Transforming Education for a World of Opportunity

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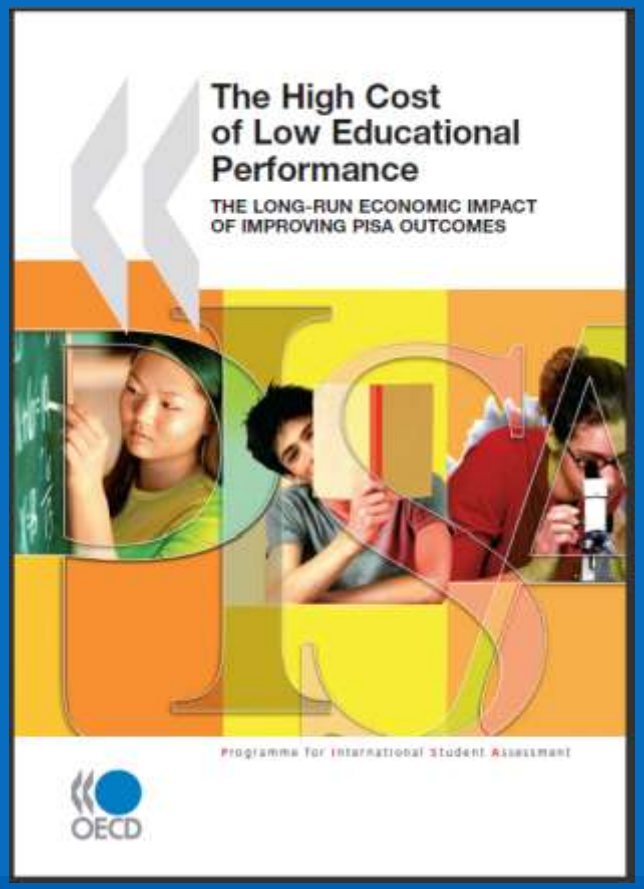
Systemic Education Transformation: a Socio-Economic Requirement



- In need of a systemic transformation approach: Change the System!
- Country Value
  - Increased competitiveness & economic development
  - Highly skilled citizens ready for the 21st century workplace
  - Improved social cohesion

* eg UNESCO, World Bank, OECD

“It is not the facts that are of chief importance, but the light thrown upon them, the meaning in which they are dressed, the conclusions which are drawn from them, and the judgments delivered upon them.”

