Evaluating Teacher Training Development Programs.

BY

Mehboobkhan Ismail.

Introduction

To inhabit, discover, and serve efficiently in a society that is becoming more technologically complex, information conscious, and knowledge centered, teachers as well as their students must be well-versed with technology. Technology is very crucial in the educational setting because it can help teachers and students to be able to use information technology; search, analyze, and evaluate information; make decisions and solve problems easily; create and use productivity tools effectively; to become knowledgeable, answerable, and contributing citizens, and; communicate, collaborate, publish and produce information and knowledge (Liu 2001).

Presently, many schools have programs for the ongoing and effective use of technology, which give students opportunities to learn important skills related to technology. Apparently, a teacher plays or ought to play a critical individual role in helping students acquire those skills. For instance, a classroom teacher has a responsibility in setting up the classroom environment and organizing the learning activities to enhance students' application of technology to learn and to communicate (Lipsitz 1973).

Accordingly, it is important that every classroom teacher is prepared to provide his or her students with these activities and opportunities. This paper evaluates the design of a teacher development program, as well as discusses changes that would be made to the program and how such changes would be introduced effectively.

ICT-Implementation Teacher Development Program—ICT Competency Standards for Teachers

(ICT-CST)

About the Program

An ICT teacher development program should have the capacity to prepare future teachers and provide them with technology-packed experiences throughout every facet of their training. The standards and resources within the ICT Competency Standards for Teachers, which is a UNESCO project, are guidelines for every teacher, explicitly for preparing teacher education programs and training activities that will enable them to play an indispensable role in bringing up technology well-versed students.

In other words,classroom teachers of the 21st century should be prepared to provide their students with learning opportunities enhanced by technology (Akhtar, Arinto & Abu 2009).

Conventional educational practices no longer offer prospective teachers with all the required skills to teach students economic survival in the present workplace. Technological preparedness and the realization that technology can support the learning process by students have turned out to be fundamental skills in the professional repertoire of every teacher. This means that teachers ought to be skillfully prepared in order for him/her to empower students with the advantages that are brought by technology (Grizzle 2011).

Classrooms in schools, whether traditional real-life or virtual, should have teachers who are outfitted with technological skills and resources; and who are able to effectively impart the required subject matter content while at the same time integrating it with concepts and skills of technology. There are a very wide range of resources that teachers can incorporate in their teaching experiences. Digital and open source educational resources, interactive computer simulations, and complex data-collection and analysis tools, are only some of the currently available technological resources that help teachers to give students opportunities that would have in previous decades, been deemed unimaginable for conceptual understanding (Grizzle 2011).

The UNESCO ICT-CST project aim is to link education reform with social development and economic growth in order to improve education quality, lessen poverty, fight inequity, improve people's living standards, and prepare citizens of all nations for the 21st century challenges.

The project's standards are based on three education reform approaches that match with the alternative, rather overlapping approaches to improve the workforce of a country and also foster economic growth (Akhtar, Arinto & Abu 2009).

First is the technology literacy approach, which involves increasing the technological application in the workforce through incorporation of technological skills in the core curriculum.

The second approach is referred to as the knowledge deepening approach and it involves enhancing the capability of the workforce to use technology in order to increase economic output worth such as by applying it to resolve complex, real life issues.

The third approach is called knowledge creation approach, which involves bettering the capability of the workforce to revolutionize and develop new knowledge so that the citizens can benefit from this newly acquired knowledge (Law, Pelgrum & Plomp 2008).

The UNESCO ICT Competency Standards for Teachers also deals with six educational system components. These UNESCO ICT Competency Standards components include ICT skill-training as part of an inclusive education reform approach including: curriculum and assessment, policy, pedagogics, technology use, school administration and organization, and professional development of teachers (Akhtar, Arinto & Abu 2009).

