**Developing faculty competencies**

**From ETEC 510**

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As it is widely known, the use of Information and Communications Technologies [ICT](http://en.wikipedia.org/wiki/ICT) is becoming one of the most important demands for teachers at every educational level. Nevertheless, the challenge of incorporating technologies into the teaching and learning process might not be as easy as it seems. It’s not just a matter of finding new resources and trying to use them as part of traditional courses, but it involves encouraging learners to interact with ICT equipment and [Web 2.0](http://en.wikipedia.org/wiki/Web_2.0) tools to enable them to co-construct their own learning. This makes them quite different from students of the last millennium.

Hayes indicates that “vision of the teacher’s role needs to shift from that of the information provider to one of the catalyst, model, coach, innovator, researcher, and collaborator with the learner throughout the learning process” (2010, p.226). In order to do that, educators and administrators in the 21st century need to embrace the multi-media culture around us and accept that it is not a print-centric world any longer; they need to recognize the benefits of being media-literate. Educators must replace existing practices; not just use computers as typewriters and call it innovation.

So the question is: how can we improve faculty competencies in ICT?

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**[**[**edit**](http://sites.wiki.ubc.ca/etec510/index.php?title=Developing_faculty_competencies&action=edit&section=1)**] 21st century learning and the role of Web 2.0**





For faculty to develop their competence in ICT they must comprehend what successful 21st century learning should look like. The 21st century is flexible, creative, challenging, and complex. It addresses a rapidly changing world filled with fantastic new problems as well as exciting new possibilities and methods for teaching and learning need to change to meet the very different needs of this generation [[1]](http://www.21centuryschools.com).

A 21st century classroom begins with the end in mind; uses project based learning, the inquiry process and [Bloom’s revised taxonomy](http://en.wikipedia.org/wiki/Bloom%27s_Taxonomy); engages in authentic assessment; connects to the global audience; and ultimately it will exploit technology as a tool to engage learners in collaborative [knowledge-building](http://en.wikipedia.org/wiki/Knowledge_building) (Colfino, 2008).

Given that today’s students are referred to as digital natives, and today’s educators as digital immigrants [[2]](http://www.21centuryschools.com), it is quite possible and even expected that students may be more proficient than their teachers in terms of their technology know-how. This fact can lead to a fear of failure among faculty and many feel they do not receive the guidance they require to cultivate these skills within themselves or their students (Jacobs, 2010). Since the role of faculty is to prepare students to navigate this new world, both teachers and students must become literate in all 21st century literacies: multicultural, media, information, emotional, ecological, financial and cyber literacies [[3]](http://www.21centuryschools.com).

How can faculty achieve their learning outcomes and deep learning in this zoo of non-linear learning? Teachers can utilize Web 2.0 tools to engage students in collaboration. These Web 2.0 tools are not packages, or artifacts, or consumables but are resources that have to be performed. For example: [search engines](http://en.wikipedia.org/wiki/Search_engine), or [wikis](http://en.wikipedia.org/wiki/Wiki), or [blog services](http://en.wikipedia.org/wiki/Blog), or user-content management services like [youtube.com](http://en.wikipedia.org/wiki/YouTube), or photosharing facilities like [Flickr](http://en.wikipedia.org/wiki/Flickr), etc. (Lankshear & Knoebel, 2008). Teachers who create a 21st learning environment and employ Web 2.0 tools will by default improve their own ability in ICT.

**[**[**edit**](http://sites.wiki.ubc.ca/etec510/index.php?title=Developing_faculty_competencies&action=edit&section=2)**] Pre-service teacher training**



Jacobs indicates that all parties within the education industry- from foundation to post-graduate- must work together through with their institutions of higher education and the mechanisms of teacher certification to make pre-service training for teachers modern and international (2010). While there is very little evidence anywhere to show that teachers are being trained to teach using technology, some studies indicate that benefits of participating in [educational technology](http://en.wikipedia.org/wiki/Educational_technology) activities during [pre-service teacher training](http://en.wikipedia.org/wiki/Pre-Service_Teacher_Education) include: developing professional knowledge of instructinal media and technology (Savittree, 2009); increasing graduating teachers' willingness to integrate it into their own classroom curricula; and encourage development of [learning communities](http://en.wikipedia.org/wiki/Learning_communities) for focused critical reflection of classroom ICT practice(Ham, 2007). Many teachers are training using technology for their own learning, collaboration and research. The younger teachers have grown up as digital natives yet they need to have experience in the field to understand how to apply their technical knowledge to their profession.