– Mark Twain

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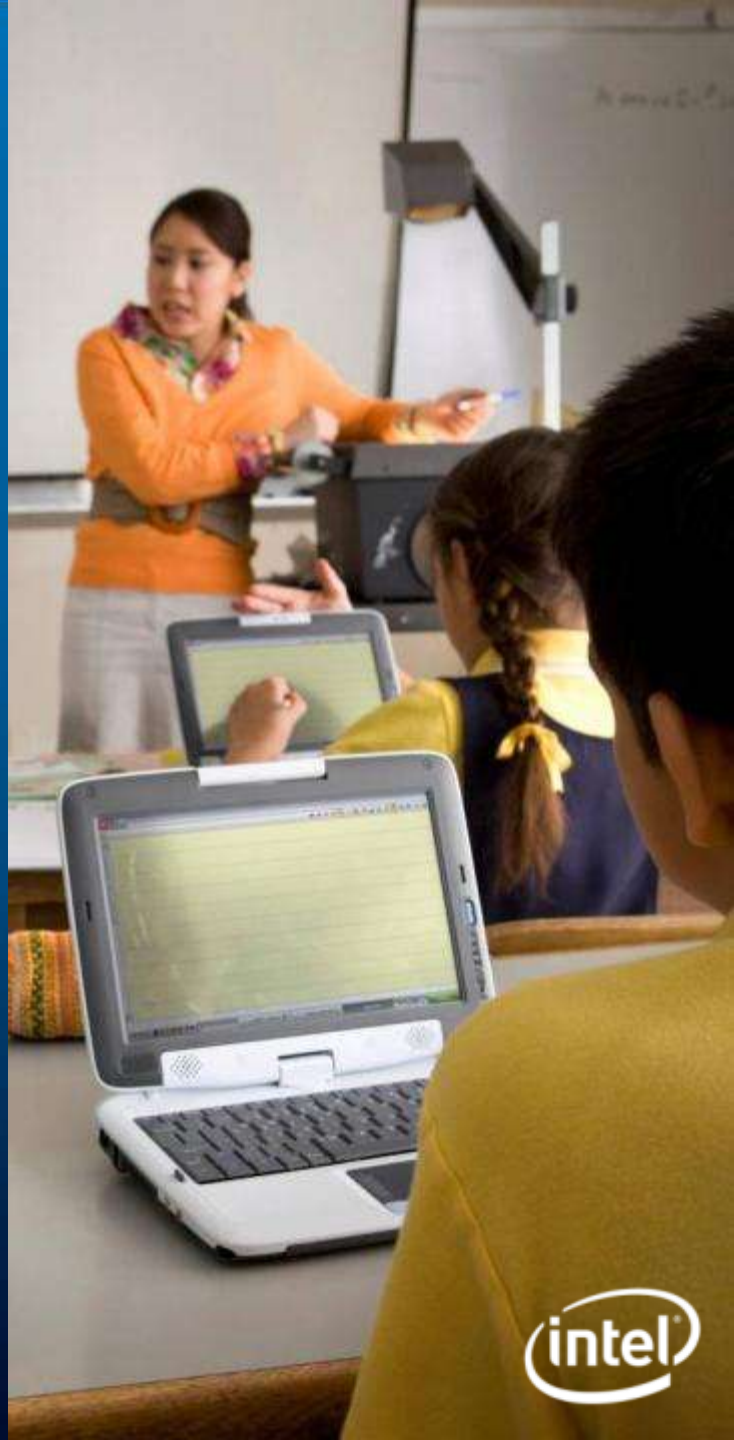
Systemic Education Transformation

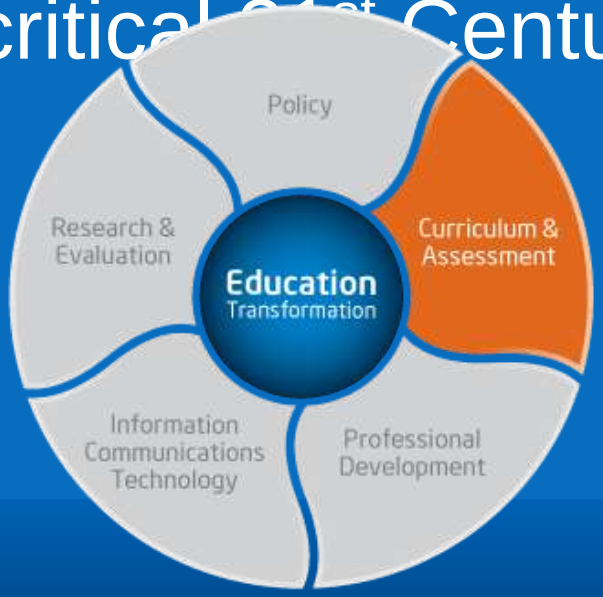
Policy

Policies aligned to education goals for student success ensure a systemic education transformation.