Evaluation of the Program

Apparently, the UNESCO ICT-CST project's objective is to avail to professional development providers a model that they can follow in developing or reviewing their professional

development programs. One advantageous feature of the UNESCO ICT-CST model is that it allows interested teacher development program providers a significant amount of flexibility in their effectuation of these guidelines and principals. However, taking advantage of this flexibility is subject to the review and approval of the ICT-CST Endorsement Board. Put differently, the professional development providers interested in the UNESCO ICT-CST model will be required to explain and justify their course programming with regard to the standards and the project basis, subject to the authorization of the Endorsement Board (Voogt & Knezek 2008). This is important to ensure high, uniform quality of the teacher development program.

Another great feature of the ICT-CST framework is that it is designed to be implemented in a modular format. In other words, interested professional development providers will not need to cover all of the modules and competences expansively with their course of study and course offerings. Instead, they can design content and programs for review that only cover specific levels of professional development, specific constituents of the educational system, or one educational change approach. With this, every phase is approved individually before designing the next unit, and the providers should ensure their proposals are consistent with the general goals and principles of the Standards project. Consistent competencies will enhance the mastering of ICT skills by students in class (Voogt & Knezek 2008).

To ensure further that teachers get quality offerings from development program providers, providers should report the rationale for the units they have selected. In the UNESCO ICT-CST framework, standard rationales include a breadth tact, which involves a provider addressing all of the components (i.e. curriculum, policy, and pedagogy) for one specific approach (i.e. knowledge creation, technology literacy, and knowledge deepening). Another is depth tact, which involves the development of one or more components. A role tact, involves the tailoring of assembled modules for a particularized school-level audience like curriculum coordinators, technology coordinators, or school principals. The UNESCO ICT-CST framework comprises of

a Technology Literacy Approach, Knowledge Deepening Approach, and Knowledge Creation Approach (Unwin 2009).

Technology Literacy Approach

The policy goal of the technology literacy approach is to prepare teachers that have the ability of acquiring new technologies so as to improve students' education. Other goals with the educational setup include improving school enrollments and enhancing basic literacy skills, such as technology literacy. The development program requires that teachers are able to identify fundamental characteristics of classroom practices and determine how these characteristics help in implementing policies. They are also required to learn how to match specific curriculum standards to specific software bundles and computer applications and explain how these standards are sustained by these applications (UNESCO 2011). Teachers are also taught to understand how to help students develop ICT skills within the context of their subjects. At the end of this teacher development program, teachers are expected to be able to apply ICT to assess students' understanding of school subject matter and to provide them with feedback on their class progress based on formative and summative assessments.

Regarding pedagogy, teachers should be taught how didactic teaching and ICT can be applied in supporting students' understanding of school subject matter. They should also learn to incorporate applicable ICT activities into lesson plans in order to enhance their students' acquisition of knowledge. When being taught, teachers can use presentation software as well as digital resources to enhance instruction. Teachers in the development program should be taught to understand how to describe and determine the use of common hardware technologies like computers and mobile devices (UNESCO 2011). In relation to that, the UNESCO ICT-CST framework requires that teachers in the development program are taught and are able to teach the

basic commands and applications of word processors like entering, editing, and formatting text, and printing.

Based on the UNESCO ICT-CST framework, teachers in the program should be trained in basic features of popular presentation software, as well as in graphic software and be able to use a graphic software bundle to produce a simple graphic display. At the end of the development program, teachers should be able to describe the Internet and the World Wide Web, as well as demonstrate their uses and explain how a browser works and use a URL to explore a website. Besides Internet, the framework requires teachers in the development program to describe the use of tutorial and drill and practice software and how they enhance students' acquisition of knowledge (UNESCO 2011).

Accordingly, teachers in the program should be able to find off-the-shelf educational software packages and Web resources and assess them for their correctness and compatibility with curriculum standards and associate them with the needs of particular students. To determine whether the development program was successful, teachers should be able to employ networked record keeping software in submitting grades, taking attendance, and keeping student records. More importantly, they should be able to use popular communication and collaboration technologies like web-based collaboration, text messaging, social networking, and video conferencing.

In regard to organization and administration, the UNESCO ICT-CST framework teachers in the development program should be trained in integrating the use of a computer laboratory into the teaching activities underway. They should learn to manage the use of additional ICT resources with students individually and in small groups in the regular classroom session to avoid interrupting other instructional activities in the class (UNESCO 2011). Above all, as leaders in the acquisition of technology in school, teachers should learn and be able to identify the suitable and inappropriate social systems to use with various educational technologies.

