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**e-learning has a
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Why e-learning has a promising future in India

E-learning has become increasingly popular across Asia. The continent's rise in Internet users and the revolutionary changes that have happened in education have created a very fertile environment for e-learning to grow. In this exclusive article, Shivaji Chatterjee, Business Head, Hughes Communications India, Ltd (HCIL) explores e-learning in India, its drivers and its advantages - and the critical role that satellite broadband is playing in its delivery.

Albert Einstein once said, "Education is what remains after one has forgotten what one has learned in school." While Einstein's words may have been intended in good humour, they aptly reflect the fact that effective education is, indeed, constant and always evolving. In fact, the face of education has experienced a sea change over the decades. Once characterized by the traditional classroom model, education today has metamorphosed into learning that is instant, online, self-driven and on the go. The journey of education in India, too, has been dotted with innumerable milestones—most recently, e-learning.

Indian government is pushing for reforms

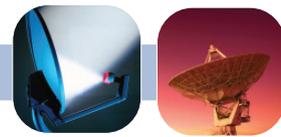
The Government of India (GoI) is a strong supporter of e-learning and the Department of Electronics and Information Technology (DeitY) has been actively developing tools and

technologies to promote it. Specifically, DeitY has supported e-learning-focused R&D projects at various academic educational institutes throughout India. These include content development, R&D technology initiatives, human resource development projects, and faculty training initiatives to improve literacy through distance education.

Exploring the scope in India

The rapid increase in Internet connectivity in the last few years has been an important catalyst for the growth of e-learning in India. A robust Internet ecosystem, with a multitude of local and global players, will help online learning make further inroads.

The story is not limited to schools alone. Indian companies are adopting e-learning platforms at a rapid pace as continuous employee learning has become a strategic



necessity. Leading companies are adopting e-learning to support both short term courses and qualification-focused learning objectives among their employees.

With the number of Indian Internet users expected to reach 250 million this year, rivalling the US and second only to China, India's potential as a huge market for e-learning is enormous. Additionally, a large number of new users are accessing the Internet for the first time from their smartphones, which is an ideal, personalised and commerce-enabled platform for e-learning adoption.

Fuelling this growth will be India's education system, already one of the largest in the world with a network of more than one million schools and 18,000 higher education institutions. More than half of the country's 1.2 billion population falls in the target market for education and related services.

In the near future, universities will see more students accessing their coursework from outside the traditional campus and classroom. According to a July 2014 report from e-learning solutions provider Docebo, the worldwide market for self-paced e-learning reached \$35.6 billion in 2011. The five-year compound annual growth rate is estimated to be almost 7.6 per cent so revenues should reach \$51.5 billion by 2016. While the aggregate growth rate is 7.6 per cent, several world regions have significantly higher growth rates. The highest growth rate is in Asia at 17.3 per cent, followed by Eastern Europe, Africa, and Latin America at 16.9 per cent, 15.2 per cent, and 14.6 per cent, respectively.



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E-learning brings unique advantages, the most prominent being the ability for online instructors to provide personalised attention to all students. This is especially critical for those students who cannot afford private face-to-face tutoring sessions or who live in rural areas where such help is not available. In a conventional set up, this is only possible when a highly skilled tutor offers one-to-one tutorials to a student. However, considering that most of the institutions have a classroom-based setup, such individualised attention becomes very difficult.

Another important advantage is that people living in smaller towns and cities can get access to the best possible learning resources from across the world, at a very affordable price. This helps create a level-playing field.

The developing wave of adaptive learning will also help students with various levels of intellectual capabilities to glean the best from the learning process at their own pace, without feeling left out.

Online tutoring will definitely pose a threat to conventional methods of teaching—while online learning can never look at completely replacing schools as schools offer much more than just academic opportunities within their campuses. However, private tuition centres which are typically managed by individual teachers will have to take a second look at their business model and adopt digital learning aids to sharpen their offerings.

Aspects of e-learning

Technology has enriched the learning experience for students. Although the foundation of education is still reading, writing, and arithmetic, there is no doubt that today's students will also need a broader education in order to be effective contributors in the future.

E-learning solutions employ technology to deliver:

Live instruction: Certain curricula may require specialised instructors. By using live broadcasts, these instructors can remain in one location and provide instruction to many students in other locations. This type of specialisation increases as students move into higher levels of education, for example towards advanced degrees in medicine. Video conferencing technology may also be used to provide interactions between students and instructors.

Video content delivery: Pre-recorded content such as lectures, documentaries, and other video content may be delivered in a forward and store model so that the material can be viewed when needed.

Student-to-student interactions (video conferencing): Related to the first point, students may learn just as much from each other as they do from teachers. Thus, communications technology can be used to connect students in different regions or even different parts of the world so that they may interact.