Curriculum & Assessment

Strong curriculum standards, robust assessment approaches and new digital media tools & resources provide students with critical 21st Century skills

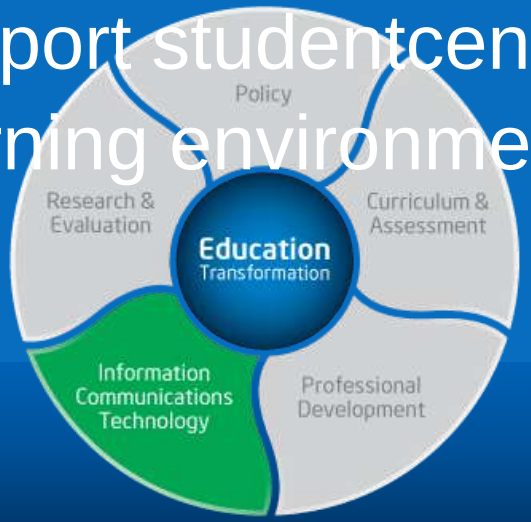


Professional Development

Provide teachers with the right tools and training to support a student centric learning environment.

Information Communications Technology

ICT is an essential foundation of education transformation, providing the tools needed to enhance teaching & learning and support studentcentered learning environments.



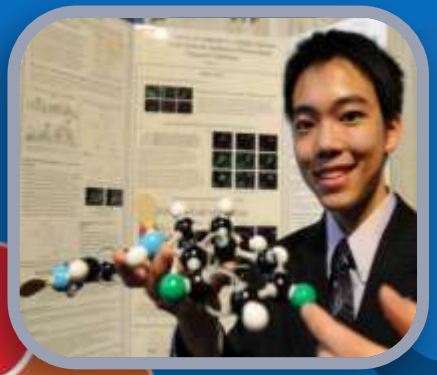
Research and Evaluation

Continuous improvement of education reform for sustainable education transformation.

Systemic Education Transformation

Education Transformation for Socio-Economic Growth

Access and Equality



Innovation

Socio-Economic Development

Employability & Entrepreneurship

Multi-Stakeholder Partnerships are Key

“Education is a fundamental human right. It provides children, youth and adults with the power to reflect, make choices and enjoy a better life. It breaks the cycle of poverty and is a key ingredient in economic and social development.”

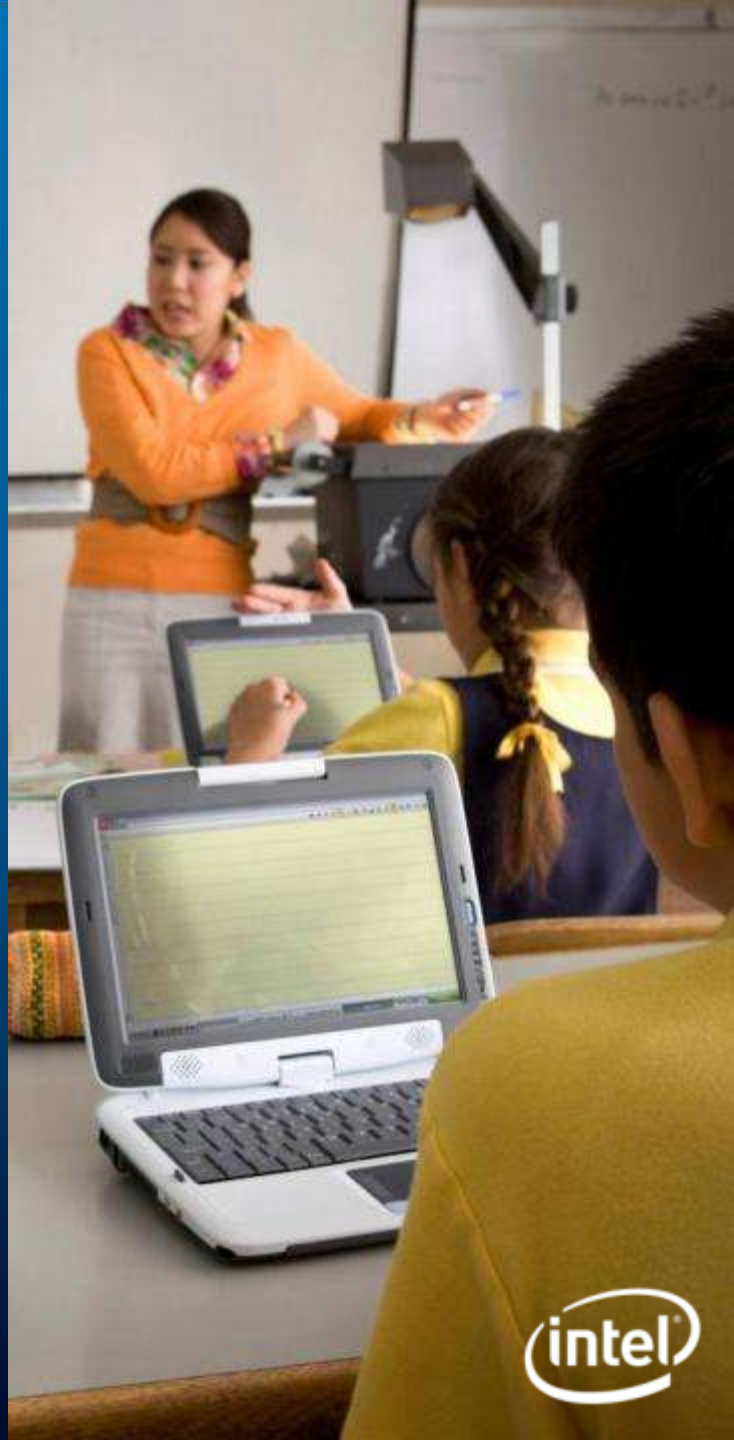
Thank You!