Knowledge Deepening Approach

The policy goal of the knowledge deepening approach of the UNESCO ICT-CST framework is to enhance the ability of teachers to add value to their students' knowledge by making use of the knowledge of school content to solve intricate problems experienced in real world circumstances of work and life.

The framework requires that teachers in the development program are able to identify important concepts and processes in content areas, as well as account the function and role of data collection tools, simulations, data analysis software, and visualizations, and how each of them supports the understanding of these important concepts and processes and their relevance in the world beyond the classroom.

Still with regards to knowledge deepening, teachers in the development program should be trained to identify fundamental theories and processes in the subject area, explain the function and purpose of subject-specific tools and how they enhance the understanding of students. Well versed teachers should then be able to develop and implement performance-based and knowledge-based rubrics that enable them to assess their students' understanding of subject matter and its associated skills, concepts, and processes (UNESCO 2011).

After the development program, teachers should be able to demonstrate how collective, project-based learning and information technology can help improve the thinking of students and their social interaction, as students increase their understanding of fundamental concepts, skills, and processes in the subject and apply them in solving real-world challenges. Therefore, the UNESCO ICT-CST framework requires that teachers are able to design online content that

support students' deep realization of fundamental ideas to finding solutions to persistent global issues (UNESCO 2011).

Accordingly, teachers should learn to design unit plans and classroom activities to ensure that open-ended tools and subject-definite technological applications can boost students in their talking about, reasoning with, and use of major subject matter theories and processes while they join forces to solve difficult problems. Besides, the development program should help teachers achieve the ability to implement collective, project-based unit plans and schoolroom activities, while effectively guiding students in successfully completing their projects as well as in their deep understanding of key concepts.

The UNESCO ICT-CST framework is also meant to enable teachers under the development program to work with different open-ended software bundles relevant to their area of study, including data analysis, visualization, online referencing, and role-play simulations.

However, they should be able to analyze and evaluate the correctness and helpfulness of Web resources in backing of project-based learning with the area of study (Unwin 2009).

Teachers should be able to use an authoring platform or tools to create online content, and a network and suitable software to assess, manage, and monitor progress of different student projects. When communicating and collaborating with students, parents, and peers, teachers should be able to use ICT, which can also be a nurturing experience to student learning.

With a knowledge of networks, the UNESCO ICT-CST framework requires teachers to have the ability to enhance student collaboration within and outside the schoolroom. For instance,

teachers should have a way to learn how to use online databases, search engines, and electronic mails to find individuals and resources for joint projects.

Based on the UNESCO ICT-CST model of teacher development program, teachers should learn to place and prepare computing devices and other digital resources within the schoolroom so as to boost and support learning activities and social communications.

In other words, teachers must be able to manage student's project-based learning undertakings in a technology-enriched setting. On the other hand, teachers should have practical knowledge regarding the application ICT to access and partake in resources to reinforce their activities as well as their own professional development (Grizzle 2011).

This teacher development program can also train teachers to be able to use ICT to reach external experts and learning groups to enhance their activities as well as their own professional development in regard to technology-based instruction.

They should be able to use ICT to search for, analyze, manage, evaluate, and integrate information that can be applicable for enhancing their professional development. During and after study, teachers should be able to discuss the significance of developing knowledge management skills associated with the analysis of online resources, incorporating them into practice, and assessing their quality (UNESCO 2011). They also have to help their students learn to describe, discuss, and manifest knowledge of their practices in this context. This is important because the main goal is not only for teachers to acquire knowledge, but also to help their students learn from informed role models.

Knowledge Creation Approach

The policy goal of the knowledge creation of the approach of the UNESCO ICT-CST model of teacher development program is to improve productivity by producing teachers who are constantly engaged in and gain from the creation and innovation of knowledge. Therefore, after the development program, teacher should be able to design, modify, and implement school-level education improvement programs that put through key constituents of national education reform policies (UNESCO 2011). Teachers are also expected to have the ability to identify and demonstrate how students learn and show intricate cognitive skills, like those doing with collaboration, information management, critical thinking, and problem solving.

