Education for a Smarter Planet: The Future of Learning
Signposts for the future provide opportunities for transformation

Leaders from education and government aspire to improve their institutions' outcomes and value to society. They strive to meet rising expectations from students, communities and business with limited and increasingly constrained resources. Signposts for the future signal significant changes to all segments of education as well as to their funders. These five signposts – technology immersion, personalized learning paths, knowledge skills, global integration, and economic alignment – are rapidly converging to produce a new and transformative paradigm that we call the "educational continuum". This continuum will further dissolve the traditional boundaries between academic segments, education providers, and economic development initiatives to create a single view of learning, skills development, and workforce training. The educational continuum creates a smarter way of achieving national objectives.

Five signposts of educational trends can be perceived as challenges to traditional institutions – or – as opportunities for meaningful and long-lasting systemic transformation to systems of education. How an educational system responds to these trends will determine not only its value to its students but ultimately, its long-term value to society.

An investigation into each of these areas is useful for understanding the direction and rate of change, as well as to developing realistic and actionable strategies for education policy, investments and programs:

Technology Immersion of Students

Personal and Varied Learning Paths

Knowledge Skills for a Service-based Economy

Global Integration of Systems, Resources and Cultures

Education's Critical Role in a 21st Century Economy

The Educational Continuum

These signposts for the future of education clearly indicate a move away from the traditional path of education for students, teachers, faculty and institutions. Academic training has been viewed as one where all students pass through a straight and narrow path from primary to secondary school, on to vocational training or university, and then to the workforce. As the dynamics of education, employment and the economy change, this view of the traditional experience is more the exception than the rule.

The traditional boundaries defined by preschool, primary, secondary, and higher education are no longer adequate to define a student's path through his or her preparation for the workforce. The educational experience is often much less linear, more complex and varied, with many different paths of educational attainment. These pathways are all acceptable and often very effective avenues for academic and skills development, such as employment retraining, vocational education, technical training, apprenticeship, internship, and informal learning programs.

This continuum will provide a more interconnected, instrumented and intelligent educational system. Learning services and resources will become more interconnected and seamless. Information about student needs and skill gaps will become more instrumented and non-intrusive to the teaching process. Decision-making will be informed by intelligent insights based on an integrated view of learning.

In this continuum, education systems will allow students to follow more dynamic and individualized courses throughout their lifetimes. Their courses of study would include emphasis at an early age on foundational skills, advance toward specialized competencies corresponding to their strengths, passions and employment opportunities, and continually provide for retraining throughout their lifetimes as changes occur in the employment market.

Several emerging technologies are enabling the transformation to the educational continuum:

- Open Technologies: open systems are critical to the future of learning to enable a seamless education continuum that is centered on the student, not the institutions. Common data and processes will allow better management of outcomes, more personalized learning pathways, and lower costs of operation.
- Cloud Technology: cloud computing will provide new opportunities for education institutions and governments to create shared services across regions and systems. This will improve access to both urban and rural communities improve quality of services from providers, and lower costs from reduced duplication and enhanced efficiencies.

- Consumer Technology: education systems will build an open environment for their institutions that accommodates and leverages the consumer market, but is not driven by it. Education institutions in the future should embrace the myriad of devices as opportunities for learning.

Translating Trends into Transformation

The future trends faced by educational institutions provide an opportunity to transform systems of learning.

Educational institutions, commercial partners, foundations and all others supporting education must make a serious commitment to sustained, energetic collaboration. We must collaborate within and across educational institutions to build new processes and services. Commercial partners and institutions must collaborate to create new standards and platforms to enable innovation. And educators must collaborate to harness new technologies, build best practices, and enable a new model for teaching and learning.
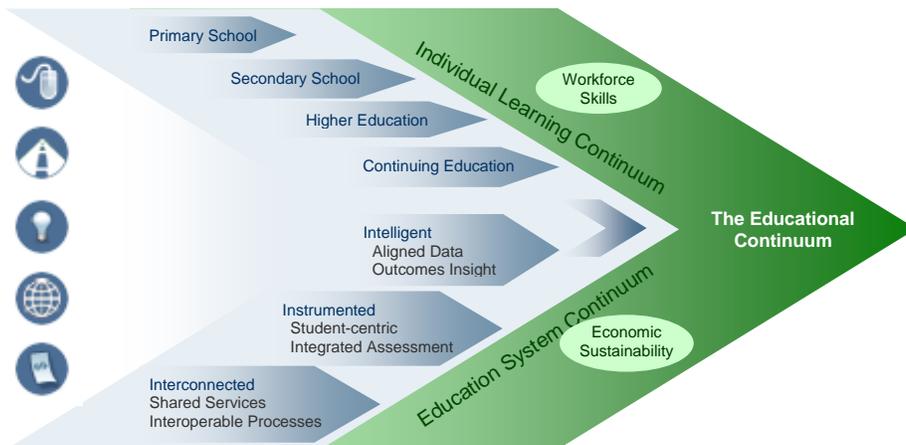
How is IBM helping create the Educational Continuum?

- **Smarter Classrooms**: learning environments that shift resources for students, teachers and faculty from traditional expenditures in personal computers and proprietary licensed software to thin clients and hosted desktops, open source tools in the form of content and curriculum materials, learning insight systems to manage student performance and simplify the management and operations of the learning environments
- **Smart Administration:** optimized back office and administrative processes that leverage shared services and collaborative efforts across educational systems.
- **Innovation in Research:** high performance computing to accelerate the creation of science, knowledge and innovation, while contributing to economic development efforts in regions and states.

Primary School
Secondary School
Higher Education
Continuing Education
Individual Learning Continuum
Workforce Skills

Intelligent
Aligned Data
Outcomes Insight

Instrumented
Student-centric
Integrated Assessment

Interconnected
Shared Services
Interoperable Processes

Education System Continuum
Economic Sustainability

The Educational Continuum