www.intel.com/education

Back Up

Policy

Policies aligned to education goals for student success ensure a systemic education transformation.



Evidence Centered Design

- Macro – Policy Level
- external environment, attempts to understand initiatives from the perspective of policy makers, their constituents, resource allocation, power relationships, political costs/benefits, and so on. Most reform initiatives have been and continue to be analyzed from this perspective.

- Meso – School Level
- internal organizational & sociocultural environment, the analysis of 'multi-stage', 'multi-actor complexities'.

- Microanalysis – Classroom Level
- interactions of participants with structures (i.e., resources). Connecting interactions with the creation of productive learning environments.

Policy Impact

- Difficulty in maintaining many large-scale policy reform initiatives:
  - Lack of understanding of schools as complex organizations and sociocultural entities.
- Sustaining policy-based initiatives:
  - Must be designed and understood at the classroom level
  - and secondarily at the School level.

Strong curriculum standards, robust assessment approaches and new digital media tools and resources provide students with critical 21st century skills

Curriculum Standards and Assessment

10 Attributes of a 21st Century Learning Environment

1. **Student centered systems**
2. **Clear standards and objectives**
3. **Robust formative and summative assessment systems**
4. **Continuous feedback improving students' learning**
5. **Support for 21st century skills**
6. **Inquiry-based learning approaches**
7. **Personalized learning**
8. **Digital media curriculum resources**
9. **Advanced open-ended learning tools**
10. **Online Managed Learning and Assessment Systems**

Student Learning Assessments

Type	Description	Example	Intel's Involvement
Benchmarking	Tests a population "sample" to help policy makers understand how their students score against other populations of students.	PISA. TIMSS, NAEP other	ATC21S- Provide research on the measurement of 21st Century Skills NAEP -Technology & engineering literacy at 8th grade level
"High Stakes" Summative	Provides students' scores for entrance / exit /school options.	National High School Exams; SAT, other	Opportunity for research from ATC21S to support integration of learning into these exams
Classroom Summative	Feedback given at the end of a unit to grade mastery of concepts and processes.	Performance Rubrics; Tests, End of Year Subject Exams	Intel Teach (Essentials; TEO, Teaching with Technology, TAO and Elements) help teachers' capacity/ skills in measurement of student learning and skills development
Classroom Formative	Feedback from learning activities used to adapt teaching approaches and meet the learner's needs. Helps students take responsibility of their own learning.	Observation, Checklists, Learning Logs, Self- assessments; Peer input; other	Intel Teach (Essentials; TEO, Teaching w Technology and Elements) help teachers understand and use formative assessment approaches ATC21S- supports research in this arena

Recommendations:

Standards, Content and Assessment must be well defined, aligned and integrated to ensure education transformation.