In helping learners apply ICT to develop the skills of exploring, managing, examining, evaluating, and integrating information, teachers should be able to discuss characteristics associated with efficacious information search and skills to manage, as well as how learning activities centered on technology can enhance the development and manifestation of these skills. They should also have the means to make their students create and show examples of such learning activities. The UNESCO ICT-CST model requires students to have the ability to design units and create classroom activities that can integrate various ICT tools and gadgets to help students obtain the skills enhancing planning, reasoning, communication, knowledge building, and reflective learning (Akhtar, Arinto & Abu 2009).

Teachers should learn to help their student apply ICT knowledge to develop their communications and collaboration skills, partly by discussing features expected of communication and collaboration skills and how the learning activities centered on technology can support these skills. Besides having teachers in the development program come up with examples of such activities, learning teachers should also simulate efficacious communication and collaboration through involution in virtual professional learning populations (Akhtar, Arinto & Abu 2009).

On the other hand, after the development program, teachers should be able to help their students in developing knowledge-based as well as performance-based rubrics and use them in evaluating their own understanding of the main subject matter and ICT skills and theories and the consideration of other students. Students should learn from their teachers how to use these assessments in improving their learning.

In implanting what they would have learned, the UNESCO ICT-CST model requires that teachers be able to discuss characteristics of self-assessment and peer-assessment, and of the knowledge-based and performance-based rubrics applied to reflect on their own learning as well as that of other students.

Teachers in the development program have to be made to make up and assess examples of such activities and rubrics (UNESCO 2011). This will ensure that they are able to guide their students in becoming creative and practical in the classroom. Teachers in the program should be allowed to develop performance-based and knowledge-based rubrics that heighten expectations for lengthening and intensifying learning of the main subject content and ICT skills and theories through the consolidation of emerging technologies.

The program should impart to teachers the skills necessary for the identification of the activities that help students in designing and planning of their own learning activities. Accordingly, teachers themselves should be trained on describing and identifying the role of ICT production resources and tools like multimedia recording equipment, editing tools, production and publication equipment and software, and web creation packages and apply them in helping students become innovative and able to create knowledge.

In other words, helping students relate with technologies associated with multimedia production, publishing, and web production enhancing their communication skills, knowledge production, and innovation (Liu 2001).

Accordingly, the UNESCO ICT-CST model requires that teachers be able to show their students how to use different production technologies to improve their learning. Teachers are also expected to have the ability to help their students reflect on their own study.

In the program, teachers should learn to take responsibilities as leaders with the ability to create a mind picture of their school in future, particularly after the integration of ICT into the curriculum and schoolroom practices. With that leadership responsibility, teachers should be trained in helping enhance innovation in their school. They should also be able to evaluate and reflect on professional practice continuously to help in continuing innovation and improvement. Therefore, it is necessary that they can recognize the professional practices that boost current innovation and improvement. The UNESCO ICT-CST program coordinators must give the teachers in the development class opportunities to provide examples of and demonstrate their leadership capabilities concerning enhancing innovation and improvement of ICT with a school.

Suggested Changes to the Program

As discussed previously, the UNESCO ICT-CST model of the teacher development program is flexible because it allows interested providers to become creative in designing content. Providers are also allowed to design programs in a modular format, covering areas in which they are interested. However, as an evaluator, I feel that the UNESCO ICT-CST model is not flexible

enough—its flexibility should be broadened. In other words, rather than calling the development program flexible and yet forcing providers to design according to the model's standard guideline, even the guidelines themselves should be left open for review (Voogt & Knezek 2008). This is particularly significant when dealing with such a revolutionary area as technology. Without such flexibility, technological innovation in an educational setting may not be accommodated easily, hence discouraging innovation.

