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Innovations in Teacher Development for the Knowledge Age

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Ontario Institute for Studies in Education
University of Toronto
UNESCO’s Global Strategy in the Use of ICTs in Education

The strategy focuses on the following main goals:

- Ensure wider access to and equal opportunities for quality education for everyone at all levels

- Harness the potential of ICTs for building sustainable, equitable and inclusive knowledge societies and for reducing the digital divide;

- Develop, collect, disseminate and share policy guidelines, models of good practice and resources aimed at enhancing the quality, cost-effectiveness and efficiency of ICT use in education.
UNESCO’s Educational Policies and Priorities in E-learning for Teacher Development

Book:

Teacher Development in an E-Learning Age: A Policy and Planning Guide

(UNESCO authors: Anderson, Bates, Breuleux, Khvilonn, Laferriere, Lamon, Patru, Resta, Rumble)
UNESCO: Education for All - 2015

Challenges for teacher development

- The quantitative demand
- The qualitative demand
The Quantitative Challenge: Global Teacher Shortages and Teacher Education

- The “Education for All” Global Monitoring Report 2002 estimates that a minimum of 15 to 35 million teachers will be required by 2015 (may be an underestimate based on the ravages of HIV/AIDS)

- Two-thirds of the world’s 60 million teachers live and work in developing countries

- Teaching is no longer viewed as an attractive profession

- Critical need to invest in teacher education
The Qualitative Challenge: Education for the Knowledge Society

- Knowledge has become a principle force in social transformation
- Leaders of virtually all countries have professed their desire to transform their countries into learning economies and knowledge societies
- Reciprocal relationship between technological and social innovations
- Teaching for 21st century skills
Research: e-learning as a solution for long standing problems

- Improving teachers’ domain-specific knowledge through new tools
  - Online materials (Fisher, 2003)
  - Web-based portals (Linn et al., 2004)
  - Simulations (e.g., Nunes et al., Sao Paulo)
  - Telementors (e.g., O’Neill et al., 2003)
  - Video cases of exemplary practices (e.g., http://ikit.org/mvt)
  - Interactive WWW technologies (e.g., collaborative blogs, Wikis)
Research: e-learning as a solution for new problems

- Innovation in teacher education to prepare teachers to design creative curriculum for teaching students 21\textsuperscript{st} century knowledge and skills (e.g., collaboration, teamwork, creative problem solving, leadership, high levels of literacy, working with knowledge)

- Integration of pedagogical content knowledge and technology
Essential Conditions for E-Learning in Teacher Development

- Shared Vision (stakeholders)
- Access (MIT - computer)
- Skilled Teacher Educators (model new approaches for learning)
- Professional Development (lifelong learning)
- Technical Support (ongoing)
- Content Standards and Curriculum Resources (explosion of information - teacher not the main source)
- Teaching for Deep Understanding (new approach for teaching and learning)
- Assessment (formative and summative)
- Support Policies (time, incentives)
Our Approach

- Ecological approach to the study of change: The concept of information ecology as “a system of people, practices, technologies, and values in a local environment” (Nardi & O’Day, 1999, p. 49)

- Pioneers’ and early adopters (Rogers, 1995)

- Research results (multiple teaching approaches and research methodologies for the seven continents)
Communication

Professional (CoP): Knowledge building, reflective

Enriched: Within a course or programme

Little or no human communication

Content not organized for instruction
Pre-structured content, within a course
Co-constructed content and meaning

Information Repository

Online (Distance) Courses

Hybrid (Extended) Courses

Networked Communities
Information Repositories

- Quick development
- Inter-changeability
- Individualized learning

Concerns

- Access to high quality, culturally relevant content
- Not used even by those who create them
Online courses

- Participate in the course using the Internet and the Web
- Content pre-structured by the teacher
- Some communication with the teacher
- Communication with peers via e-mail or other communication tools that may be embedded within the Web environment
- Content Management Systems
What is a Hybrid Learning Environment?

- Students use online resources and tools and also meet face-to-face on campus as members of the same class or program.

- The Web has become the technology of choice:
  - Electronic versions of lectures, handouts, learning assignments, exemplars and/or artifacts, links to supplemental learning resources.
  - Tools for collaboration, discussion, and joint problem solving.
Why Is Hybrid Learning Important?