Summary

- **Standards**: Specify 21st Century skills and content knowledge in measurable terms.
- **Assessment:** Identify and address methodological and technological barriers to ICT-based assessment thru R&D.
- **Content:** Recommend ICT-enabled, classroom-based learning environments and formative assessments to support development of 21st Century skills.

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Assessments of 21st Century Skills:

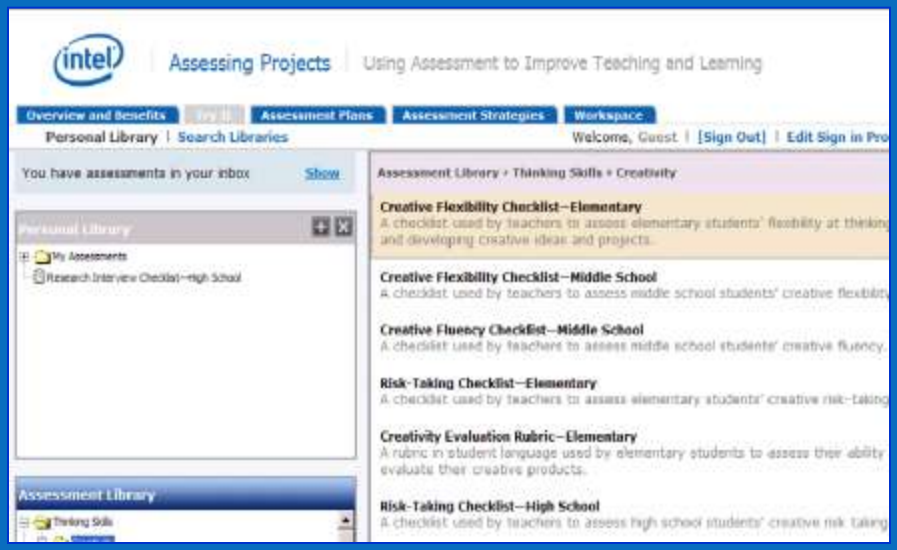
Summative:

- Provides concluding information on student's mastery of content, knowledge or skills.
- Allows students to construct responses to open ended items.
- Incorporates adaptability to novel situations.
- Is largely performance-based.
- Measures collaboration.

Formative:

- Provides information needed to adjust teaching and learning while they are happening.
- Informs both teachers and learners on progress.
- Makes students thinking visible

Intel Investment in Assessment



Please see backup slides for more details.

Research as Multi-Stakeholder Partnership

Mission: Strategic Research Framework to help transform teaching, learning & assessment of skills needed by students to succeed as citizens and workers in 21st century.

Team: > 260 researchers & practitioners
6 pilot countries: Australia, Finland, Singapore, UK, USA, Portugal

Endorsed by: OECD, IEA, UNESCO

2009/10: **5 Whitepapers**: 21st C Skills, Methodologies, Technologies, Learning Environment, Policy Frameworks.
2010/11: **Cognitive Labs, Trial, Pilots**
2011/12: Scale & link to **PISA, TIMSS**

ATCS 21
ASSESSMENT & TEACHING OF 21ST CENTURY SKILLS
THE UNIVERSITY OF MELBOURNE
CISCO | INTEL | MICROSOFT

ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT
OECD

IEA

Public Domain
www.atc21s.org

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Professional Development

Provide teachers with the right tools and training to support a student centric learning environment.

