sufficiency. When there is a willingness to change, there is hope for progress in any field. Creativity can be developed and innovation benefits both students and teachers.

Buddin and Zorrow (2009) found that traditional teacher qualifications had little influence on student achievement. Educators currently live in an ever-changing world that is being created and recreated before our very eyes on a continual basis. The rapidly changing world will put an emphasis on people's ability to improve and just to maintain their level of performance. These rapid changes will have an impact on everyone, not just those who seek to become experts. Researchers who have studied how people get better at what they do report that **simple** *practice* **isn't** enough—**deliberate practice requires a focused, specific approach** to building individual skills

2.1 Innovation- the Key Driver for Sustainability

Indeed, the quest for sustainability is already starting to transform the competitive landscape, which will force educational institutions to change the way they think about teaching learning process, their use of technologies and teaching modules. The key to progress, particularly in times of economic crisis, is innovation in education. By treating innovative education for sustainability as a goal today, the students of 21st century will be equipped with skills to be competent in a globalized society. This type of competitive advantage will stand them in good stead, because sustainability will always be an integral part of development.

2.2 Innovations for Quality Teaching and Sustainability

Quality teaching has become an issue of importance as Henard and Soleine (2008) remarked quality teaching has become an issue of importance as the landscape of higher education has been facing continuous changes. The student body has considerably expanded and diversified, both socially and geographically. New students call for new teaching methods. Modern technologies

have entered the classroom, thus modifying the nature of the interactions between students and professors. The governments, the students and their families, demand value for their money and desire more efficiency through teaching.

3. SETTING NEW TRENDS: CREATIVE APPROACH

Reading the Signs of the Times, we focus the lens of Education on the future, which necessarily is going to be challenging and will**, therefore, call for new and creative responses**. The academic activities of teaching, learning and research are the core business of higher education institutions. The quality of our education will determine the future of our country and our people. Therefore the need for innovation is very essential.

What we require today, is to adopt a **creative approach to teaching, learning and research**. The time has come to restructure the traditional method of imparting knowledge and to bring about structural changes wherever necessary. The past is no more the model, we got to put our heads together to re-vision and re-create a relevant model of education for our times. We must dare to make things happen. I am confident that the presence of all the enlightened leaders and educationists from various institutions from all over the world present here can be effective to set a new trend in the field of Higher education.

Thus improve the organizational climate in our educational institutions. "**We need visionaries who dream things that never were" The power of 'now' is great**. Can our institutions become centers of peace and harmony. We need to see differently and think differently. It is an attempt to train willing young minds to meet the needs of capitalism and industry by producing students who can unquestioningly go out and join the work force and become so-called "productive" members of society.

4. THE RISE OF TECHNOLOGY AND ITS INFLUENCE ON EDUCATION

Today's students are the first generation to grow up with digital technology and this technology has changed the way we view knowledge, access information and relate to our world. Education needs to both capture the incredible possibilities for deep learning opportunities that new technologies can offer and prepare students to cope with the amount and speed of information at their fingertips.

5. INNOVATIVE TOOLS: MULTIMEDIA APPROACH TO LEARNING

I hear and I forget.

I see and I believe.

I do and I understand. - Confucius

Multimedia, is the combination of various digital media types such as text, images, audio and video, into an integrated multi-sensory interactive application or presentation to convey

information to an audience. Traditional educational approaches have resulted in a mismatch between what is taught to the students and what the industry needs. Since the traditional approaches do not encourage students to question what they have learnt or to associate with previously acquired knowledge **(Teo & Wong, 2000),** problem-based learning is seen as an innovative measure to encourage students to learn how to learn via real-life problems **(Boud & Feletti, 1999)** As such, many institutions are moving towards problem based learning as a solution to producing graduates who are creative; think critically and analytically, to solve problems.

