**Learning In The 21st Century**

**Saturday, 07 November 2015**

We are in the 21st Century. Just saying that brings a kind of mystique and excitement even today, as it did, when we made the great leap from the 20th Century into this one—a feeling of exhilaration as though we have crossed some barrier into a 'brighter age'.

This 'brighter age' has a lot of expectations associated with it, dreams for the future, hopes for success—both individual, national and global. Today, the main factor of production is 'knowledge', the main enabler is 'technology'; information is freely available via the internet. This has brought with it great unpredictability in terms of our future as well because the nature of jobs is rapidly changing with the use of technology, and if one skill is useful today, it may no longer be useful tomorrow.

Given these rapid changes, the focus on technology, and most importantly knowledge, only one thing to ensure that we are not left behind is the ability to learn.

Learning has always been a part of our lives, since the dawn of humanity—we can learn anytime, anywhere, whether we go to school or not! However, it is only since the last 200 years or so that we have started going to 'school' in order 'to learn'. This suggests two things—that learning cannot happen anywhere other than school, and that only what is covered in school is to be learnt. We know that this is not true. However, it makes what happens in school extremely important, because we spend a good six hours of our day there!

**Converting Information or Content into Knowledge**

A lot of the class time involves working with information or content—either from the textbook, or from notes. Moreover, we are required to reproduce the words of the textbook during exams. When learners do not engage with the subject matter, it is easily forgotten.

Engaging with subject matter only occurs when learners are active. The first thing is to relate what we learn to our lives, to what is happening in the real world, and to other subjects. For example, learning about equations in Math should be related to real world situations such as when a vendor weighing vegetables stops adding vegetables when the scale balances. Another way is to encourage the famous 'why' question, as well as 'how can I…' and discuss the ways in which the information can be used, thereby converting it into knowledge.

Joining the Dots: Knowledge as a Whole

Schools have back-to-back classes, where different teachers come, speak, instruct the class, and then leave. Knowledge is fragmented into subjects, which are watertight. Very few teachers consciously integrate one subject with the other.

Integrating subjects can generate interest. So, a class on the Merchant of Venice could then include literature, communication, history, culture, and geography, while one on the Sun Temple of Odisha could include literature, mathematics, history, art, culture, geography and science!

Countries such as Finland are now replacing 'subjects' with 'topics'. The idea is to prepare students for the real world and for a working life. So, a particular topic would include the different subjects. For example, learning about banking would involve learning about math, communication and language, finance, political science and more.

**Overcoming the Swiss Cheese Effect**

At present, assessment is largely in the written format, and most of the time requires memorization and understanding. Once marks are received, the exam is forgotten and we move on. But wait! If you get 80 marks out of 100, what about the 20 marks that you missed?

One of the greatest problems in education is what Salman Khan of Khan Academy calls 'Swiss Cheese Learning'. The 20 marks that you missed could be about a key concept common to Geography and Science such as 'air expands due to heat and rises', which forms the basis of the chapter on pressure belts and winds. If one's basics are weak, studies become difficult, we perform badly and lose interest.

Building Skills for the 21st Century

In 2012, Indian students performed dismally on the Programme for International Student Assessment or PISA, ranking 71 out of 73 internationally, and finally dropped out of giving the test.

The PISA seeks to test 15-year-olds on Mathematics, Science and Reading for the "tests are designed to assess to what extent students at the end of compulsory education, can apply their knowledge to real-life situations and be equipped for full participation in society."

Today, there is a high demand for such professionals with skills like:

- Information handling, media and technology
- Life and career skills
- Learning and innovation skills

Instead of asking, 'What is the distance on between Village Dantiwada and Village Ganodara?', the PISA question provides a map with routes and distances, and indicates that three people are travelling from places A, B and C and want to meet in a manner that no one travels for more than 15 minutes each; that the learner needs to locate the place where they can meet. This question requires us to calculate the distances along different routes, to different places on the map and then conclude which place meets the required criteria. This question tests higher order thinking skills.

Students from Finland, Korea and Poland score very high on the PISA, while students from India don't. The PISA test requires us to think and apply our knowledge, while here we are required to 'mug up' for exams which ask questions that test memory or recall or check your understanding. It is actually fun to think and answer rather than be a parrot! Which would you prefer?

**Teaching Subject-Specific Skills**

Each subject has its own specific set of skills. For example, numerical literacy and problem solving in Math; map work, field work, graph interpretation in Geography; research and experimentation, graph interpretation, in Science; critical evaluation in History; listening, speaking, reading and writing in language; critical appreciation in Literature, land many more! Many of these need to be consciously taught as skills and emphasised for they can actively engage the learner.

**Emphasizing Non-Cognitive Skills for Long Term Success**


School largely focuses on developing the mental or cognitive domain. An individual's marks and rank are usually considered as indicators of success, which isn't always accurate! Success came to great personalities such as Stephen Hawking, Albert Einstein, Gandhiji, and many others after several setbacks. What got them through these? It was sheer grit that developed their unique character.

Non-cognitive skills such as grit are the master key to success, and as Paul Tough author of 'How Children Succeed' says, these can be taught!

Value education classes taken separately cannot alone develop one's character. Engaging in active learning through a variety of activities, failing yet pushing forward can develop the many non-cognitive skills that are needed for success.

**Developing Intrinsic Motivation**

To truly learn, we need to love learning, be immersed in it without anyone telling or forcing us to learn. Getting a prize or a star should not be the carrot to get someone to learn.

When something is interesting to us, we do not need to be pushed or rewarded to do it. Similarly, when we find a task neither too difficult nor too easy, but just a little challenging, we are more likely

to be engaged by it. Hence, when activities of different types are used for learning, they will cater to each and every learner at some point.

