Highlight

Learning from national ICT/education agencies
Over 100 education policymakers from 32 countries gathered early October in Seoul to share lessons, experiences and opinions in response to the following question: How should an education system structure itself to meet new challenges and take advantage of new opportunities related to the use of ICTs, and what roles and responsibilities could/should a dedicated ICT/education agency or unit play?

News & Events

Educating the educators: Capacity-building essential for successful ICT in Education
“Capacity Building for ICT in Education”, an infoDev-commissioned paper, says most South Asian nations need to complement their basic ICT4E infrastructure needs, such as computers, connectivity, and physical resources, with investment in mass-based learning networks, content support and development initiatives.

UN concludes workshop to strengthen ICTD education in the Asia-Pacific
The UN Information Communication Technology Hub for Asia-Pacific looks to strengthen coverage of Information and Communication Technology for Development (ICTD) in Higher-Learning Institutions.

Increased use of technology by K–12 teachers has positive effects on perceived student learning, study says
A new study dispels myths about teachers’ experience with technology and its effectiveness in the classroom.

UNESCO and University of Pretoria collaborate to improve information literacy of teachers
UNESCO and the University of Pretoria continue their collaboration in community development with the new initiative aimed at testing UNESCO’s ICT Competency Standards for Teachers and Draft Media and Information Literacy (MIL) Curriculum for Teachers.

Science education for children using the TV magazine
"I Got It!" is a unique co-production and capacity building project about science for children managed by broadcasters from Southeast Asian countries in cooperation with the Goethe-Institut. The project encourages all participants to produce edutainment content at the local level and especially for young audiences and facilitates professional and cultural exchange between ASEAN countries.

USAID, Cisco & World Learning to promote entrepreneurship and ICT Education
The collaboration will work through the Cisco Entrepreneur Institute and Cisco Networking Academy—programs that provide entrepreneurship and ICT education, mentoring networks, and technology resources—to help individuals develop and manage successful businesses.

Job announcement: Programme Officer
UNESCO Bangkok is seeking a Programme Officer for its ICT in Education Programme.
Programmes & Projects

ICT resources centres for special needs education
Portugal has been very innovative in the past years to fulfil inclusive education for children and youth with special needs by using ICT.

Resources

Using ICTs to promote education and employment opportunities for immigrants and ethnic minorities
The report gives examples of various initiatives all over Europe illustrating that ICT contribute to the social and cultural integration of immigrants and ethnic minorities (IEM); facilitate the successful integration of migrant children and youth into Education and Training; and enhance vocational training and employment opportunities.

Delivering coherent ICT policies in developing countries
This paper asks the question what national ICT policies have achieved in developing countries since they originated in the 1970s.

The end of techno-critique: The naked truth about 1:1 laptop initiatives and educational change
This article responds to a generation of techno-criticism in education. It contains a review of the key themes of that criticism.

The pedagogical enhancement of open education: An examination of problem-based learning
This paper defines problem-based learning in the context of open education. Unique challenges are presented and discussed alongside possible solutions, realistic limitations, and calls for implementation in the future to test validity.

Free Technology Academy
The Free Technology Academy (FTA) consists of an advanced virtual campus with course modules that can be followed entirely on-line. The learning materials are Open Educational Resources that can be studied freely, but learners enrolled in the FTA will be guided by professional teaching staff from the participating universities.

Science Books Online
Science Books Online lists free science e-books, textbooks, lecture notes, monographs, and other science related documents. All texts are available for free reading online, or for downloading in various formats.

Highlight

Learning from national ICT/education agencies
Over 100 education policymakers from 32 countries gathered early October in Seoul to share lessons, experiences and opinions in response to the following question:

How should an education system structure itself to meet new challenges and take advantage of new opportunities related to the use of information and communication technologies, and what roles and responsibilities could/should a dedicated ICT/education agency or unit play?

This was the theme of the fourth global symposium on ICT and education, an annual event that the World Bank has co-sponsored with the Korean Education & Research Information Service (KERIS) and the Korean Ministry of Education, Science and Technology (MEST) and other partners, including UNESCO Bangkok, Intel and the IDB. (Proceedings from previous symposia are available here, here, here and here.)

This global symposium was believed to be the first ever global gathering of leaders of national ICT/education agencies (and their equivalents) from OECD, middle income and low income countries to share information about what is working, and what isn’t, and possible roads ahead, especially as it relates to the development of institutions dedicated to directing the implementation of initiatives in this area.

While the event was targeted for participants from medium and low income countries, the first day featured presentations from OECD countries whose national ICT/education agencies have been (or are being) dissolved, radically downsized or re-structured (UK, Australia, Japan), and one from a country (Korea) whose national agency which has escaped such a fate, as a way to highlight potential future challenges for similar institutions emerging in less developed countries, and potential responses to such challenges.

One key difference between the experience of the national agency in Korea and those in Australia, Japan and the UK was that funding for KERIS was written into the national law related to education to embed it firmly within the structures of the existing education system, help to ensure that it would be less susceptible swings in opinion by political leaders over time. (For more comments on this topic, please see a related blog post from Keith Krueger of CoSN.)

Prior to this year’s event, many countries -- especially in Asia -- had expressed an interest in "setting up an national institution like KERIS", and so specific attention was paid to lessons learned from the KERIS experience. Multiple sessions examined the development of national institutions in Korea to implement ICT/education initiatives in order to provide participants with a more granular exposure to various aspects of the Korean experience.

Separate sessions focused on KERIS included: (a) how KERIS, the national ICT/education agency, was conceived and started; (b) on what KERIS does today and how; (c) a roundtable discussion with the president of KERIS and his key lieutenants in areas such as education management information systems (EMIS); educational resources and portals; open courseware; and forward-looking research; and (d) a site visit to KERIS headquarters.

In recent years KERIS has engaged with numerous developing countries to share its experiences more widely, and has established many partnerships with emerging national initiatives in other parts of the world.
One of the goals of this year's global symposium was not only to further enable existing channels for knowledge sharing between leaders of national ICT/education efforts within Asia that go back many years (UNESCO-Bangkok has played a key role in animating such discussions over the past decade, and has published a series of related toolkits), but also to expose institution leaders in Asian countries to the rich experiences in Latin America related to ICT use in education. To this end, the Inter-American Development Bank was brought on as a partner in the event, and a number of cases from South America were highlighted. The cases of Chile and Uruguay were specifically cited by Asian participants as of keen interest, and a number of connections were established between these South American countries and Asian counterparts for knowledge exchange going forward.