The entire UNESCO ICT-CST model of teacher development program seems to be a one-size-fit-all. In other words, the program presents the same content and principals to teachers regardless of their status and technological background. Accordingly, the second change that would be necessary regards customization or individualization. As it is, UNESCO ICT-CST model assumes that all teachers do not have a background in ICT. For instance, the program assumes all teachers in the program do not know how to use the Internet or how to access websites and search engines. To make the program more interesting and effective, the program should be designed in a way that can recognize the teachers that have previously made individual efforts in updating themselves technologically (UNESCO 2003). Such teachers should either be trained separately or given the freedom to study advanced content or in areas that seem to be more complex to them. In the same spirit, the teachers that have never touched a computer should never be neglected and assumed to have even know how to power a basic device. Accordingly, they should be separated and during the initial classes, be given basic computer knowledge at least for them to learn to use a computer before they are taught how to implement technology in the classroom.

Teachers should be able to design online learning materials and activities that occupy students in collaborative research, problem solving, or artistic development. In addition, teachers should be able to assist their students in designing project programs and activities that require them to

research, solve problems, and create artistic impressions collaboratively. However, the UNESCO ICT-CST model of teacher development program appears to lack a fair deal of interactivity. The teachers in the program are just following the guidelines as instructed by the model, without being allowed to input their views into the design (UNESCO 2003).

Therefore, as an assessor, another change that I would like to be incorporated is enhanced interactivity. Program coordinators should be empowered to give the teachers in the program a chance to collaborate among themselves, and when necessary, adjust the program according to their views, but still follow the standards of the UNESCO ICT-CST model. This is partly because for teachers to introduce and implement technology-based activities that require interaction in their classrooms, they need to be involved themselves while they are studying. Being a good role model begins with a teacher having practical skills (Ng & Renshaw 2006). Therefore, generally, the UNESCO ICT-CST model program coordinators must engage their teacher-students one-on-one while they acquire technology-centered career development skills.

A school is a wide community with various people having different responsibilities at diverse capacities. For that reason, teachers in the development program should not only learn to implement technology in the classroom, but also among their colleagues, school management, and students' parents and guardians. In other words, to make the UNESCO ICT-CST model more effective, teachers in the development program must also be trained to relate with the community other than their students (Ng & Renshaw 2006). This can be particularly important if at some point the school decides to create a portal or an Intranet network exclusively for teachers and school management. Differently said, the UNESCO ICT-CST teacher development program can be modified to include such models as netiquette, secured file sharing, etc. The program should be enhanced in such a way that it can help teachers have the ability to unequivocally model their own reasoning, knowledge creation, and problem solving while teaching students.

Conclusion

Although the current set of competencies in the UNESCO ICT-CST model is presented as being comprehensive, its standards should not be fixed, but changing dynamically as conditions dictate. There should be a procedure in place to review and to approve definite curriculum and course delivery proposals, as well as to review the structure and constituents of the standards occasionally (UNESCO 2011).

Bibliography

AKHTAR, S., ARINTO, P. B., & ABU, H. M. (2009). *Digital review of Asia Pacific 2009-2010*. Montreal : IDRC.

NG, C. C., & RENSHAW, P. D. (2006). *Reforming Learning: Issues, Concepts and Practices in the Asian-Pacific Region*. Berlin: Springer Netherland.

GRIZZLE, A. (2011). *Media and information literacy curriculum for teachers*. Paris, France: United Nations Educational, Scientific and Cultural Organization.

LAW, N., PELGRUM, W. J., & PLOMP, T. (2008). *Pedagogy and ICT use in schools around the world: findings from the IEA sites 2006 study*. Hong Kong: Comparative Education Research Centre, University of Hong Kong :.

LIPSITZ, L. (1973). *Teacher education and educational technology*. Englewood Cliffs, N.J.: Educational Technology Publications.

LIU, L. (2001). *Evaluation and assessment in educational information technology*. New York: Haworth Press.

UNESCO. (2003). *Building the Capacities of Curriculum Specialists for Educational Reform: Final Report of the Regional Seminar, Vientiane, Laos PDR, 9-13 September 2002*. Paris: International Bureau of Education.

UNESCO. (2011). *UNESCO ICT Competency Framework for Teachers*. Paris, France: UNESCO.

UNWIN, T. (2009). *ICT4D: information and communication technology for development*. Cambridge: Cambridge University Press.

VOOGT, J., & KNEZEK, G. (2008). *International handbook of information technology in primary and secondary education*. New York: Springer.