The teacher uses multimedia to modify the contents of the material. It will help the teacher to represent in a more meaningful way, using different media elements. These media elements can be converted into digital form, modified and customized for the final presentation. Creating multimedia projects is both challenging and exciting. Fortunately, there are many multimedia technologies that are available for developers to create these innovative and interactive multimedia applications **(Vaughan, 1998).** By working in a group, the students would have to learn to work cooperatively and collaboratively, using their group skills and a variety of activities to accomplish the project's overall objectives.

5.1 *Other Innovative Teaching Techniques (ITT)*

<u>Web-based Instruction (WBI)</u> is defined broadly as a form of innovative approach for disseminating information and delivering instruction to a remote audience in which the web is included as a tool (Relan & Gillani, 1977). Presently, several Web sites have been developed to provide learners with access to instructional resources from a distance.

However, Hill (1996) noted that, most course based or learning sites simply post course materials. In such cases, use of the Web falls short of the potential this medium serves. According to Casey (1998), currently used Web models can be identified as the following:-

  - ➢ **The Web as Source of Information:** Web used as a convenient place to store supporting information for traditionally offered courses.
  - ➢ **The Web as Electronic Book:** In this many institutions present information in a more structured way for teaching process. Students use the screen to read materials, activate multimedia demonstrations.
  - ➢ **The Web as a Communication Medium between Teacher and Students:** In this model students learn from the teacher but "through" the Web and not "from" the Web. A model such as these aims to mirror a face- to-face learning environment, within which the students will be able to establish some form of human relationship with the teacher. (Ruksasuk, 1999).

The aim of Web -based education must be to develop a model, which will enable a relatively large proportion of the student population to learn easily and successfully. (Casey, 1998).

Computer -assisted learning (Learning through CD-ROM) :

The development of computer-based technology has greatly contributed to enhance teaching effectiveness in the past decade. The multimedia soft ware available on CD-ROM plays a significant role with applications in labs and lecturers, tutorials and project work.

Virtual Laboratories:

The virtual laboratory is an interactive environment for creating and conducting simulated experiments: a playground for experimentation. It consists of domain- dependent simulation programs, experimental units called objects that encompass data files , tools that operate on these objects. Virtual Laboratory presents a range of equipments on –screen and may offer a very high degree of interactivity.

Humour, an Effective Medium of Teaching:

A teacher with a sense of humour is loved by all students. Looking at the lighter side of life not only fosters cordial relations between professors and students but also provides welcome relief while trying to follow a difficult lecture on a complicated subject. Humor strengthens the relationship between student and teacher, reduces stress, makes a course more interesting and if relevant to the subject, may even enhance recall of the material. Humor has the ability to relax people, reduce tension, and thereby create an atmosphere conducive for learning and communication. Observe reality and exaggerate it - much humor lies in observations about real life and truthful situations. In conclusion, humor not only plays an important role in the healing process but is also very important in education.

Z to A Approach:

This approach attempts to explain the application part of a particular concept first. The teacher should explain the application of a particular concept first and then explain the effects of such applications. For example in management subject - motivation is explained in a manner that the organization get extensive benefits out of using some techniques like promotions and awards. So here the use of promotion is explained first and later students would get interest in knowing what are promotions and awards. The teacher starts explaining what is promotion and explains what motivation theory in management is.

Advantage of this innovation:

➢ Makes a particular concept clear
➢ Students develop interest to know exactly the concept.
➢ Creates long lasting memory/correlation of a concept.

Mind Map:

Mind maps were developed in the late 60s by Tony Buzan as a way of helping students make notes that used only key words and images, but mind map can be used by teachers to explain

concepts in an innovative way. They are much quicker to make and much easier to remember and review because of their visual quality. The nonlinear nature of mind maps makes it easy to link and cross-reference different elements of the map. Mind Maps are also very quick to review, as it is easy to refresh information in your mind just by glancing once. The key notion behind mind mapping is that we learn and remember more effectively by using the full range of visual and sensory tools at our disposal. Pictures, music, color, even touch and smell play a part in our learning armory will help to recollect information for long time. The key is to build up mind maps that make the most of these things building on our own creativity, thinking and cross linking between ideas that exist in our own minds.

