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### **ICT integration in Curriculum**

Since the dawn of civilization, societies systems witnessed three major waves of change: the agrarian, the industrial and the information. The agrarian wave settled humanity from a nomad base. The industrial revolution harnessed human physical capabilities. The information revolution is trying to understand the human mental capabilities and expand on them.

Each one of these waves produced major paradigm shifts in the life of human beings . Families moved from extended, to nuclear, to working parent. Businesses moved from family based to bureaucracy to teen based. Transportation developed from horsepower to locomotive to jet and nuclear power.

In education, the transformation brought by the waves of change started with the establishment of the one-room school house during the agrarian wave to the current system that was developed to face the needs of the industrial revolution. At the time, mass education was established. The aim was to produce clerks and clergy and foremen for the factories, not necessarily to educate people.

## **What are the implications of these changes on education?**

To understand the main feature of an information age educational training system, we need to understand the needs and demands of the emerging information society.

At the family level, we noticed that major changes have taken place. Foremost is lack of communication. This led to neglect unmet needs at the emotional and physical levels also at lack of discipline. At the work place, thinking, cooperation and initiative taking processes have changed dramatically. All workers are to be involved as active participants in the process of production and development.

Societal changes in the information age witnessed the most far-reaching transformation of systems. Shared leadership and team organization replaced autocratic leadership and bureaucratic organization. Cooperative relationships, autonomy and accountability replaced adversarial relationships, competition and centralized control. Initiative taking and diversity superseded compliance and conformity. Integration of tasks outweighed division of labor. Holism and cooperation took the place of compartmentalization.

All this transformation, resulting from the major waves of change, necessitates a fresh look at the educational paradigm and its role.

Nobody is happy with their educational system in spite of the efforts and attempts of reform and updating the current paradigm. Over the last five decades, most educational systems underwent changes to meet the ever-growing demands, and needs; foremost of which is the shift from the concept of teaching to that of learning. But we still find that educational systems are graduating and certifying students who are not learning enough at a time where the cost of quality education is rising at an ever increasing speed. There are tens of millions of youth in our region and hundreds of millions all over the world who are not getting proper education and training or are totally left out of the system and its outreach. Remembering that education is a basic human right,

we realize that the need for a new paradigm of education is paramount. ICT integration in education, if properly planned and executed, along with the proper training and environment may be a major part of the paradigm shift, and the transformation to quality education. Technology can play an important role in providing equity in offerings, supplements to curricula, and a major push towards quality, all being at an affordable cost.

**What are the essential components of this new paradigm, and how does it differ from earlier models and attempts on improving the educational system and its curricula?**

Alvin Toffler, the famous futurist and author of the seminal books, "Future Shock" (1970), "The Third Wave", (1980), and "Revolutionary Wealth", (2006); tells us that "...the illiterates of the 21<sup>st</sup> century will not be those who cannot read and write, but those who cannot learn, unlearn, and relearn".

Educational research tells us that in the 21<sup>st</sup> century, the focus of education is on learning, not on teaching. Learning should be based on enhancing cognitive, social and emotional skills. Literacy is not only reading, writing, and numeracy. The new focus on literacy includes visual literacy, information literacy, and consumer literacy; all of which are based on critical thinking. Thus curricula in this age should be based on the integration of these elements, and enhanced by technology as one of the major modes of delivery. We reached a major conclusion that education and learning do not take place only in a classroom or between four walls. Learning opportunities will be provided to children from birth on. Learning will be evidence based, including the latest findings from neuro-learning research, and artificial intelligence studies.

**What do we know about learning? And how is it different from teaching?**

We have come to know that individuals learn at different rates, while the prevailing teaching paradigm, which is service based and

mass production oriented, allows little space, if any, for individual differences. Governments, in fulfilling their service duties, provide mass public education. This type of education is time, group, and teacher based, and is market driven. Mass public education looks at the input - output process as the essence of this paradigm; not on the individual learner and her/his needs.

Developing the new learning paradigm, which is attainment, person and resources based, addresses the process of education as an unalienable right for people and their aspirations. It aims at the production of well-rounded citizens who can survive in our fast developing global world.

The main feature of our information age education system includes mastery learning, personal learning plans, performance-learning and assessment, cooperative learning .Technology can play an essential role in these processes.

### **What are the rubrics of the new paradigm?**

The major emphasis is focused on lifelong learning. All trends and directions point to the fact that life pace and change are growing at an ever exponential rate. Researchers and futurists tell us that more than half the jobs that will be available for a newborn are not yet thought of or existing. So to what purpose do we teach and prepare our youth?

The new paradigm based on learning should provide basic values and survival skills that are needed for an active and prosperous life in the 21<sup>st</sup> century. At the value level one would include citizenship as a major component, along with personal and social awareness and responsibilities. Cross cultural understanding and conflict resolutions are major assets of living in a globalized world. At the skill level, one would include at least critical thinking, reasoning and creativity which should be fostered. Planning and strong communication skills are needed as a major survival skill too. To this, one can add decision making, visualization, and the knowledge of how and when to integrate technology. Technology can facilitate the delivery of the curricula in a

new more involving way to the learner allowing her/him to reach their potential by providing them different modalities to tackle and understand issues and ideas in more different ways allowing for individual differences and letting creativity open to all possibilities.

In education, curriculum integration with the use of technology involves the infusion of technology as a tool to enhance learning in a content area or at a multi-disciplinary level. Effective integration of technology is achieved when learners are able to select tools to enhance their learning modality in a timely manner, analyzing and synthesizing information and data in order to present them in a professionally. Technology should become an integrated part of the curriculum and the learning process, it should be accessible as all other resource and tools. Thus the focus in such learning process is on the outcome prescribe by the curriculum not the technology itself.

Toffler, also tells us that, “it is no longer resources that limit decisions, but it is decisions that makes resources”.

The key factors to integration technology in the new paradigm would include a supportive and effective leadership and an accepting climate. Professional development of the staff with a technology plan and the proper infrastructure to fulfill the objectives stipulated. In the final analysis ,it is the taking of the right decisions in an educational setting that will lead to a difference in delivery and quality of what is delivered .

To succeed, a technology implementation plan requires a clear vision, sufficient access, proper skills, resources, administrative and technical support along with proper timing which is of major essence.

The use and integration of technology in the curricula can be effective only when it helps the learner to be motivated, engaged, and actively learning. Technology can allow learners to authentically experience the learning process through modeling, simulation, and experimentation in less costly virtual situations among other possibilities. This can be achieved through encouraging and fostering

collaboration and team-work. This approach will also lead to enhancing the development of communication skills.

Integration of technology in the curricular can only be effective when it allows the learner to become an explorer and a producer of knowledge. This will be achieved through systematic structuring and integrating learning and technology across the curricula. By so doing the learner eventually build his/her digital age literacy skills needed for survival.

For full integration of ICT in curriculum, the need is for interdisciplinary collaboration spearheaded by well-trained administrators and teachers .The staff should have the opportunity for a well-orchestrated school based professional development .This will keep them abreast of all new developments in research and evidence based studies on human learning ,and will allow them to be more effective in coaching and helping the learner.

## **References**

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