It will be especially interesting to see what sort of linkages may be formed going forward between Korea and Uruguay, two emerging regional hubs for knowledge sharing on implementation issues related to the large-scale use of educational technologies, and how lessons from these two countries may impact and inform strategic decisions in other countries around the world.

As a result of this global symposium, case studies of countries identified by participants from Asia as of keen interest and relevance will be collected together into a publication that will serve as a companion document to this event. This publication will come out some time in mid-2011; profiles of these cases will be featured on the EduTech blog as they are completed. Going forward, it expected that the annual global symposium in Seoul may be linked thematically each year to an annual minister-level event in Asia on ICT/education issues convened by UNESCO-Bangkok 

Of potential related interest:

KERIS regularly publishes numerous white papers and other reports in English as a way to share lessons learned with a broader, international audience.

- White papers
- Annual reports
- Overview of KERIS's activities
- Contacting KERIS about possibilities for international cooperation

A number of the items and issues discussed during the symposium were previously featured on the World Bank's EduTech blog. For the convenience of participants in Seoul, some of these have been collected together here for quick access:

- The blog post that inspired this year's event: Building national ICT/education agencies
- ICT & Education: Eleven Countries to Watch -- and Learn From
- Learning from Becta
- Uruguay's Plan Ceibal: The world's most ambitious roll-out of educational technologies? and two other posts about Uruguay; What happens when *all* children and teachers have their own laptops and How do you evaluate a plan like Ceibal?
- Linking up with Enlaces (Chile)
- **One Mouse Per Child**
- **Worst practice in ICT use in education** and **Failing in public -- one way to talk openly about (and learn from) ‘failed’ projects**
- **Ten comments on 1-to-1 computing in education**
- **Comparing ICT use in education across countries**
- There have also been many posts about **impact and evaluation**

Also:

- European Schoolnet published a [Compendium of ICT in Education Networks](link to PDF) over the summer.
- The most complete discussion of the Australian experience can be found in the doctoral dissertation of Gerry White (one of the speakers at this year's event), *Diffusion of ICT in education and the role of collaboration: a study of EdNA*.

Author: Michael Trucano, The WorldBank

**Further information:**

- [Learning from national ICT/education agencies](link to resource)

**Related links:**

- [EduTech - A World Bank Blog on ICT use in Education](link to blog)

**Previous issues of the e-newsletter:**

- [UNESCO "ICT in Education" Announcement e-newsletter](link to newsletter)

**What do you think about this topic?**

- [Visit our on-line forum and share your views](link to forum)

**News & Events**

**Educating the educators: Capacity-building essential for successful ICT in Education**
Simply putting ICT in the classroom is not enough for ICT4E (information and communication technology for education). Even the best policies and sophisticated technologies will fail to reach their full potential if teachers, administrators, and students don’t know how to get the best out of them.

*Capacity Building for ICT in Education*, an infoDev-commissioned paper by Price Waterhouse Coopers India, says most South Asian nations need to complement their basic ICT4E infrastructure needs, such as computers, connectivity, and physical resources, with investment in mass-based learning networks, content support and development initiatives.

The third essay accompanying the *Survey of ICTs for Education in India & South Asia*, *Capacity Building for ICT in Education* states that the focus in education needs to shift from the teacher to the learner. Integrating technology into education certainly helps switch to a more student-centered pedagogy. However, encouraging digital literacy and providing computers are necessary but insufficient conditions for success.

The *infoDev / PWC India* report identifies the main challenges to ICT4E capacity-building in South Asia:

- Increase in the use of ICT in education has not occurred at the same pace as the increase in overall ICT infrastructure, and the overall increase in ICT availability has not yet reached a stage of providing access to most people in South Asia
- Absence of integration and interaction across the South Asian region restricts sharing of information resources and creates duplication of efforts, resulting in ineffective use of ICT
- Absence of trained teachers of high quality and calibre
- Restrictive access to ICT facilities results in a lack of ICT enablement
- Absence of authentic and adequate data on access and use hampers policymakers
- Narrowly focused interventions limit the overall gain from ICT and miss the broader vision and goals of the sector
- Continued need for a minimal level of physical and complementary infrastructure
- Low use of ICTs’ potential

The basic requirements for access to ICT4E are infrastructure, financial resources, and legal frameworks. Notwithstanding these challenges, South Asia also has significant geographic, cultural, and economic resources that help capacity-building.

This thematic essay is one of five that accompanies the *Survey of ICTs for Education in India & South Asia*. By gathering and comparing on-the-ground information from eight countries, illustrating successes and challenges, and drawing out key lessons learned, this survey helps decision-makers to plan, coordinate, implement and evaluate successful ICT4E initiatives in India, South Asia and beyond.

Stay tuned for the two remaining thematic essays on ICT in primary and secondary education, and policy coherence to be released on the Survey website in the coming months!

**Further information:**
Educating the educators: Capacity-building essential for successful ICT in Education

Related links:

- ICT4E in India and South Asia - Capacity Building for ICT4E
- ICT4E in India and South Asia - Extended Summary
- ICT4E in India and South Asia - Full Report
- Innovating and improving education through ICTs

Previous issues of the e-newsletter:

- UNESCO "ICT in Education" Announcement e-newsletter

What do you think about this topic?

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UN concludes workshop to strengthen ICTD education in the Asia-Pacific

Over seventy governments and higher-learning institution participants from the Asia-Pacific region concluded a curriculum enhancement workshop organized by the United Nations Information Communications Technology (ICT) capacity development hub.

The Asian and Pacific Training Centre for Information and Communication Technology for Development (APCICT) - a regional institute of the Economic and Social Commission for Asia and the Pacific (ESCAP) - concluded on 9 November 2010 the Consultative Workshop, “Turning Today’s Youth into Tomorrow’s ICTD Leaders.” held during the Asia Economic Community Forum (AECF) in Incheon, Republic of Korea.