Role Playing and Scenario Analysis Based Teaching:

Role playing and scenario analysis is mostly used in organizations that try to analyze a problem pertaining to the organization, and this is also used in management institutions. But the similar kind of practice can be tried in other specialization too like science and engineering. For example, in teaching accounting the role of accountant can be explained by role playing technique. Invoice and bills can be given to students and asked them to assume the role of accountant. Here the real entries pertaining to transactions are made by the student and this is more practical approach to teaching where theory is supplemented by proper practical knowledge. Similar kind of technique can be applied in management, engineering and science courses.

iPod in Education: The potential for Teaching and Learning: iPod touch is an easy-to-use mobile device with many uses. It can be used to store and play audio and video, view images and access the internet. Teachers are using iPod to support second language learners, address the needs of diverse learners, and motivate struggling readers as well as to support their own professional development. Using iPod in the classroom can assist in helping students' mastery of content, capturing the attention of today's students and getting them engaged in learning. With an iPod and microphone or suitably equipped computer it would be very simple for a teacher to record a lesson and to put these online for pupils to access after a lesson. This could benefit those who missed the lesson or to help pupils to review their lessons later on.

6. CERTAIN PARAMETERS FOR QUALITY AND SUSTAINABILITY OF EDUCATION:

- ➢ Creation of innovation to develop enterprising minds among students

- ➢ Appointing committed and qualified faculty with proper research orientation

- ➢ Educational reforms and ability to adopt a sincere work culture

- ➢ Granting autonomous status and academic freedom to colleges to raise the bar by setting new benchmarks

- ➢ Keeping institutions free from political interference

- ➢ Facilitating knowledge transfer through networking and supporting cooperation between

educational institutions/ sharing of resources and expertise

➤ Creating and offering facilities for faculty exchange & student exchange programs

➤ Offering relevant courses for a knowledge society and quality of students

➤ Enhancing infrastructural facilities in keeping with latest technologies like virtual class rooms and video conferencing

➤ Providing value based education to promote leadership among the youth.

➤ Job oriented curricula & pedagogy that focuses on academics and experiential learning

➤ Effective institutional management & alumni relations

➤ Enhancing education for sustainable development by promoting trans-disciplinarity
➤ Peace education is the need of the hour.

7. PURPOSE AND GOAL OF INNOVATIVE EDUCATION:

Educational Innovation empowers faculty and staff to be the agents of change for the inherent creativity of faculty and staff can be the spark for innovative approaches to curriculum and research which will set the university on the path to greater self-sufficiency. This coordinated effort will create a sustained campus environment that maintains and enhances student learning while improving the capacities and generating new resources. A fundamental component of educational innovation is sharing ideas. **Innovative education should lead to:-**

➤ Improve student learning and comprehension
➤ Engage students in active participation
➤ Develop critical thinking skills
➤ Match teaching strategies to specific student needs
➤ Apply theory and practice directly to the class room demands

8. EDUCATIONAL INNOVATIONS: EFFORT OF GOVT. OF INDIA THROUGH NATIONAL INNOVATION COUNCIL

The aim of NIC is to herald a mindset change and create a push at the grassroots level so that more and more people in education, business, government, NGOs, urban and rural development engaged in innovative activities are co-opted and are part of shaping the national level innovation strategy. Education is the crucible in which Innovations are forged. Promoting creativity and incentivizing innovations through our educational institutions is a first step towards broadening and deepening the impact of innovations in our society and economy. In large scale education systems in India, catering to a vast population with relatively limited resources, this is a major challenge. At the same time, with rapid advances in new technologies, changing needs of the economy, and the very presence of the challenges identified above, the sector itself presents a

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fertile ground for pioneering innovations. Recognizing the fundamental role of education in nurturing and fostering an ecosystem of innovation the National Innovation Council is engaged in a series of initiatives to encourage innovations in existing educational institutions – universities, colleges and schools, as well as promoting new educational models and innovative platforms for knowledge creation, dissemination and application.