**Including Time for Unstructured Play**

School itself provides limited opportunities for play, unless it is a residential school with a sports regimen. For a rounded personality, time has to be spent on both unstructured play, as well as sport. Playing is an activity in itself. Apart from providing exercise, connects us with the physical, real world, develops thinking and imagination, reduces stress and improves mental wellbeing, and helps build relationships.

**Making Learning Active: Shifting from Teacher-centred to Learner-centred Methods**

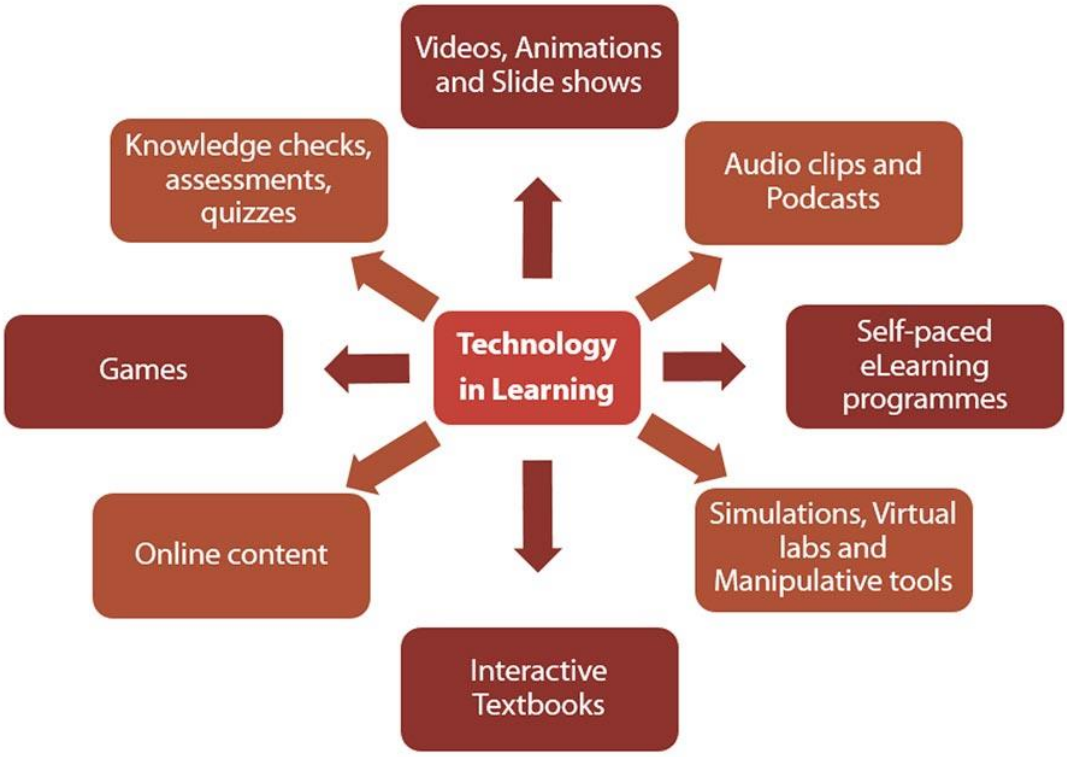
Learners today are largely passive. The digital classroom has merely replaced the teacher with a voiced animation. Learners forget what they have 'learnt' at the end of the academic year.

A good learning experience will ensure that learners retain what they have learnt and can apply their knowledge and skills to real world problems.

Today we stand in a fortunate space, when education and learning is transitioning from a teacher-centred methodology to a learner-centred one.

It is heartening to see much change in many schools and a great effort to introduce collaborative work and group work, project work, more field trips, and more. Yet, primary to the success of the active learning approach is a change in mind-set from 'I have to teach the learner' to 'the learner can learn on his/her own, how can I help?'

It is certainly possible to make a classroom an active place. Reading, writing, discussions, finding out information, analysing it, putting together information from various sources, solving problems, creating things, judging the worth of information are some of the ways in which learning can be made active.




**Using Technology in Education**

Technology in Education is a buzzword today. Technology can be a great way to enable active learning and can be used to learn on one's own or to collaborate with others.

The internet, the laptop, the tablet and the mobile phone have revolutionised learning. One can now learn at any time and any place. These devices can be used either in the class in school or at home, and can serve as a means of coordinating between the two.

Some of the formats of learning through technology are given here.

Technology can be used in several ways. Some of those being tried in India are:

**Digital classrooms:** Projection of animations, slideshows and other audio-visual media create an interest in learning.

**The Flipped Classroom:** This involves studying at home mostly by watching videos, on one's own, those parts of a topic that involve knowing or understanding something; then reinforcing, applying that learning in the classroom, either alone, or in pairs or groups.

Technology must be used with care, and not be a replacement either for a teacher, or for tasks that require a leaner to perform them manually, such as writing.

There is a symbiotic relationship between education, society, and the nation. What is taught in school comes from the expectations of the nation after considering global trends, technology trends, economic trends, needs and goals, the nation's social and political situation, its culture and values. Education serves the nation by preparing individuals to participate as active citizens. On the other hand, we and our parents have an expectation from education—that it will help us to blossom, bring out our talents, and at the same time prepare us for economic success in the future. It is only when we are active participants in learning that both our needs and those of the nation will be addressed, and the true purpose of education will be fulfilled!

**About Tata ClassEdge**

Tata ClassEdge™ provides an innovative and comprehensive instructional solution that empowers teachers to teach better, with an effective blend of curriculum-mapped classroom activities and interactive multimedia. Tata ClassEdge's proprietary instructional framework – the Multiple Learning Experiences (MLEx™) model – makes use of distinct types of activities that promote social and thinking skills in students, including critical thinking, creativity, teamwork, research-orientation and communication skills.