The workshop included 75 participants from 29 countries and sought to enhance the coverage and quality of teaching the use of ICT for socio-economic development in institutions of higher-learning in the Asia-Pacific region.

Youth represent over half the population of the Asia-Pacific region. Recent research has indicated that universities and other higher-learning institutions in the region responsible for training them, lack adequate content of ICT for development in their curricula. Programmes and courses that are best suited to provide training and impart knowledge about the use of ICT for socio-economic development either do not cover ICTD or address it in a manner that does not sufficiently identify the potential of ICT. To achieve the
development goals of the coming decades, the future leaders and workforce of the Asia-Pacific region must have the requisite set of ICT knowledge and skills.

The workshop brought together policymakers and experts in the field of ICTD education to examine the existing gaps in ICTD coverage in university curricula and propose solutions that will meet the capacity needs of the region’s youth and future leaders.

“Nurturing and developing the next generation of leaders is a top priority for all the participants of this timely workshop”, said Secretary Sunil Jayantha Nawaratne, of the Ministry of Higher Education of Sri Lanka. “We, as part of today’s leadership, owe it to our youth to provide them with the ICT skills and knowledge to meet the development challenges and opportunities presented by this digital era”.

The workshop marked an important step in APCICT’s project “Strengthening ICTD Education in Institutions of Higher Learning”, which aims to raise the awareness of the importance of ICTD education in tertiary education through advocacy to policymakers, governments and networks of relevant partners in the Asia-Pacific region. Mandated to develop the ICT capacity of countries within the region, APCICT has been working to meet the demands of ESCAP member-States for enhanced ICTD training and education of the region’s youth.

“As a United Nation’s ICTD hub in the region, APCICT understands that effective and sustainable ICT capacity building initiatives must consider and include every demographic group within the region – be it women, persons with disabilities, or youth”, said Dr. Hyeun-Suk Rhee, Director of APCICT. “This workshop and the consensus it has built is an essential first step in working to create curricula that will meet the future needs of the region’s next generation of leaders”.

In addition to creating consensus and outlining a plan to fill the ICTD education gaps that exist, participants of the consultative workshop also agreed to identify national focal points who will advocate at the national level for the need of a comprehensive ICTD learning regimen in tertiary education institutions.

APCICT will work with the project’s focal points to incorporate inputs from government and other agencies responsible for development of curricula towards refining an ICTD learning module that can be used at institutions of higher learning to either provide core training, or supplement existing course materials. APCICT intends to finalize and launch the learning module in June, 2011, during APCICT’s fifth anniversary.

Twenty ASEAN exchange students participated in the Consultative Workshop, nine of whom spent two months in Incheon as part of APCICT’s Young ICTD Leaders Programme. The workshop was an official parallel event of the AECF, which is a regional forum that brings together leaders from Asia and the world to explore the identity of Asia and discuss the future economic direction of the region.

Further information:
• **UN concludes workshop to strengthen ICTD education in the Asia-Pacific**

Related links:

• **UNAPICT**  
  UN ICT Hub publishes ICTD Briefing Note Series  
  UN training programme helps Cambodia bridge digital divide  
  UN launches remote training on information communication technology for development  
  UN teams up with Indonesia to develop ICT training in the country: First four workshops in the national language to take place in Bali and Jakarta  
  UN works with the Philippines to close the digital divide  
  UN works with Mongolia to close the digital-divide

Previous issues of the e-newsletter:

• **UNESCO "ICT in Education" Announcement e-newsletter**

What do you think about this topic?

• **Visit our on-line forum and share your views**

**Increased use of technology by K–12 teachers has positive effects on perceived student learning, development of 21st century skills, study says**

An increased use of technology in the classroom by K–12 teachers yields a perceived positive impact on student learning, engagement and the development of 21st century skills, according to the study *Educators, Technology and 21st Century Skills: Dispelling Five Myths*. The report was released today by The Richard W. Riley College of Education and Leadership at Walden University during the International Society for Technology in Education annual conference and exposition (formerly known as NECC) in Denver.

The Riley College of Education and Leadership commissioned the survey of more than 1,000 U.S. K–12 teachers and school administrators to determine whether classroom teachers and school administrators believe that using technology and fostering 21st century skills benefit their students.

Core findings of *Educators, Technology and 21st Century Skills: Dispelling Five Myths* include:
• Teachers who use technology frequently report greater benefits to student learning, engagement and skills from technology than teachers who spend less time using technology to support learning.

• Teachers who completed their initial certification or licensure since 2000 do not believe their pre-service programs taught them how to teach 21st century skills or how to effectively incorporate technology into instruction.

• There is little association between a teacher’s years of experience and the frequency of technology use in the classroom.

The findings reveal perceived differences related to teachers’ use of technology in the classroom and the impact of technology on perceived student learning.

“This study underscores the growing importance of integrating technology instruction into our educational programs while at the same time ensuring that our future educators are prepared to teach 21st century skills to students nationwide,” said Dr. Kate Steffens, dean of the Riley College of Education and Leadership.

Classroom Instruction, Professional Development Implications

“Using technology alone is not enough for students,” said Cindy Johanson, executive director of The George Lucas Educational Foundation, publisher of Edutopia. “Training teachers to effectively integrate technology in the classroom will help engage students and create an interactive learning environment.”

Teachers believe advanced training and certification programs do a better job at preparing them to incorporate technology into their instruction than pre-certification or licensure training, the study found.

“This study firmly shows that continued technological education throughout a teacher’s career is vital to providing students with the skills they will need for future careers,” said Anne Bryant, executive director of the National School Boards Association. “This survey shows that school boards need to be as intentional and purposeful as possible in supporting increased technology integration in schools.”

Technology engages many types of students regardless of learning style, language barriers and academic needs, teachers and administrators report.

“This study is important, because it underscores the critical role individual teachers play in effective implementation of educational technology,” said Douglas Levin, executive director, State Educational Technology Directors Association. “High-quality teacher preparation and professional development can make all the difference.”