Angel Gurría, OECD Secretary-General, at the launch of the OECD Teaching and Learning International Survey (TALIS) in Mexico on 16 June 2009: "The first thing that strikes us is the magnitude of the challenges facing the teaching profession in the 23 participating countries, where more than one teacher in three works in a school that has too few qualified staff."

[The U.S. National Educational Technology Plan 2010, March 5, 2010](http://sites.wiki.ubc.ca/etec510/index.php?title=The_U.S._National_Educational_Technology_Plan_2010,_March_5,_2010&action=edit&redlink=1): "Today, however, there is tremendous variation in how new teachers are prepared and what they are being prepared to do with technology (Pellegrino, Goldman, Bertenthal, & Lawless, 2007). Although some pre-service programs are using technology in innovative ways (Gomez, Sherin, Griesdorn, & Finn, 2008), widespread agreement exists that teachers are by and large not well prepared to use technology in their practice (Kay, 2006). The best way to prepare teachers for connected teaching is to have them experience it. All institutions involved in preparing educators should provide technology-supported learning experiences that promote and enable the use of technology to improve learning, assessment, and instructional practices. This will require teacher educators to draw from advances in learning science and technology to change what and how they teach, keeping in mind that everything we now know about how people learn applies to new teachers as well. The same imperatives for teacher preparation apply to ongoing professional learning. Professional learning should support and develop educators’ identities as fluent users of advanced technology, creative and collaborative problem solvers, and adaptive, socially aware experts throughout their careers. Effective teaching in the 21st century requires innovation, problem solving, creativity, continuous improvement, research, diagnostic use of data, and flexible and personalized approaches to meeting students’ diverse needs and strengths. As a result, the most effective educators are professionals with complex knowledge, expertise, and competencies, not merely deliverers of content and managers of well-behaved classrooms."

Teachers must learn to use technology for their own use, to research, collaborate, prepare lesson plans, do the administrative work but also how to use technology in the classroom. Although there is little public research on this, field service can be the catalyst for the new teacher to understand how technology can be used with their students.

OECD ICT IN INITIAL TEACHER TRAINING: RESEARCH REVIEW,EDU Working Paper No. 38: "Findings of a survey of 6,998 future teachers in Québec, Canada revealed that commitment to and perseverance in pedagogical integration of ICT during practical education of future teachers mainly depend on five factors or determinants (Karsenti, 2005b)...

* (1) the future teacher‘s degree or level of computer literacy,
* (2) the value placed on ICT by future teachers,
* (3) a future teacher‘s expectations of success in integrating ICT, and
* (4) pedagogical integration of ICT by teacher trainers.
* The fifth is pedagogical integration of ICT by the mentor teachers (e.g. also Larose et al., 2002).

Deaudelin, Dussault and Brodeur (2002) found apprenticeship and support very important also for in-service teachers in acquiring knowledge and adopting the innovation process in their classrooms."

The role of the 21st century teacher must be very different, it has become a facilitator's role, helping the students find, understand and use the tools to learn to learn and create more knowledge. From a very lonely job it must become a team effort using peers, students and remote experts assistance.

**[**[**edit**](http://sites.wiki.ubc.ca/etec510/index.php?title=Developing_faculty_competencies&action=edit&section=3)**] Training teachers in ICT Competencies**





UNESCO (2008a) has recently established what they called [Information and Communication Technologies (ICT) Competencies Standards for Teachers (CST)](http://portal.unesco.org/ci/en/ev.php-URL_ID%3D25742%26URL_DO%3DDO_TOPIC%26URL_SECTION%3D201.html). Being aware of the need of leading faculty to develop those skills (competencies) required to make them easy the incorporation of ICT in the educational process, this project stated that: Teachers need to be prepared to empower students with the advantages technology can bring. Schools and classrooms, both real and virtual, must have teachers who are equipped with technology resources and skills and who can effectively teach the necessary subject matter content while incorporating technology concepts and skills (p. 3).

UNESCO ICT-CST project (2008a) is based on three approaches in the use of ICT that should be considered as three progressive steps to be followed –one by one- by faculty in order to acquire the needed skills for facing the new millennium teaching challenges: (1) the technology literacy approach, (2) the knowledge deepening approach and (3) the knowledge creation approach.

As it would become a hard and even an impossible task to identify the particular needs and characteristics that each of these three approaches should be like in each country, the project framework is defined just in general lines. This allows each institution to adopt the project in such way that it would be easy to adapt it to its particular context and requirements. In so doing, it would be necessary to take into account the six components of the educational system: (1) policy and vision, (2) curriculum and assessment, (3) pedagogy, (4) ICT, (5) organization and administration, and (6) teacher professional development. (UNESCO, 2008b, p. 6).