8.1 *Igniting Youth Innovations: Key Proposals Approved by MHRD, GOI:*

➢ Award of **1000 Innovation Fellowships at the School Level** (Classes 9-12) who think creatively, laterally and innovatively on issues that they perceive important.
➢ Creation of a **National Innovation Promotion Service**
➢ Setting up an **Innovation Centre in each DIET** (District Institute of Education and Training) to enhance teacher training and enable them to become facilitators of creativity and innovative thinking.
➢ Introducing the **Mapping of Local History, Local Ecology and Local Culture and 10**
➢ **Heritage** by all High Schools
➢ Setting up the **first Meta-University of the world for multi-disciplinary and collaborative** learning to create critical thinking on their local environment by students.

9. HOW CAN INNOVATIONS HELP BUILDING ORGANIZATIONAL LEARNING CLIMATE?

As Senge (1990) remarks: The rate at which organizations learn may become the only sustainable source of competitive advantage. Much of the discussion on learning organizations and organizational learning has focused on private corporations. The general story is simple enough. In an era of globalization, companies that learn and that use this learning to shape new structures, processes, and systems in an innovative way is better able to thrive and prosper. Let us now look at the **Five Disciplines of organizational learning** from the point of innovation.

9.1 *Five Disciplines of Organizational Learning:*

➢ **Personal Mastery:** This discipline of aspiration involves formulating a coherent picture of the results people most desire to gain as individuals (their personal vision), alongside a realistic assessment of the current state of their lives today (their current reality). Learning to cultivate the tension between vision and reality can expand people's capacity to make better choices, and to achieve more of the results that they have chosen thus creating a better climate in organizational learning.

➢ **Mental Models:** This discipline of reflection and inquiry skills is focused around developing awareness of the attitudes and perceptions that influence thought and interaction. By continually reflecting upon, talking about, and reconsidering these internal pictures of the world, people can gain more capability in governing their actions and decisions.

➢ **Shared Vision:** This collective discipline establishes a focus on mutual purpose. People learn to nourish a sense of commitment in a group or organization by developing shared

images of the future they seek to create and the principles and guiding practices by which they hope to get there.

> **Team Learning:** This is a discipline of group interaction. Through techniques like dialogue and skillful discussion, teams transform their collective thinking, learning to mobilize their energies and ability greater than the sum of individual members' talents. The icon of flying birds symbolizes the natural alignment of a learning-oriented team as we see it in the flight of a flock of birds.

> **Systems Thinking:** In this discipline, people learn to better understand interdependency and change, and thereby to deal more effectively with the forces that shape the consequences of our actions. Systems' thinking is based upon a growing body of theory about the behavior of feedback and complexity-the innate tendencies of a system that lead to growth or stability over time. Tools and techniques such as systems archetypes and various types of learning labs and simulations help people see how to change systems more effectively, and how to act more in tune with the larger processes of the natural and economic world.

I feel that given the direction in which society is moving today, the ecological crises, the social crises that we face, the globalization of capitalism, and the destruction of the environment that goes inherently along with that process, the last thing we need to do is to reproduce that system. We need instead to generate forms of education that help to transform that system, change its basic structures in ways that can address these interrelated crises that we find ourselves mired in. Innovative education is the only solution for a sustainable future for generations to come.

CONCLUSION:

In closing I would simply ask that you keep the faith. That we continue to enhance innovative ideas, that we recognize that sustainability will only come about through a process of education, that education is not limited to the classroom or to institutions of higher education, and that each of us, as an individual, has a responsibility to serve as an educator. For an education to be truly innovative and radical we need to examine the form that education takes. We need to examine the content of that education. What it is that is being taught? And, very importantly, we have to understand the intentionality with which this educational process is being put forth. Why? Towards what end? There is not a single solution or a single model that would constitute a radical and innovative education.

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