While administrators reported seeing the benefits of technology use for students, teachers’ perception of administrator support for classroom technology use varies.
“Education and education technology leaders have a responsibility to provide a vision around powerful use of technology to transform learning, and they must model it with their actions,” Keith Krueger, CEO of the Consortium for School Networking added.

For a full copy of the report, visit www.WaldenU.edu/FiveMyths.

Further information:

- Increased Use of Technology by K–12 Teachers Has Positive Effects on Perceived Student Learning, Development of 21st Century Skills

Related links:

- New UNESCO publication: ICT transforming education: A regional guide
- How can education meet 21st century demands in the workplace?
- Gateway to 21st Century Skills
- Standards for the 21st-century Learner by AASL

Previous issues of the e-newsletter:

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UNESCO and University of Pretoria collaborate to improve information literacy of teachers
UNESCO and the University of Pretoria continue their collaboration in community development with the new initiative aimed at testing UNESCO’s ICT Competency Standards for Teachers and Draft Media and Information Literacy (MIL) Curriculum for Teachers. Two training courses for teachers from Kgoro Primary School, situated in the township of Zithobeni (South Africa), recently took place in the framework of this initiative.
The Zithobeni community is situated approximately 70 kilometres from Pretoria and is disadvantaged in terms of social and economic life. Most people stay in informal settlements, are unemployed and illiterate, which makes it difficult for parents to pay school fees and to engage in academic matters of their children. Kgoro Primary School has programmes on HIV and AIDS, and holds regular awareness activities. It is also challenged by the high rate of learners who are orphans.

Against this social context, the teacher training at Kgoro Primary School was initiated bearing in mind the potential advantages of ICT and Internet for teachers from a developing community, and the challenges and barriers they may face. Advantages of such a project include access to vast resources of information that teachers can tailor to their circumstances, enhancing the quality of teaching, and learning from international expertise.

The content of the courses was adapted according to the UNESCO MIL Curriculum. The main challenge of the information literacy component was to teach Internet search skills in a limited time frame to people who are working fulltime, so that the use of ICT becomes an integral part of their work practices in the future.

The teachers from Kgoro School were highly dedicated to following the training sessions and sharing knowledge. Their feedback will be used to prepare recommendations to UNESCO on how to better align its Curriculum to the needs and expectations of teachers who are employed fulltime and enter the training as experienced and working adults.

On 27 October 2010 a special ceremony took place at Kgoro School during which the teachers who successfully completed the training received their certificates. According to Ms Phoofolo, the headmistress of Kgoro School, the ICT knowledge is now fully applied and adopted. “ICT is becoming standard practice even for those who did not attend the training programme,” she says. Teachers were empowered both on a personal level and as development agents for Zithobeni, and there is now a shift from paper work to computerised activities.

Further information:

- UNESCO and University of Pretoria collaborate to improve information literacy of teachers

Related links:

- UNESCO and partners set up ICT competency standards for teachers
- Teacher-Training Curricula for Media and Information Literacy
- ICT competency standards for teachers: competency standards modules
- ICT competency standards for teachers: implementation guidelines, version 1.0
- ICT competency standards for teachers: policy framework
Previous issues of the e-newsletter:

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What do you think about this topic?

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Science education for children using the TV magazine

Universe, galaxy, aliens, sugar, human body, health, and children......

What is the relationship between these words?

These are the main issues of the video clips screened at the Executive Meeting on Co-production of a Regional TV Edutainment Magazine, “I Got It!”, held on November 8, 2010 at UNESCO Bangkok and co-hosted by Goethe-Institut.

"I Got It!" is a unique co-production and capacity building project about science for children managed by broadcasters from Southeast Asian countries in cooperation with the Goethe-Institut. The project encourages all participants to produce edutainment content at the local level and especially for young audiences and facilitates professional and cultural exchange between ASEAN countries.

At the meeting the decision makers and production teams of various television stations in already networked countries as Cambodia, Indonesia, Lao PDR, Malaysia, the Philippines, Thailand, and Vietnam and newcomers like Brunei and Myanmar were invited to review the first season of 2010, share their experience/feedback from their country, and discuss issues such as new approaches for cooperation, financing, and timeline for the next season in 2011.

The Malaysian broadcasting team showed a new episode about the universe and it was utilised to get feedback from the other countries. Most of the participants gave positive feedback on the episode and the piece was used further in the workshop which followed the meeting.

Ms. Susanne Ornager, UNESCO Advisor for Communication and Information in Asia, expressed UNESCO’s interest in the project saying that “Children need to be empowered to participate in the development processes. “I Got It!” specifically focuses on the similarities and the differences between various cultures in emphasizing cultural and spiritual identities of children in ASEAN countries. This series also intends to open the mind to the cultural diversity”.
Mr. Norbert Spitz, the Director of Goethe-Institut Thailand, highlighted the importance of capacity building and collaboration between the parties including UNESCO. Asia-Pacific for Institute for Broadcasting Development (AIBD) and the ASEAN Foundation also participated in the meeting to explore the possibility of cooperation with the other parties. They were actively involved in all sessions of the meeting delivering their opinions and finding opportunities for being future potential partners. The Memorandum of Understanding (MOU) was signed by all participant countries and Goethe-Institut. The MOU consists of six articles which deal with the cooperation between the parties and allocation of the production. All parties pledged their commitment to the project. After this meeting, participants spent four more days brainstorming on potential topics for the next season and the production timeframe. Each country will produce from two to four new episodes.

Science education has been a special theme in UNESCO since its inception and particular emphasis is given to promoting the importance of science education and encouraging the young generation to study and pursue careers in science.

UNESCO’s programmes in science, education and communication work together through the inter-sectoral platform on science education, which has highlighted the need for more innovative methods for science teaching to encourage interest in science and engineering. In that sense, “I Got It!” is implementing the tasks of UNESCO well and further cooperation is foreseen with Goethe-Institut and ASEAN Foundation.

