

Network of Global Agenda Councils

Discussion highlights on **Technology and Education**

at the Summit on the Global Agenda, Dubai, United Arab Emirates 7-9 November 2008

This reflects work that is still in progress. It will continue to be updated and revised.

The views expressed here emerged from the Council meeting and do not necessarily reflect the views of the World Economic Forum or those of all the Council Members.

1) What is the state of the world on technology and education and how is the economic crisis impacting this issue?

The Digital Age in education is here. In China, e-learning is growing at 23% a year, and distance learning now accounts for up to 15% of all higher education globally, including 30% in Russia.¹ But the Digital Age is not yet transforming education.

It has long been posited that education is the engine of economic growth and societal advancement. Technology can be the flywheel to advance educational access. But technology to propel educational achievement can only be value-added if linked with creative pedagogy (i) to educate students with 21st Century skills; and (ii) to train teachers to use the new materials to engage actively with students in interactive learning communities.

As the 2008 Report “Equipping Every Learner for the 21st Century” by Cisco reinforced: “Education 3.0 has the potential to provide new access to quality teaching and learning materials, expert practitioners and global support networks in a range of specialized domains.”² That potential is not yet being realized.

General State of the World

Governments and citizens increasingly believe in the power of technology and the Internet to improve an individual’s quality of life and to advance society.

- § Technology-enabled education is proceeding at different paces across and within countries.
- § Providing technology products is only a first step: seamless integration of instructional technologies is also required.

Education is in a state of transition from a traditional model to one where technology plays an integral role. However, technology has not yet transformed education.

- § Student expectations about the educational experiences (e.g., connected, participatory, engaging) are not being realized.
- § Students are digital “natives” while teachers are “laggards”.
- § Rather than introducing 21st Century skills, technology is often being used to automate outdated education paradigms.
- § Technology changes what students/citizens need to learn (e.g., analysis over rote memorization).

An explosion of online content, connectivity and users who are accessing the Internet has taken place.

- § There is no easy way to find outstanding education materials (information overload).
- § There has not been a corresponding change in the concept of intellectual property that would help these materials to be disseminated.

Despite many advances, the digital divide is not decreasing quickly enough.

- § Broadband penetration must accelerate; it is necessary but not sufficient for the effective use of technology in education.

¹ “Equipping Every Learner for the 21st Century” developed by the Centre for Strategic Education, Cisco Systems, Inc and McKinsey & Company (2008), page 14

² Ibid, page 8

- § Mobile holds potential – but of uncertain magnitude; there is a lack of incentives for mobile providers to support learning initiatives.

In emerging markets, a clear enough link between education and economic development (between communities and businesses, and between people and jobs) does not exist.

Technology and education has been focused on traditional school settings, and has not yet embraced informal learning communities (e.g., ages 0-6, after school, dropouts, adult education, public health, citizenship).

Teacher Issues

The role of teacher needs to change from “sage on stage” to “guide on the side”.

- § Teachers’ professional development does not include compelling strategies for using technology to advance learning.
- § Online resources do not provide an inventory of best practices for teaching teachers how to teach.
- § Technology holds the promise of increasing teacher productivity.
- § Teachers are not preparing their students to participate in an information society.

An increasing gap exists between technology-enabled pedagogy and current assessment techniques; assessment does not adequately gauge 21st Century skills.

Learner Issues

Technology can offer routes for advancement for residents of emerging economies – if the right channels can be ascertained.

Children learn when they have access to well-defined, educational material – even with limited interaction with teachers.

New tools/methods for education are not being adequately embraced (e.g., gaming, social networks, Web 2.0 technologies).

Technology provides people with the opportunity to learn by doing, providing information, facilitating social linkages and building self-confidence (e.g., Indian children on the playground, special needs, women in some societies).

Sustainability

Multistakeholder partnerships are required and proven to be effective in accelerating technology-enabled education.

Many approaches in developed economies do not represent scalable approaches and solutions.

- § There is a lack of business models for operating costs and capital funding for technology adoption.

2) What should be done to improve the state of the world on this issue?

There is an inextricable link between education, employment and economic development and societal progress. The 21st Century requires fundamental changes in the curriculum and the way it is created, delivered and assessed. Therefore, governments, the private sector and other key stakeholders should collaborate to support sustained and substantial investment in education and education technology. We offer the following recommendations to accelerate progress:

Policy / Government

- § Prioritize the use of technology to transform education
- § Develop an explicit and sustainable strategy for the use of technology to enable education
- § Provide incentives to support educational innovation (teacher productivity, assessments and effective teaching strategies, 21st Century skills integration and assessment, teacher professional development, etc.)
- § Eliminate structural barriers that exist among government, ministries of education, industry, etc., to create mechanisms to enhance employment opportunities
- § Promote policies that increase investment in infrastructure, expand bandwidth/frequency allocation and reform regulation to provide greater access to the Internet

Innovation / R&D

- § Expand the mission of educational organizations to include R&D on the future of education and apply that research to advance practice (e.g., educational technology, learning science, instructional design)
- § Identify successful models and teaching strategies and find ways to scale, distribute and proliferate them
- § Develop new methodologies that seamlessly integrate technology with instruction rather than simply layering technology on top of existing educational models
- § Make learning more engaging and effective through the use of new technologies, including:
 - Simulation capabilities
 - Animation
 - Language translation
 - Gaming / virtual world
 - Individualization of instruction
 - Social networking

Teaching and Learning

- § Promote an active, learner-centric approach to learning in order to leverage the promise of technology
- § Focus education on developing life-long learning skills (i.e. learn to learn) versus the acquisition of specific vocational skills, so that learners are prepared to succeed in industries and jobs that don't yet exist and be productive citizens (successful in school, career and life)
- § Develop a knowledge hub (aka EduNexus) (i) to aggregate outstanding teaching materials and best practices of successful teaching techniques; (ii) to proliferate them globally. In addition to materials for primary, secondary, tertiary and vocational education, the hub will also include learning content relating to key issues for citizenship (e.g., green/environmental curriculum, HIV/AIDS prevention techniques, etc.). The next steps are to:
 - Create a task force made up of multistakeholders to build an index of educational resources that can be easily shared
 - Establish a protocol to curate and share existing high quality content, successful lesson plans, etc.
 - Develop a community of practice to organize, curate and employ this shared content and best practices

Systems and Leadership Development

- § Create incentives for educational and institutional leaders to adopt new education models and technologies
- § Train teachers to be able to leverage new technologies through continuous and ongoing professional development
- § Develop sustainable solutions with long-term funding
- § Empower learners (students of all ages and abilities) to be aware of educational and career opportunities to motivate them to take more ownership of their own learning
- § Encourage linkages between formal and informal as well as centralized and decentralized learning
- § Improve learning productivity and increase efficiencies to support administration and school leadership