



EFFECTIVE INTEGRATION OF ICT WITH PROFESSIONAL DEVELOPMENT OF TEACHERS

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Abstract

Professional development should help engage teachers in activities that improve their performance in the classroom. In addition, professional development of the teacher–learner has become a focus with recent changes in teacher evaluations in some states, i.e., adopting pay-for-performance models. If student achievement is contingent on a highly effective teacher, then the duty of every school district and building-level administrator is to find and implement the best professional development opportunities. Technology and the use of ICT has created an entirely new avenue for professional development. Able to plan instruction which promotes problem analysis, critical thinking, creativity, leadership development and decision-making based upon subject matter, organization and integration of content and the relationship of content to education, career and life goals; student learning and motivation, with emphasis on individual differences; the community; and current education standards and practices



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INTRODUCTION

“Nothing has promised so much and has been so frustratingly wasteful as the thousands of workshops and conferences that led to no significant change in practice when teachers returned to their classrooms” (Fullan, 1991, p. 315). Research studies have concluded that the biggest indicator to predict student achievement is teacher effectiveness. Over 40 years of educational research has pointed to the classroom teacher as the most important factor in increasing student achievement(Wong 2001) There is a need to upgrade teachers’ capabilities in most countries, especially with regard to content and pedagogy, and in facilitating hands-on activities for science lessons, as well as on the introduction of contemporary technologies to enhance student learning in science. While countries vary in their process for preparing future teachers, some with specialization in science and some without, they all express a need for the adequate training of their teachers. The situation is particularly pressing with respect to teachers at primary and secondary school levels. It is

here that the foundations for an enquiring mind and of basic concepts are laid. Many teachers at these levels are ill-informed about current developments in science, and, being themselves frustrated due to poor working, economic or social conditions, they can hardly be expected to provide inspiring mentorship. Data from an international study (TIMSS, 1999) suggest that students perform better in science and mathematics under teachers who enjoy firm and positive academic support from school principals and departmental heads who understand the importance of appropriate training, materials and supplies, as well as facilities for conducting hands-on activities for students. Moreover, while teachers need to provide more time for instruction, especially for advanced courses, they also need support from their superiors in creating a more conducive learning environment. Most principals from top-performing countries are full-time administration officials who spend minimal time on teaching, allowing them to focus on their administrative role. In addition, low student enrollment

Teacher's professional development should provide forms of pedagogy that teachers can use in their classrooms. These training programs should accomplish Empowering teachers to develop their knowledge and skills actively and experientially, in a variety of learning environments, both individual and collaborative. Include a variety of learning strategies, encompassing direct instruction, deduction, discussion, drill and practice, deduction, induction, and sharing. Aim at higher-order thinking skills. Provide an authentic learning environment so that teachers engage in concrete tasks within realistic scenarios. Emphasize ways that technology can facilitate and enhance teachers' professional lives. Encourage teachers to be mentors, tutors, and guides of the students' learning process rather than simple presenters of knowledge and information. Develop teachers' skills in learning how to learn (define learning objectives, plan and evaluate learning strategies, monitor progress, and adjust as needed Promote cooperative and collaborative learning. Be sensitive to the culture and diversity of teachers as learners, using a multifaceted approach to respond to different learning styles, opportunities, environments and starting points. Monitor students' understanding of content through a variety of assessment strategies; provide feedback to students to assist learning. Being able to use advanced technology to extend and enhance learning. Design, conduct, and evaluate laboratory activities that target the development of science concepts, using techniques. Being able to use prior conceptions and student interests to promote new learning. Research studies have concluded that the biggest indicator to predict student achievement is teacher effectiveness (Aaronson, Barrow, & Sander, 2007; Marzano, 2003; Sanders & Horn, 1998; Wong 2001). "Professional development

should be able to increase the professional life of the teacher, remediate the struggling teacher, reflect the school improvement goals of the building, and help bring a systemic process change to the building” (Blandford, 1998, p. 2).

Traditional Professional Development

The traditional styles are still commonly used today. Progress in technology and the approach to professional development has created more avenues for a teacher to participate in professional development. A more traditional approach is also found in the idea of professional training, which has been defined as “conferences, courses, and workshops that emphasize practical information and skills, managed and delivered by local education authority (LEAs), schools’ external consultants or trainers from HEIs. Such courses may lead to academic awards or accreditation towards national standards” (Blandford, 2000, p. 7).