New Teaching Methods are Required in a Knowledge Economy

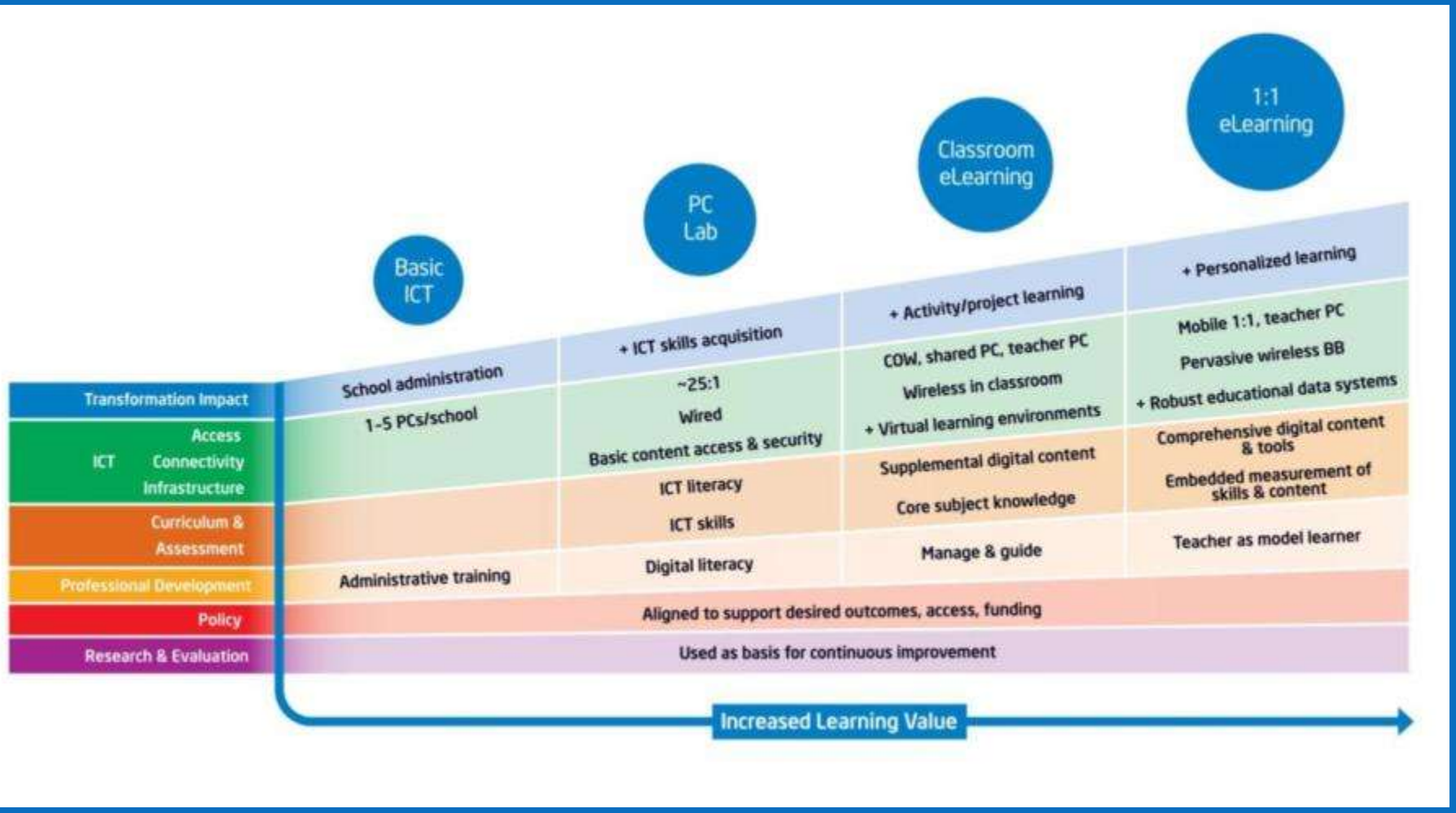
- Projects Based Learning
- Personalized
- Relevant Questions
- Engaging Learning
- Multiple Experts
- Collaborative Grouping
- Assessment across the instructional cycle
- Ensures students meet the standards