Remote test administration: In some countries, standardised tests are used to evaluate students on a level playing field. These tests must be delivered securely and on time to meet testing schedules. In Indonesia, for example, this is a daunting task simply because of geography and population size. Digital delivery could be the solution.

Up-to-date materials: As mentioned above, the basics



seldom change. However, virtually all textbooks must be updated. Textbooks are very expensive to purchase, maintain, and deliver. Again, digital delivery solves this issue when coupled with e-Readers such as tablets.

Self-learning: Computer-based training or self-paced learning is common in higher education and trade-oriented learning. Kiosks or terminals to support this may be located close to underserved areas where populations already work.

Teachers and instructors may also take advantage of the technology to interact with their peers, students, and parents using email and social media.

At the higher educational level, collaboration is vital to research. Post-graduate students working in remote locations as part of their study may be able to consult instructors at the university when needed. For example, in the medical field, tele-medicine is growing rapidly and can only be facilitated using broadband connections.

The VSAT Advantage

Satellite broadband, typically VSAT (very small aperture terminal) systems, is ideally suited to bridging this gap. In the past, satellite connectivity was typically thought to be too expensive, too slow, and unreliable. With the advent of High Throughput Satellites (HTS) and advances in radio technology, the cost and reliability of satellite connectivity has made it a most attractive option.

Satellite broadband offers these distinct advantages:

Competitive Cost: HTS introduces an order of magnitude reduction in the cost of satellite bandwidth. This reduction is achieved primarily through the use of spot beams which allow frequency reuse and higher order modulations. Bandwidth in

the megabits per second is possible at monthly costs comparable to any other connectivity option.

Multicast Capability: Inherent in the nature of satellite broadcast is the ability to send data once and have it received by many. In the educational environment this is a perfect fit because typically every school must receive the same content such as videos, e-Books, presentations, etc. Also, in the case of live learning, broadcast (the superset of multicast) is the obvious choice.

Universal Coverage: As long as line-of-sight to the satellite is available, there will be coverage anywhere.

Low Cost and Simple Installation: A typical installation at a school would include the satellite dish, satellite modem, and one or more PCs. All of these can be acquired at relatively low cost and installed in less than a day.

Specialized equipment such as digital white-boards, video conferencing systems, multimedia systems and even 3D learning experiences may be connected to take advantage of the broadband connectivity.

As e-learning tools become more advanced, so too does their bandwidth requirement. Depending upon which applications are in use, bandwidth requirements can vary from several hundred kbps all the way up to multi-megabit connections.

A business opportunity?

Countries with large geographic areas and/or hard-to-reach areas, such as India, are likely to benefit the greatest from satellite broadband.

In India, franchise owners invest in small retail locations



Photo courtesy of Hughes

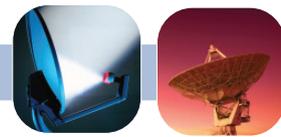


Photo courtesy of Hughes

equipped with Internet classrooms. These entrepreneurs are in the business of education. Students may travel to one of over 2,500 such centres to earn a college degree. Centres are equipped with two-way video and audio for maximum teacher/student interaction.

VSAT is helping the growing trend

India has the highest number of medical institutes in the world, yet many students around the country are not able to access quality education due to geographical limitations. Hughes Communications India Ltd is helping these institutions expand their reach and accessibility across India, and already runs its tele-education solutions for renowned medical institutes.

This initiative represents a paradigm shift in medical education, as it will dramatically increase the accessibility of knowledge to every corner of the country—employing cost-effective and user-friendly technology platforms.

This technology is bound to help medical students, particularly those based in smaller, more rural cities. Medical institutes are looking to leverage the advantages of satellite technology to reach out to more students. So far, their students who have participated have supported the concept.

Their online curricula, which provide live, interactive, real-time, two way video, voice and data classes, have been carefully designed to enable students to learn from the best of faculties and institutions – including All India Institute of

Medical Sciences, Indian Institute of Management and the Indian Institute of Technology - and to ensure high quality and academic rigour.

The advanced tele-education networks provide a virtual face-to-face experience with high-quality, high-clarity, and direct eye contact, including two-way voice interaction and chat-based queries. Now students from the most remote areas of the country will have access to the same faculty as students in Delhi and other metro cities. Many more examples of e-learning using satellite communications exist throughout the globe. Clearly, there is no reason why any student should be left out of the technological possibilities in education.

Conclusion

In underdeveloped and developing countries, e-learning raises the level of education, literacy, and economic development. This is especially true for countries where technical education is expensive, opportunities are limited, and economic disparities exist.

Thanks to satellite technology, the costs have come down so significantly that every student—whether a grade school student or medical student doing a rotation in a remote area—can take full advantage of bandwidth provided by broadband satellite systems, opening up a world of opportunities.

Although the Indian market is still young, it will continue to adopt the concept of e-learning in order to meet its communication needs and seize business opportunities. ■