The three approaches and the six components already mentioned are combined in such way that they form a matrix, in which each intersection between an approach and a component becomes a module for training teachers in ICT issues. The whole matrix is shown in the next image:





UNESCO ICT-CST framework [[1]](http://sites.wiki.ubc.ca/etec510/Developing_faculty_competencies#_note-0)

An example of each module is presented in the [UNESCO ICT Implementation guidelines](http://cst.unesco-ci.org/sites/projects/cst/The%20Standards/ICT-CST-Implementation%20Guidelines.pdf) (2008c).

If education within the technology ecosystem is the way of the future then all educators need opportunities to improve their ICT confidence and proficiency. One internationally recognized ICT training opportunity is the International Computer Driving License certification (used in over 148 countries in 41 languages making it accessible to almost every educator) [[4]](http://www.icdlus.com/). Teachers will also need support and professional development on a consistent basis to encourage technological risk-taking in their classroom practice.

**[**[**edit**](http://sites.wiki.ubc.ca/etec510/index.php?title=Developing_faculty_competencies&action=edit&section=4)**] Training Teachers in New Millennium Competencies**

Every educational institution must be aware of the importance of providing teachers with the adequate tools in order to help the face the new challenges within their own classrooms. As Bates (2000. p. 95) had stated “because of the central role that faculty members play…, any change, especially in core activities such as teaching and research, is completely dependent on their support.”

UNESCO also recognizes the important role of teachers in the successful implementation of ICT in the educational process. This implementation “will depend on the ability of teachers to structure the learning environment in non-traditional ways, to merge new technology with new pedagogy, to develop socially active classrooms, encouraging cooperative interaction, collaborative learning, and group work” (UNESCO, 2008a, p. 10).

Peters (2003) goes beyond the need of training faculty in ICT issues, and suggests considering the pedagogical changes derived from the arrival of the knowledge society, in which the use of ICT is implied. In this sense, Peters (2003, pp. 160-161) mentions the next competencies which people –teachers and students- must have for facing the challenges of the knowledge society:





* Media competence
* Competence in dealing productively with plurality
* Competence to deal productively with change
* Competence to active, conscious and responsible life planning
* Social competence (relating with others)
* Communication competence
* Competence for collaboration
* Information competence
* Competence in knowledge management

**[**[**edit**](http://sites.wiki.ubc.ca/etec510/index.php?title=Developing_faculty_competencies&action=edit&section=5)**] Institutional role in faculty training**

The way institutions help teachers to develop those needed skills could be responsible of the success or failure of the training efforts. As Bates (2000, p. 99) pointed out “faculty development practice in an institution… [is]…strongly influenced by the institution’s overall approach to the use of technology for teaching”. He also mentioned the following as some of the strategies that should be part of the institutional ICT culture in order to lead faculty to incorporate ICT in their teaching job (Bates, 2000, p. 99):

* A strong strategic plan in which the use of technology for teaching played a prominent role
* Extensive investment in technology infrastructure
* Support from senior leadership for the use of technology for teaching
* Support, in a wide variety of ways, for faculty members who wished to use technology for teaching
* Support for students through computer access, Internet accounts and financial support

There are many institutions that are working to help schools and teachers reach these 21st century skills. The International Society for Technology in Education (ISTE) has published the National Education Technology Standards NETS for Students, teachers and administrators. This is a resource schools can use to help them insert themselves in the 21st century. This standard is being used in many countries around the world. <http://www.iste.org/AM/Template.cfm?Section=Educator_Resources> 

**[**[**edit**](http://sites.wiki.ubc.ca/etec510/index.php?title=Developing_faculty_competencies&action=edit&section=6)**] Successes and faculty helping themselves**

Although there are a variety of challenges for educators to improve their ICT competencies, many teachers are achieving success, as the following studies highlight:

* The teachers in the “Developing conceptual frameworks for creativity, ICT and teacher education” study in the UK highlighted the affordances of ICT to try out lots of ideas, collaborate, be creative, edit and trial as well as the immediacy of their work results (Loveless, Burton and Turvey, 2004)
* As indicated in the “Outcomes for Teachers & Students in the ICT PD School Clusters Programme” in New Zealand, ICT PD lead to improved competence in graphics (81%), spreadsheets (67%), databases (57%) and multimedia packages (72%) and the great majority (86%) of teachers reported at least some element of positive change in their classroom practices due to integrated ICT (Hal, 2007)
* Teachers who have received training on how to integrate ICT within the classroom are significantly more likely to be integrating ICT within their classroom (44%) than those who had not undertaken such training (34%). (Western Australia. Dept. of Education and Training. Evaluation and Accountability Directorate, 2006)
* In the Netherlands the study “Which factors obstruct or stimulate teacher educators to use ICT innovatively?” Showed that teacher educators described as ‘personal entrepreneurs’, created possibilities to experiment with ICT applications, researched the use of ICT in their education, reflected on their outcomes, and exchanged ideas with colleagues (Volman, 2005)
* In India, Intel’s ‘Teach to the Future’ nation-wide initiative targeted teacher training using the tools of ICT is an example of corporate support of teachers to utilize ICT in education as described in the “ICT in Pre-Service Teacher Training” study (Prasad, 2005)