By SeongHoon Yoo, UNESCO Bangkok

Further information:
- Science education for children using the TV magazine

Related links:
- Thai PBS - I got it programme
- Enhanced learning with interactive courses for TV
- UNESCO and the government of Italy agreement on supporting the educational radio and television of Afghanistan
- Ethiopian children’s TV wins again
- neoK12 – educational videos and lessons for K-12 school kids
USAID, Cisco & World Learning to promote entrepreneurship and ICT Education

The U.S. Agency for International Development (USAID), Cisco and World Learning recently announced a new collaboration to promote local entrepreneurs, workforce development and economic growth in developing countries. The collaboration will work through the Cisco Entrepreneur Institute and Cisco Networking Academy—programs that provide entrepreneurship and information and communications technology (ICT) education, mentoring networks, and technology resources—to help individuals develop and manage successful businesses.

The partnership is one of the key initiatives to grow out of President Obama's 2009 speech in Cairo, in which he vowed to deepen U.S. engagement with Muslim-majority countries in order to foster economic growth, promote civil society and provide new economic opportunities for U.S. business and investors—a promise that has since expanded to include other developing nations.

"USAID is proud to partner with Cisco and World Learning to expand local entrepreneurial activities in developing countries with the goal of alleviating poverty and promoting sustained economic growth," stated Deputy Administrator Donald Steinberg, at a ceremony held at USAID to sign the partners' Memorandum of Understanding. "This alliance will help build sustainable businesses and train the business leaders of tomorrow."

With an aim to train more than 2,500 students over the next two years, improve local businesses, raise local incomes and help grow local economies, USAID is providing $1 million in seed funding through World Learning to encourage the creation of new Cisco Entrepreneur Institutes and Networking Academy programs in up to 10 countries. USAID Missions will in turn be invited to partner with local Cisco offices to fund country or customized initiatives, such as curriculum enhancement, scholarships, or initiatives that target underserved populations, including youth, women and persons with disabilities. A portion of the funding also could be used to translate and localize training content to ensure it meets local business laws and regulations.

"Since 2000, Cisco has worked closely with USAID in more than 40 countries to combine the power of the Internet with best practices in ICT and business education," stated Clay Lowery, vice president, Cisco International Government Affairs. "By supporting the next generation of entrepreneurs and ICT business leaders, we are making a significant
investment not only in the future of our company, but also in communities around the world."

"World Learning believes this partnership with USAID and Cisco will unlock the potential of entrepreneurs to develop effective business practices and networks that can help address critical issues like poverty and exclusion," said Adam Weinberg, World Learning president and CEO. "This joint project will help cultivate the global leadership needed to create positive, sustainable change in our increasingly connected world."

Through this partnership, USAID will utilize Cisco’s investments in the Entrepreneur Institute and the Networking Academy, as well as World Learning’s two decades of experience supporting institutional capacity development worldwide to expand and deepen the economic and social impact of entrepreneurship and business development.

Further information:

- USAID, Cisco & World Learning to promote entrepreneurship and ICT Education

Related links:

- Keeping pace with a changing world
- The impact of the economic crisis on ICT and ICT-related employment
- Twenty eight European companies make a commitment to bring more women into technology industries
- 2010 Horizon Report - trends and challenges that will affect teaching and learning

Previous issues of the e-newsletter:

- UNESCO "ICT in Education" Announcement e-newsletter

What do you think about this topic?

- Visit our on-line forum and share your views

Job announcement: Programme Officer
UNESCO Bangkok is seeking a Programme Officer for its ICT in Education Programme.

http://www.unescobkk.org/fileadmin/user_upload/job/JA20-10Programme_Officer_ICTEDU.pdf

Programmes & Projects
ICT resources centres for special needs education
In the framework of the recent reorganization of Special Needs Education in Portugal, aiming at the inclusion of children and youth, with permanent special needs, in mainstream schools, several measures were undertaken to support this ongoing process.

Human and material resources were assigned to schools, setting up special units for multiple disabilities, for autism spectrum disorders, and reference schools for blindness/low vision and deafness/hard hearing.

A network of ICT Resources Centres was launched in 2007-2008 in order to evaluate assistive technologies needs for these pupils, that the Ministry of Education has financed in the last two years. These units are located in schools around the country and have district coverage, supporting other schools. This network is monitored by a central department of the Ministry of Education, using Moodle platform to share resources and news and to submit annual activity plans and reports, according to national pre-established guidelines.

Considering the complexity of evaluating the needs of these pupils, the units are oriented to seek partnerships with other institutions with expertise in the field. Private institutions, former backbone that used to host these children and youth, were certified as resources centres to support schools from a technical and therapeutic point of view. Special needs departments at Universities/Polytechnics with research in disabilities issues have also been involved, as well as assistive technology companies.

ICT Resources Centres have raised awareness among the educational community for the inclusion of these children in mainstream schools and for the importance of the use of assistive technologies to help their development and future autonomy. Many public events (workshops, seminars) have taken place, opened to teachers, school staff, students and parents.

ICT Resources Centres have carried out training support to their peers in the use of assistive technology, namely, switches, alternative keyboards, augmentative communication tools, Braille devices, screen readers, speech synthesizers, optical character recognition systems and so on. They also support pupils with severe illnesses that are permanently or temporarily absent from school and need distance learning tools.

Each Centre uses online forms of communication through websites, blogs or school Moodle platforms.

Further work and resources will be required to sustain the inclusion process, but these efforts are producing already some positive results.
Further information:

- [ICT Resources Centres for Special Needs Education](#)

Related links:

- [Websites of Resource Centers](#)
- [UNESCO publishes report on ICT for persons with disabilities](#)
- [Interactive session on ICT and persons with disabilities](#)
- [UNESCO and G3ict sign a partnership on ICT for persons with disabilities](#)
- [e-Accessibility Policy Toolkit for persons with disabilities](#)
- [Access to technology for people with disabilities](#) focus of UN Asia-Pacific forum

Previous issues of the e-newsletter:

- [UNESCO "ICT in Education" Announcement e-newsletter](#)

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Resources

**Using ICTs to promote education and employment opportunities for immigrants and ethnic minorities**

This report gives examples of various initiatives all over Europe illustrating that Information and Communication Technologies (ICT):

- contribute to the social and cultural integration of immigrants and ethnic minorities (IEM);
- facilitate the successful integration of migrant children and youth into Education and Training;
- enhance vocational training and employment opportunities.