Current Professional Development

Traditional one-time teacher training workshops have not been effective in helping teachers to feel comfortable using technology or to integrate it successfully into their teaching. Instead, a new paradigm is emerging that replaces training with lifelong professional preparedness and development of teachers. This approach includes at least three dimensions:

- Initial preparation/training (pre-service) that provides teachers with a solid foundation of knowledge; competency in teaching, classroom management, and organization skills; mastery of the subject matter they will teach; and proficiency in using a variety of educational resources, including technology.
- Workshops, seminars, and short courses (in-service) that offer structured opportunities for acquisition of new teaching skills and subject matter knowledge, as well as skills development in the use of technology in the classroom, that are government-certified and linked to teachers’ professional career development.
- Ongoing pedagogical and technical support for teachers as they address their daily challenges and responsibilities.

ICT AND PROFESSIONAL DEVELOPMENT

Professional development in the past generally consisted of a teacher attending a college class, a conference, or a workshop. ICT based technologies such as Skype, webinars, E-learning, Twitter and Facebook all provide virtual classrooms. Video conferencing has provided school teachers and principals with many more options for large-group professional development experiences.

The professional development that uses technology ICT should incorporate the fundamental components that research has found to be essential, including:

- Direct connection to student learning. The goal of teacher professional development is improved student achievement.
- Hands-on technology use. This requires development of core technology competencies and skills and actual application of skills in the classroom.
- Curriculum-specific applications. To the fullest extent possible, teachers need to see a direct link between technology and the curriculum for which they are responsible.
- New roles for teachers, as facilitators and guides, not simply as lecturers or instructors.
- Active participation of teachers and Professional development as an ongoing process.

E-Learning

Technology has created and added new formats that teachers can use for professional development. Halse and Mallinson (2009) found that podcasting, blogging, social networking tools, microblogging, and collaborative editing are the most issued forms of professional development. The audio format is able to be downloaded using MP3 or iPod technology. Blogging allows teachers to take part in collaborative professional development. Carvin (2006) wrote, “Lots of educators blog so they can have a professional dialog with their colleagues. Everyone can benefit from discussing the various challenges we all face in our work, and blogs serve as a mechanism for sharing those ideas” (para. 15). Social networking tools continue to grow. Examples of social networking sites are Facebook, Twitter and Live Journal (Carvin, 2006).

Distance Learning, Webinars, Live Virtual Classrooms, Skype, and Video Conferencing

Distance learning, webinars, virtual classrooms, Skype, and other forms of video conferencing are all designed around a common theme of flexibility. The teacher does not have to leave his or her classroom or house to participate in professional development.

The degree to which we are impressed with the format might overstate the value of the content. McCullagh (2012) argued that using video technology is a motivating form of professional development. Teachers are able to view their own teaching skills and interactions with their pupils. The teacher is also able to monitor their development of improving their instructional delivery. Video recording also allows for peer conversation and supervisor conversation.

Teachers begin to learn skills through ICT and develop new knowledge online, through interaction with instructors, mentors, peers, and subject matter experts, modeling the potential learning experience of their students after the training. More specifically, from a pedagogical perspective, teachers working together online with their instructors, peers, and experts share and collectively construct their skills and knowledge.

Teacher professional development in the use of ICT to improve teaching and learning needs to be: multifaceted, modular, authentic, collaborative, ongoing, allocated sufficient time and financial resources, cost-effective and evaluated and revised.

While technology increases teachers' training and professional development needs, it also offers part of the solution. Information and communication technologies (ICTs) can improve pre-service teacher training by providing access to more and better educational resources, offering multimedia simulations of good teaching practice, catalyzing teacher-to trainee collaboration, and increasing productivity of non instructional tasks. ICTs also can enable in-service teacher professional development at a distance, asynchronous learning, and individualized training opportunities. Finally, ICTs can overcome teachers' isolation, breaking down their classroom walls and connecting them to colleagues, mentors, curriculum experts, and the global teacher community.

Despite all the time and money given to professional development, there is usually little change in teacher behavior, thus, student achievement. Well-implemented professional development should influence teacher behavior in the classroom. A challenge that teachers and administrators face is choosing from the different types of professional development available, especially when electronic delivery systems choices have become vast. Teachers and administrators need to know the best form of professional development and how to best implement that professional development, especially through ICT to the school or district, making meaningful changes to teacher behavior in the classroom. Social media and ICT has increased the available forms of professional development.

CONCLUSION

Classrooms contain students with a wide range of educational and social-emotional needs that need to be met. When looking at professional development and the link to student achievement, it is imperative to look at the needs of each individual teacher and classroom. Teachers often lack the skills needed to meet the needs of every student. It is necessary to provide professional development that has positive impacts on teacher's quality and

instruction. It is important as we work with teachers to increase their skills in order to meet the needs of all learners

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