Technology Supports New Teaching Methods

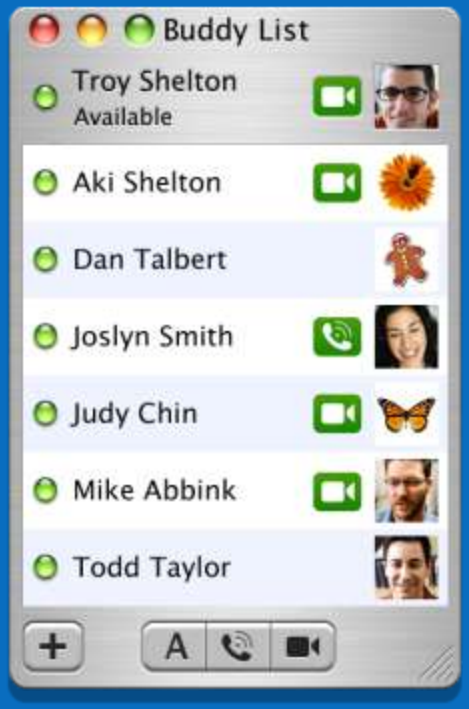
Approach	ICT Assists
Projects	Supports students in completing real world projects
Personalized	Provides student choice, differentiation
Expert Access	Connects to expertise beyond the school
Collaborative	Capacity for anytime interaction
Assessment	Longitudinal data and informing instruction
Standards attainment	Meaningful engagement helps kids learn

Information Communications Technology (ICT) is an essential foundation of education transformation, providing the tools needed to enhance teaching and learning and support student-centered learning environments.

ICT Integration Models



Individually



Sharing Content

In Virtual Communities

Be the CEO of your own personal brand.....

Research and Evaluation

Continuous improvement of education reform for sustainable education transformation.

Previous Findings

End of Training Benchmarks

A high percentage of teacher respondents indicate the training:

1. focused on integration of technology into their curriculum.
2. provided teaching strategies to apply with their students.
3. training illustrated effective uses of technology with students.

A high percentage of teacher respondents indicate they are prepared to:

1. implement teachings that emphasize independent work by students.
2. integrate educational technology into the grade or subject they teach.
3. support their students in using technology in their schoolwork.

Impact Benchmarks

1. A significant majority of teachers reported an increase use of technology for lesson planning and prep
2. A majority of teacher respondents indicate increased use of technology activities with their students
3. A majority of teachers use the unit/lesson they developed in training back in their schools
4. A simple majority of teachers increase use of project-based approaches in their teaching

Local story : Pakistan

"Yes it has made my teaching simpler and effective. Students' responses are better and they want to learn the new technology – it attracts everybody".

- Teacher, Pakistan

- Intel Teach Program was launched in 2002 with the Ministry of Education
- Trained 80,000 teachers to date across the Country
- First year evaluation activities included surveys, interviews & focus groups. Time, infrastructure & access were key challenges.
- However, 55% of the teachers identified the difficulty in Scheduling Time at the Computer Lab as a primary barrier.
- Punjab : Passed out a Policy for all CPP (Community Private Party Labs Owners – 102 of them) to allow access to all teachers and students in support of the Intel Teach to the Future Program.

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Local story : Philippines

"I must confess that I have fallen in love with the Intel Teach curriculum. As the days passed, I gained more skills and discovered more possibilities that the curriculum can offer to me. In turn, my students benefited much as I implemented what I have learned in Intel Teach."

- Candelario Garo, Philippines Professor

- Intel Teach is recognized as a main training component of the govt's major ICT projects; >100,000 teachers trained
- Promotes the development of learning communities that foster reforms in micro to mid-level to macro levels

- Strong private sector and government collaboration resulting in
  - Classroom innovations: 97% MT unit plan implementation rate in SY05-06
  - Institutional innovations: 41 top teacher education institutes integrating Intel Teach in curriculum

Recent Findings - The Intel® Teach Essentials Course and changing teacher practice in India, Turkey, and Chile

- **Supporting change at the school-level.** What are the factors that facilitate teachers' ability to follow up on the training with their students?