ICT provide learning and training opportunities for adult migrants and ethnic minorities, fostering their language and cultural skills, fighting illiteracy, and training digital skills, thus
promoting social integration. ICT make educational and vocational training accessible to youth and adult immigrants who are often disenfranchised from mainstream training opportunities.

ICT tools assist in opening up employment opportunities for immigrants and ethnic minorities by improving recruitment procedures and matching immigrants’ professional profiles with employments needs. However, to seize the opportunities offered by ICT, access to computers and basic digital skills as well as digital competence need to be promoted.

Read the report:

- [Using ICTs to promote education and employment opportunities for immigrants and ethnic minorities](#)

Related links:

- [How can education meet 21st century demands in the workplace?](#)
- [The impact of the economic crisis on ICT and ICT-related employment](#)
- [Twenty eight European companies make a commitment to bring more women into technology industries](#)
- [ILO launches community portal to collaboratively address the challenges of skills development and employability](#)

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Delivering coherent ICT policies in developing countries

In this paper, the authors Richard Heeks, Ping Gao & Angelica Ospina could trace the origins of information and communication technology (ICT) policies in developing countries to the 1970s – for example in India – when there were a few focused on helping develop the
local IT industry. Or one could go decades further back to find roots in policies on media and telecommunications.

However, documents called "national ICT policy” only really started to be made in the 1990s and early 2000s.

What have they achieved?

Read the paper:

- [Delivering coherent ICT policies in developing countries](pdf)

Related links:

- Institute for Development Policy and Management: Working Papers
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The end of techno-critique: The naked truth about 1:1 laptop initiatives and educational change

This analysis written by by Mark E. Weston and Alan Bain responds to a generation of criticism levelled at 1:1 laptop computer initiatives.

The article presents a review of the key themes of that criticism and offers suggestions for reframing the conversation about 1:1 computing among advocates and critics. Efforts at changing, innovating, and reforming education provide the context for reframing the conversation.
Within that context, the authors raise questions about what classrooms and schools need to look and be like in order to realize the advantages of 1:1 computing. In doing so, they present a theoretical vision for self-organizing schools in which laptop computers or other such devices are essential tools.

**Read the paper:**

- The end of techno-critique: The naked truth about 1:1 laptop initiatives and educational change

**Related links:**

- Laptops and fourth-grade literacy: Assisting the jump over the fourth-grade slump
- Technology to the rescue - Can gadgets in the classroom enhance learning?
- UN telecom agency joins forces with Portugal to bring laptops to schools
- IT@school Project: Successfully educating Kerala with ICT
- What happens when *all* children and teachers have their own laptops

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**The pedagogical enhancement of open education: An examination of problem-based learning**

**Abstract**

Open education, as embodied in open educational resources (OER) and OpenCourseWare (OCW), has met and dealt with several key problems. The movement now has a critical mass of available content. Leveraging no small amount of funding and associated development, open education has the tools to collect, disseminate, and support the discovery of open materials. Now that the foundation for openness has been laid, practitioners are experimenting with new kinds of education and pedagogies associated
Problem-based learning is one of many progressive pedagogies that might be combined with open education. This paper defines problem-based learning in the context of open education. Unique challenges are presented and discussed alongside possible solutions, realistic limitations, and calls for implementation in the future to test validity.

**Introduction**

For various reasons, open educational resource (OER) archives are beginning to lose external support, including the OpenCourseWare initiative at Utah State University (Perry, 2009). This comes at a time when organizations like the OpenCourseWare Consortium (2009) are starting to charge educational institutions for membership. Now more than ever, OER is in a position of needing to find ways to defray costs (Downes, 2007) or to show value to the organizations that fund them.

One possible means of showing value is partnering OER with established, vetted, and well-researched approaches to teaching and learning. Scholars are beginning to push for an examination of the underlying pedagogies of OER and are even calling for materials that are much more progressive in their orientation (Weller, 2009, di Savoia, 2009). OER is perhaps uniquely positioned for this kind of partnership. Whereas learning objects are criticized for being a technical or engineered solution to a fundamentally pedagogical problem (McGreal, 2004), OER is comparatively less about standards and more about the pedagogically neutral concept of openness. Although there are several pedagogical approaches that OER might be partnered with, this review provides an examination of problem-based learning (PBL). As a fundamentally progressive approach, PBL answers the call of Weller (2009) with a whole host of literature, a meta-synthesis (Barneveld & Strobel, 2009), and several meta-analyses (Walker & Leary, 2009). The purpose of this review is to examine problem-based learning open educational resources (PBL OERs) and to explore the potential for a mutually beneficial relationship between the two areas of inquiry.

Because a combination of PBL and OER is scarce in scholarly writing and in empirical work, searches in each area were conducted largely in parallel. For PBL, search terms included problem based learning and problem-based learning. For OER, search terms included open educational resources and free educational resources. Sources included ScienceDirect, Wiley Online Library, EBSCO, and PubMed. For references covering both areas of research, variations on PBL were combined with the terms free, open, or resources. Given the emergent nature of the work, and the combination of quantitative and qualitative studies included, a qualitative literature review (Ogawa & Malen, 1991) was conducted.

**Problem-Based Learning**

PBL is a particularly good fit with OER. PBL has a reasonable amount of empirical research. It is progressive in its alignment, yet it needs to draw on a range of resources, including both expert-centric and those that are more egalitarian in nature. PBL is particularly efficacious with non-traditional student populations (Doucet, Purdy, Kaufman, & Langille, 1998) endemic to open education experiences. Arising in medical schools in the late 1960s, PBL is a learner-centered instructional approach (Barrows, 1996). PBL consists of student-centeredness, teachers acting as facilitators, small group learning, and beginning with problems that are ill structured and authentic (Barrows, 1986; 1996).
PBL has been widely adopted and applied in a variety of social science disciplines since its inception in medical education. Initial writing about PBL was coupled with ambitious aims for the development of domain or content knowledge structured for problem solving, as well as for problem-solving skills, for critical thinking and reasoning, for self-directed learning, and for increased motivation for lifelong learning (Barrows, 1986). According to the empirical research base, those aims have been largely met. When compared to lecture-based students on their general content knowledge alone, PBL students appeared to perform slightly worse initially (Albanese & Mitchell, 1993; Vernon & Blake, 1993), but subsequent research showed that they perform at about the same level (Dochy, Segers, Van den Bossche, & Gijbels, 2003; Gijbels, Dochy, Van den Bossche, & Segers, 2005; Walker & Leary, 2009). When assessments become more complex, asking students to explain the underlying relationships between concepts or to apply their knowledge in the solution of novel problems, PBL students perform markedly better (Gijbels et al., 2005; Walker & Leary, 2009). PBL also results in better retention over time (Barneveld & Strobel, 2009) and has shown particularly positive results with adult learners (Doucet et al., 1998) and in disciplines outside of medical education, including teacher education, social sciences, and business (Walker & Leary, 2009). Overall, the learning outcomes of PBL are positive. PBL students have as much content knowledge as their lecture-based counterparts, perform better at more complex forms of assessment, and retain more of what they learn. In addition, the approach has proven robust in several different disciplines and with older students (Doucet et al., 1998), indicating that it may be efficacious and a good fit for OER. Although traditionally delivered in face-to-face settings, PBL has expanded recently to include distance learning, which may be better suited to the digital nature of OER.

