1. Background: Setting up the stage

A paper based on the work of TWG 3 at EDUsummIT 2011 (Twining, Raffaghelli, Albion, & Knezek, 2013) includes an update of key literature on TPD, with a focus on TPD aimed at supporting the integration of technology for the enhancement of learning and teaching across all disciplines. It is noted that quality teachers are the most important factor influencing student learning (Rivkin, Hanushek, & Kain, 2005) and that TPD should go beyond encouraging technology adoption for common tasks to a focus on improved learning and teaching. In this respect, effective teaching requires the effective use of technology (Ertmer & Ottenbreit-Leftwich, 2010) and should build upon the integration of knowledge across the domains of content, technology and pedagogy (TPACK) (Mishra & Koehler, 2006).

Several studies (e.g. Liu, 2012; Postholm, 2012; Sun et al., 2013) recognize the potential of TPD that is tailored to local conditions and takes advantage of mutual support among teachers. Kopcha (2012), for instance, noted the benefits of TPD that was situated in the local context and responded to needs by transitioning over time from mentoring by an outside expert to teacher-led communities of practice (CoPs). Matching TPD to local needs has also been managed using a design-based approach that was successful in promoting generative teacher knowledge and ICT integration (O’Hara, Pritchard, Huang, & Pella, 2013). Beyond the local school, Holmes (2013) reported on the success of TPD facilitated through an online learning community that crossed regional and national boundaries. Communities of practice have also been used to provide PD for school leaders (Bouchamma & Michaud, 2013).

TWG3 at EDUsummIT 2011 identified several obstacles to effective TPD, such as a lack of consistent vision for (technology integration in) education; poor matching of TPD to needs of teachers; failure to engage all stakeholders in decisions; and lack of harmony among context, policy, practice, and research. Consensus developed around a particular concern that research-based knowledge for effective professional development is not adequately disseminated in a
manner that impacts policy or practice. Proceeding from this base and considering the recent research noted above, we proposed that TWG3 at EDUSummit 2013 initiate its discussions around the following:

1. Despite progress in some areas, a major challenge remains to engage all stakeholders in developing a shared vision about the role of ICT in education with a focus on TPD in order to realize this vision.

2. School-based communities of practice and professional learning networks have been effective in TPD for building ICT integration capability. The related challenge is to engage more teachers in these forms of TPD.

3. Teachers are required to exhibit effective teaching, using effective models for TPD. Hence, there is a need for vignettes of effective practices, which can be assembled into models for TPD for pre- and in-service teachers.

4. Leadership and management conditions for TPD need to be defined and researched, as principals and leading pedagogic staff are considered arrowheads for facilitating technology-enhanced educational innovation.

5. The gap between educational research and the practice of teachers in classrooms has been noted previously. There is a need for educational research that is more closely connected to, and informs, the practice of teachers and vice versa.

6. Teacher educators should be included in the TPD scheme - usually the target population is in-service teachers; hence, training is in many cases a top-down process. Teacher educators are part of the academia, and as such are involved in training the new generation of teachers. As researchers, they may have many recommendations for policymakers as a result of their studies and experience - this should be utilized for enhancing TPD.

2. Recommendations

Vision:

1. There is an urgent need to develop a joint vision that facilitates technology enhanced learning for pedagogic transformation rather than assimilation of technology into current pedagogical settings.

2. Notwithstanding it is also necessary to develop a local school vision (bottom-up) of ICT implementation, as an integral component of the general pedagogical PD in accordance with specific needs and emphases.

3. Technology integration should be seen as an integral part of teacher education at large; hence, a change of approach to teacher education altogether is a prerequisite to implementing technology enhanced learning as an integral part of TPD (e.g. Finland).

Policymakers:

1. An education master-plan for TPD – 21st century skills rather than IT skills – top-down, combined with encouraging bottom-up initiatives - should be laid out for pre-service and in-service PD.
2. All stakeholders should be included in decision-making processes for a TPD masterplan facilitating technology-enhanced learning. It is imperative to be attentive to different voices focusing on diverse needs.

3. The need for TPD is unquestioned; however, there is need for allocation of resources for effective TPD (e.g. time, including for participation in conferences, mentors and tutors etc.).

4. Professional standards and principles need to be set for education, with regards to technology-enhanced learning, e.g. teachers as designers of practice, innovations and research – as means of generating knowledge.

5. Local TPD needs to be developed, according to school culture, teachers’ needs, stage of ICT implementation; hence, PD needs to be seen as a continuing process.

6. Cost-effectiveness of TPD should be measured. Therefore, a financial model for assessing TPD for technology-enhanced learning needs to be developed.

Practice:

1. TPD needs to be promoted according to specific educational-pedagogical needs, e.g. technology integration for special education (following inclusion policy).

2. Development of resources is vital to the effective implementation of TPD for technology-enhanced learning. These resources are in line with theoretical models emphasizing the need for accessible online best practices.

3. Training by commercial parties or NGOs is welcome and recommended in cases in which national training via MOEs is insufficient.

4. Usage of theoretical models (e.g. TPACK, SAMR) is necessary for practice as well as research focusing on TPD initiatives.

5. Implementation of PD in learning communities allows teachers to interact as learners, moreover, as lifelong learners. Teachers as learners is a switch of roles that has been mentioned in the literature. In these PLCs teachers can share practices (online and f2f) and professional experiences, including visits to schools.

Research:

1. Research and development should be promoted via design-based research and/or action-based research using blended approaches. Research should be executed by joint enterprises of academia and practitioners.

2. Research needs to promote global as well as local themes, and should reflect TPD priorities.

3. Promotion of masters programs in Technology in Education may serve as a lever in combining design-based research with practice, since many of the candidates will be in-service teachers; this is especially relevant for institutes in which the expertise is teacher education (e.g. education colleges).
3. Action plans

Local-level actions:
- Include technology in professional training as an integral component of the educational setting.
- Create local CoP for TPD, including technology as a component crossing all disciplines.

National-level actions:
- Establish policy for TPD including long-term development of ICT-based effective implementation models.
- Use models for assessing TPD for technology integration, e.g. the LOGIC model, SAMR model.
- Allocate funding for action research and/or design based research around TPD for technology integration.

International-level actions:
- Call for action to international organizations (e.g. UNESCO) for establishing international CoPs of teachers and faculty teaching pre-service teachers.
- Exchange programs for teachers worldwide, supported by MOEs and international organizations.
- Support translation of white papers to several languages and adapt to local cultures - via international NGOs.

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References