**[**[**edit**](http://sites.wiki.ubc.ca/etec510/index.php?title=Developing_faculty_competencies&action=edit&section=7)**] Barriers to progress**

There are a few barriers to progress:

* Access to working technology in schools is still very limited in many countries.
* Connection between personal use of ICT to teaching students to learn with technology
* Attitude
* Lack of Technical support
* Lack of instructional support
* Lack of mentor teachers have kept teachers from doing more with technology in their classrooms

Some specific examples of barriers to developing faculty competencies in ICT are indicated below:

* In Australia, a study was done to provide a reliable assessment of the level of ICT skills among teachers. The analysis of this study indicated that greatest limitation to developing ICT competence in teachers was the insufficient access to technical support and inadequate numbers of computers. (Western Australia. Dept. of Education and Training. Evaluation and Accountability Directorate, 2006)
* In Cambodia, a project that involved training teacher trainers on software and hardware was conducted. This study demonstrated that the most omnipresent inhibitor to ICT integration was lack of ICT equipment, namely computers. (Richardson, 2009)
* An ICT cluster project that analysed the outcomes for Teachers & Students in use of ICT in New Zealand concluded that teachers identified significant concerns: about access to ICT equipment for students (38%); reliability of the equipment (36%); and lack of time for themselves to become familiar with the range of ICTs (37%). (Hal, 2007)
* The Assessment of Nigerian Teacher Educators’ ICT Training report indicated that the training had not impacted on classroom practices because so many teachers required word and data processing skills and only 2% of the educators who had previous ICT training had been taught the skill of teaching with computer. In fact almost 50% of teachers had never used a computer before. (Jegede, 2009)
* An investigation entitled “Integrating ICT into Pre-Service Teacher Education: The Challenges of Change in a Turkish Faculty of Education” revealed numerous barriers: accessibility to ICT resources; inadequate training; preference for other teaching methods; lack of support from mentor teachers and technical/organisational issues.(Alev, 2009)
* A study entitled: “Singapore’s preservice teachers’ perspectives in integrating (ICT) during practicum” suggested more ICT support and modelling is required throughout the teacher preparation programme and especially the teaching practicum to inspire preservice teachers. (Choy, Wong and Gao, 2005)
* In India the “Survey Report on Pre-service Teacher Training on ICT Use in Education in Asia and the Pacific” concluded that the significant urban-rural imbalance in infrastructure, instructional facilities and human resources for the use of ICT; a lack of electricity; and high costs of hardware, software and other infrastructure facilities were huge barriers to consistent integration of ICT by teachers. (Prasad, 2005)
* In "Teachers Facing ICT The Case of Greece" the study shows that although teachers believe in ICT they are reluctant to introduce it into primary schools. (Kiridis, A., Drossos, V. & Tsakiridou, E., 2006)

**[**[**edit**](http://sites.wiki.ubc.ca/etec510/index.php?title=Developing_faculty_competencies&action=edit&section=8)**] References**

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Reason for edit:

The reasons we choose to edit the “Developing faculty competencies” wiki were:

* We wanted to put the wiki into context and explain why the entry was educationally important. We gave it an introduction and made succinct links to other areas of pedagogical significance. The background information helps to explain why the information within the wiki is vital to pre-service and existing educators.
* We felt that the wiki as it stood was very narrow in scope. It spoke only of the UNESCO [Information and Communication Technologies (ICT) Competencies Standards for Teachers (CST)](http://portal.unesco.org/ci/en/ev.php-URL_ID%3D25742%26URL_DO%3DDO_TOPIC%26URL_SECTION%3D201.html). We wanted to add to the list of resources for the entry and thereby provide a broader perspective for approaches to, barriers to and success stories about improving faculty competencies in ICT.
* We investigated and researched extensively to find case studies and research papers that would help to substantiate the key points in the entry- particularly for successes and barriers to developing faculty competencies. There is a lot of existing and relevant research to help articulate why there are significant barriers to developing ICT skills in teachers and this evidence is international. We found it interesting to find that there were many parallels between wealthy and underdeveloped countries in terms of barriers and successes.
* We didn’t need to update the existing information as it was still current and valid but wanted to provide a range of sources to validate the key points.