- **Time**
  - Flexibility, savings, convenience
  - Extended opportunities for engagement

- **Twenty-first century skills**
  - Exchanging real-time data
  - Deliberating alternative interpretations
  - Using collaborative tools for progressive problem solving

- **Emphases from learning sciences on**
  - Learners and learning
  - Knowledge
  - Assessment
  - Community
How Hybrid Learning Environments Work

- The integration of domain-specific knowledge and pedagogy with technology
- The transformation of pre-service teachers’ beliefs about learning and teaching
- The conduct of learning in real-world contexts
The Web-supported teacher educator’s classroom

- Learning materials put online are dynamic
- Learning contexts are linked
- Discourse extends beyond the walls of the classroom
- Teacher educators uncover the potentials and challenges of pre-service teachers interacting online for reflection purposes
- Teacher learners become online contributors to school learners’ and to their peers’ learning
Requirements

- Network Access
- Visioning and resource allocation
- Faculty Awareness and Support
- Student Recruitment
- Retention and learner satisfaction
Teacher Networked Communities

- Webs of relationships growing from computer-mediated conversations
- A group united by a shared sense of purpose, concerns
- Teachers who share a common connection (e.g., teachers working in the same school or district)
- Teachers who differ in certain ways (e.g., teachers in different geographical locations)
Stages in teachers’ adoption of ICT (Laferriere et al, 1997)
## Characteristics

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<th>Formal</th>
<th>Non-formal</th>
<th>Informal</th>
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<tr>
<td>Organization</td>
<td>Universities/normal schools</td>
<td>School/District/Professional association based</td>
<td>School/District / Professional association/interest based</td>
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<tr>
<td>Goal</td>
<td>Accreditation</td>
<td>Learning specific content or strategies</td>
<td>Becoming a member of a community of practice</td>
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<tr>
<td>Content</td>
<td>Mainly structured curricula</td>
<td>Negotiated</td>
<td>Constructed meaning through dialogue and shared activities</td>
</tr>
<tr>
<td>Structure</td>
<td>Course/program completion</td>
<td>Completion of the specified goal</td>
<td>Sustained participation as a manifestation of interest</td>
</tr>
<tr>
<td>Access</td>
<td>Local and national standards</td>
<td>Curricular and pedagogical resources</td>
<td>Teaching communities and their shared repertoire of resources</td>
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<tr>
<td>Knowledge</td>
<td>Declarative Knowledge – knowing that</td>
<td>Knowing that and knowing how</td>
<td>Tacit Knowledge – knowing how</td>
</tr>
<tr>
<td>Leadership</td>
<td>Course instructor</td>
<td>Moderator probably pre-ordained</td>
<td>Guidance based on experience</td>
</tr>
<tr>
<td>Timeline</td>
<td>Course/program</td>
<td>Limited</td>
<td>Potentially ongoing</td>
</tr>
<tr>
<td>Community</td>
<td>Class/course</td>
<td>Learning community</td>
<td>Community of practice</td>
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Informal and Non-formal Teacher Networks

- To support teacher development for 21st century skills
- To improve teacher learning
  (from transmission to socio-constructivist approaches)
- To share experiences, resources, teaching strategies
- To provide informal/non-formal modes of learning
- To encourage cross-sector collaboration for mentoring
  (teachers, pre-service teachers, teacher educators)
Learning Communities

- Groups are organized around a task and members work for a set period of time.
- Goal is to use communal diversity to achieve deeper understanding of issues, find solutions, or complete a task that would be beyond an individual’s capabilities.
- Allows for brief but intense interactions in which an individual identifies strongly with the task, partners, and supporting organization.
- Product is generally a static, inert report.
Communities of Practice

- These are larger groups with shared goals that provide members with richly contextualized and support for learning.
- Focus is on the evolution, preservation, and reproduction of the common or shared understandings of the group.
- Knowledge is shaped as a consequence of modifying practice.
- Product comes in the form of participatory knowledge.
Knowledge Building Communities

- The focus is on the production of external knowledge or cultural artifacts about practice.

- Knowledge is to be recorded and shared, but may be separated from its immediate use or context. (ideas, theories exist as semi-autonomous artifacts)

- Product is dynamic, living documents for the purpose of allowing reuse, improvement and rising above.

- Community knowledge and collective responsibility drives individual knowledge building and vice versa)
Examples

Learning Communities
  I*Earn

Communities of Practice
  Tapped-In

Knowledge Building Communities
  Knowledge Society Network
  L’école éloignée en Réseau
  Institute for Child Study
Essential Conditions
Networked Communities

- Initial Face to Face Contact to Establish Trust
- A Collaborative Software Environment
- Begin with a Specific Goal
- Ensure a Growth Mechanism
- School/District/National Recognition
Challenges of E-learning for Teacher Development

- Understanding the gap between the potential and reality of technology

- Understand key planning and policy issues in use of e-learning for teacher development such as:
  - Access
  - Adoption: new pedagogical models and tools
  - Effective uses
  - Assessment at the micro, meso and macro levels
Implications for policy makers

- Focus on capacity building for hybrid learning environments and teacher networks

- Keep in mind that Web-supported innovation has two facets: information access and collaborative work

- Initiate innovation-oriented educational research & development programs that emphasize twenty-first century knowledge and skills, blended learning environments, and partnerships
  - Design experiments
Barriers

- Research Culture and Practitioner Culture Divide
- Cost?
- Transition from a teacher-centred or a learner-centred to a knowledge-centred environment
UNESCO Resources

www.unesco.org/education