Distributed problem-based learning (or dPBL) specifically refers to online implementations of PBL. With dPBL, learners around the world can work together and expand their problem-solving skills. Online learning environments provide PBL learners with opportunities to be involved in different stages of work as a group and to continue their collaboration on projects, despite physical separation, using communication technologies. Some dPBL studies use synchronous interventions, requiring simultaneous interaction by students (Sulaiman, Atan, Idrus, & Dzakiria, 2004). Others use asynchronous technologies, allowing students to take part in discussions over a period of days or weeks (An & Reigeluth, 2008; ChanLin & Chan, 2007; Kenny, Bullen, & Loftus, 2006; McConnell, 2002; Steinkeuhler, Derry, Hmelo-Silver, & Delmarcelle, 2002; Stewart, MacIntyre, Galea, & Steel, 2007). Still others combine the two, with some synchronous elements and some asynchronous (An & Reigeluth, 2008; Dennis, 2003; Gale, Wheeler, & Kelly, 2007; Ronteltap & Eurelings, 2002; Waters & Johnston, 2004). The research findings for PBL are favorable: It is well suited for combination with OER, and emerging trends to deliver PBL at a distance are well positioned to take full advantage of the digital nature of OER.

The Combination of PBL and OER
A quick search using the Folksemantic engine reveals over 20,000 resources related to PBL, suggesting some overlap between these two communities (http://www.folksemantic.com/). Additionally, Falagas, Karveli, and Panos (2007) suggest the use of free Internet resources for case studies, presumably including open educational resources. Kerfoot, Masser, and Hafler (2005) note the use of the repository PubMed, which includes works in the public domain.
Those looking for resources to support PBL design directly or to support students seeking information during a PBL implementation might look at Academic Earth (http://academicearth.org), Scientific Commons (http://en.scientificcommons.org/), or other specialty portals like Project OSCAR (http://oscar.iitb.ac.in/). The following is a discussion of the unique challenges and benefits of combining PBL and OER alongside relevant examples. Two PBL cases are discussed, neither of which is open. One teaches non-physics majors about basic forces through accident reconstruction (http://www.udel.edu/pblc/samples/badday/). The other is an Earth science investigation of fire management in the Yellowstone National Forest (http://www.cotf.edu/ete/modules/yellowstone/YFsituation.html).

Benefit of Lowering Costs

PBL stands to benefit directly from the inclusion of the shared resources possible with OER. Generally, faculty commits more time to interacting with students in PBL contexts than in traditional classroom settings (Berkson, 1993). This presents several difficulties for PBL. Faculty is generally expensive and does not scale to large numbers (Donner & Bickley, 1993). Irrespective of cost, faculty actually hampers PBL outcomes. Although the exact reasons are unknown, the use of peers as facilitators results in better learning outcomes than the use of faculty (Walker & Leary, 2009). Thus, PBL may improve as students go to outside resources in addition to faculty. For example, students in the forest fire case are encouraged to explore resources on Yellowstone Park and fire science (http://www.cotf.edu/ete/modules/yellowstone/YFlinks.html) that get at the underlying nature of the problem. Utilization of OER within PBL contexts might decrease the time that course instructors spend with learners, specifically the time that content experts spend answering direct student questions. This may further benefit the PBL process in that students will have less exposure to faculty who, uncomfortable with the PBL approach, turn discussion sessions into ad hoc lectures (Moust, de Grave, & Gijselaers, 1990).

In any PBL context, learners are required to identify their learning needs and to collect resources or information regarding the assigned topic. For learners in a conventional PBL situation, information needs can be fulfilled by access to printed materials, such as journal articles, reference books, or textbooks. Yet access to such resources might be limited or costly for the institution providing them. Print-based materials are rivals in the sense that no two groups can access them simultaneously. Because print-based resources are even more problematic in online settings, with time required to mail resources, OER makes even more sense in dPBL contexts. Digital resources like OER may alleviate some of the demands on print-based collections. Although there are substantial upfront costs, the marginal cost of serving 10 or even 1,000 more students with OER approaches zero (Catone, 2009). While this is not a new concept for OER, it is a pronounced benefit in the context of PBL. As an example, an interactive Java applet (http://www.udel.edu/pblc/samples/badday/) visualizing motion and acceleration (or deceleration), found through Project OSCAR, might assist students with accident reconstruction. Another benefit of incorporating OER is the ability to respond directly to criticisms of PBL.

PBL Criticism
According to Kirschner, Sweller, and Clark (2006), cognitive load may arise for students in minimally guided settings like PBL. Their argument is that strong guidance is necessary, especially for the learners who do not have enough background knowledge at the beginning of learning. In essence, this is about germane load. If learners are devoting a substantial portion of their mental capacity learning background material, they will have comparably less capacity for engaging in problem-solving and for learning the new material surrounding the problem at hand. Relevant background knowledge might be disseminated via OER. There are certainly risks with this approach. Overly focused background knowledge may detract from the ability of students to engage in free inquiry (Barrows, 1986), essentially labeling the underlying issues of the problems by virtue of the associated background content. If resources are closely related to the problem at hand, this can be avoided. For example, in the physics problem (http://www.udel.edu/pblc/samples/badday/) all of the student resources deal with accident reconstruction, allowing free inquiry to proceed. Scaffolds may suffer from similar problems; in the Yellowstone scaffold (http://www.cotf.edu/ete/modules/yellowstone/YFsituation1.html), students are quickly made aware of a critical relationship between forest fires and the biosphere, lithosphere, atmosphere, and hydrosphere of the park. While the nature of that relationship remains for student discovery, the fact that the relationship exists does not.