1. Pedagogical Objectives and Goals
   - The schools were able to translate a broad abstract vision, such as "student-centered learning," into a set of practical goals and objectives that were relevant to actual classroom practices and meaningful to teachers in their schools. And technology was seen as a learn tool that would support this vision.
2. Leadership
   - Leadership at various levels of the system is important if an innovative project is to take root and grow. (Meso & Macro)
3. Professional Development and Ongoing Support
   - For many, the tools and teaching strategies are new to many of the teachers in these schools. Therefore, both the quality of the professional development course and the presence of ongoing support for teachers in their classrooms are important.

Recent Findings - (Cont'd) The Intel® Teach Essentials Course and changing teacher practice in India, Turkey, and Chile

- **Supporting change at the school-level.**

4. Experimentation, Adaptation, and Critical Reflection
   - The case studies reveal the role a culture of experimentation plays in school wide change and its relationship to leadership, pedagogical goals, and professional development.
5. Time
   - Time needs to be viewed in two dimensions: (1) teachers' professional development and planning time and (2) students' time in the classroom or learning activity.
6. ICT Infrastructure
   - The case studies suggest that no single strategy will work for all schools with resource limits. Instead each school developed unique strategies
7. Financing and Sustainability
   - These schools attempt to do two things to manage sustainability of their ICT activities: first, they try to obtain resources from as many sources as possible, and second, they try to control the costs related to ICT activities.

Recent Findings – (Cont'd) The Intel® Teach Essentials Course and changing teacher practice in India, Turkey, and Chile

- **Changes in the learning environment.** Within each context, how are teachers able to follow

1. Changes in Teachers' Knowledge, Beliefs, and Attitudes
    a. *Teachers' beliefs shifted to a constructivist paradigm of teaching and learning.*
    b. *Teachers deepened their understanding of student-centered practices.*
    c. *Teachers improved their ICT knowledge and skills.*
2. Changes in How Students Engage with Content
    a. *Project-based work gave students a chance to collaborate, use multiple resources, and direct their own learning.*
    b. *Independent Internet research gave students autonomy and a chance to develop and share their own perspectives.*
    c. *Connecting school content to students' lives made learning more meaningful to students.*
3. Changes in Relationships among Teachers, Students, and Parents
    a. *Projects and ICT activities fostered collaborative relationships among students.*
    b. *New teaching strategies allowed teachers to develop more collaborative and interactive relationships with their students.*
    c. *Innovating with projects and ICT strengthened the relationships between the school, parents, and the community.*
4. Changes in the Use of ICT Tools to Promote Students' Learning

Where to Find the Resources

- Intel Corporate Affairs & Education: http://www.intel.com/education/
- Strategy & Research Library: engage.intel.com/index.jspa
- SRA Research & Policy Community: http://engage.intel.com/community/leadershiplearning
- Evidence of Impact: http://www.intel.com/education/evidenceofimpact/index.htm
- Evaluator Community: http://engage.intel.com/index.jspa
- EMPG Content and Collateral: www.intellearningseries.com/alliance
- World Ahead: Education: http://www.intel.com/about/companyinfo/worldahead/index.htm

Intel's Education Transformation Model

Intel Education Transformation Toolkit now available

For Business | For Home | Products | Support | About Intel

IT Center | Developer Center | Partners | Technology

Free Tools and Resources from Intel® Education

Intel offers free, easily integrated tools and teaching resources to support collaborative student-centered learning. Our online thinking tools provide active learning places where students can engage in robust discussions, analyze complex information, pursue investigations, and solve problems. You'll also find teaching resources such as exemplary lesson plans, assessment strategies, and technology-enriched project ideas for all K–12 subjects. Developed by educators, these free tools and resources support 21st century learning, with project-based approaches in the classroom.