Barriers to Open PBL

The combination of PBL and OER presents other unique challenges. In order for the free inquiry process to be meaningful, it is important that the problem solution be unknown to students. Yet if a PBL course were made available as OpenCourseWare (OCW), then students as well as teachers would have access to it. In essence, this forces a dual course design with one course intended for student consumption and one supplement intended for teachers. There are several possible solutions, each presenting different challenges.

Close part of curriculum.

The solution set could be made available freely upon request from a teacher. An example of curricula with closed teacher guides is the Problem-Based Learning for College Physics (http://rea.ccdmd.qc.ca/en/pbl/). The teacher guides for each project are password protected, but the portions meant for student consumption and use are freely, but not openly, available. There are two difficulties associated with this approach: The first is administrative overhead, including the necessity to vet an OCW user as a teacher, which in this case is done via email, and the second is blocking access to information, which is in ideological opposition to the goals of open education.

Encourage localization.

Features of the problem could be altered to meet the needs of a specific class. Since this “remixing” for the class is one of the purposes of OER, it is a good fit with the intended goals of education (Gurell, 2008). The problem is a massive disincentive to make the modified version of the problem and associated materials equally open. Once open, students may be able to find the solution for their localized version of the problem. In essence,
localization encourages teachers to share, but not to share alike. A shift in licensing to allow a period of closed use before providing full open access to teacher guides might be needed.

**Leverage existing OER in support of PBL.**

In this approach, the PBL portion does not become OER; rather, it uses OER to help students fulfill their information needs in pursuit of a problem solution. Fitting traditional OCW/OER into a PBL curriculum may be awkward and inefficient. For example, students may need to watch a 50-minute lecture in order to gain three minutes of relevant information. The pedagogy built into the OER may be at odds with the PBL approach, a departure from the inquiry-based foundations that is stark enough to subvert the self-directed learning nature of PBL.

**Structure the curriculum to have an instructor-provided solution.**

A PBL curriculum could be structured in such a way that the answer would be obvious to a domain expert (e.g., the instructor), but not to students. This method reduces the responsibility of repositories to manage the answers while providing authentic PBL instruction at the same time. As an example, the accident reconstruction problem eschews a provided solution to the problem ([http://www.udel.edu/pblc/samples/badday/solution.html](http://www.udel.edu/pblc/samples/badday/solution.html)). Here the disadvantages are about existing research and cost. The expertise necessary for this approach, such as college faculty, is relatively expensive.

**Sustainability**

Best practices surrounding the sustainability of OER as a whole are largely unknown, and the body of literature is only beginning to emerge. Stephen Downes, a noted scholar on open education, has suggested several funding models (2007). Some have already been implemented and evaluation efforts are ongoing. MIT OCW derives its funding from MIT, with some help from non-profit foundations (O'Liveira, n.d.). Brigham Young University has been experimenting with offering OCW courses for credit (Wiley, 2009a, 2009b). Results of that research indicate that the cost of converting existing online courses to OCW adds to paid enrollments, so much so that the effort is self-sustaining (Johansen, 2009). The costs of PBL tend to be much higher than traditional forms of instruction. For those willing to invest in PBL irrespective of openness, the utilization of OER represents a cost-saving mechanism from the beginning.

**Conclusion**

Many of the technical and legal barriers to open education have been alleviated, and a critical mass of content has been achieved. Colleges and universities have a stake in quality teaching and learning, which may be advanced by coupling PBL with OER. Rarely can practitioners take advantage of such mutually beneficial situations. PBL does provide strong learning outcomes in certain disciplines (Walker & Leary, 2009) and with certain types of assessment (Gijbels et al., 2005). Depending on the discipline and assessments, OER creators could certainly bolster their case for funding by partnering their open course material with PBL. With that said, much work remains. Studies are needed to determine if PBL is equally efficacious with OER. It should be noted that Barrows (2002), in particular, was skeptical.
about whether or not tools existed to support the interactions necessary for PBL fully at a distance. However, those comments were made well before many of the social software tools that are readily accessible now and would not apply to some of the face-to-face combinations of OER and PBL described above.

We want to emphasize our stance that PBL is not a single solution to every educational need. If the focus is on memorizing facts, for instance, PBL may take longer and may cost more (Donner & Bickley, 1993) to arrive at similar learning outcomes when compared to the traditional lecture. Nor is PBL the only approach that might be meaningfully combined with OER. Future research should explore not only the efficacy of PBL and OER but also the union of PBL with other well-researched approaches to teaching and learning. Although licensing is still a critical concern, OER needs to start devoting equal effort to the underlying pedagogy of open materials.

References
Barrows, H. S. (2002). Is it truly possible to have such a thing as dPBL? Distance Education, 23(1), 119-122.


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Further information:

- The pedagogical enhancement of open education: An examination of problem-based learning (The International Review of Research in Open and Distance Learning)

Related links:

- Training workshop on facilitating effective ICT-pedagogy integration in USM Penang
- 7 things you should know about open educational resources
- The impact of openness on bridging educational digital divides
- Toolkit for academics on Open Educational Resources released
- OpenEd at Creative Commons
- Open Educational Resources: Conversations in Cyberspace

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Free Technology Academy
The Free Technology Academy consists of an advanced virtual campus with course modules that can be followed entirely on-line.

The learning materials are Open Educational Resources that can be studied freely, but learners enrolled in the FTA will be guided by professional teaching staff from the participating universities.

The full master programme can be concluded at one of the three universities.

The Free Technology Academy (FTA), financially supported by the Life Long Learning programme (LLP) of the European Commission, is a collaboration between the FKI and three European universities.
Further information:

- Free Technology Academy

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