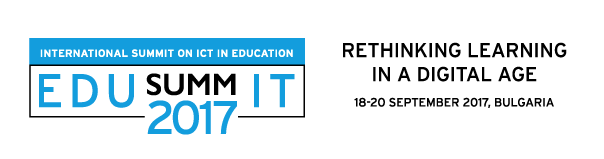
**Working Group 3: Professional development for technology-enhanced learning leaders**

Group leaders:

Rhonda Christensen, University of North Texas, Denton TX USA

Koos Eichhorn, The Netherlands

Group members:

Ghaiada Alayyar, Kuwait; Rowland Baker, USA; Christine Bescherer, Germany; Tania Broadley, Australia; Paul D’Souza, India; Asmaa Ganayem, Israel; Yidda Marcial, Ecuador; Shesha Kanta Pangeni, Nepal; El El Phyu, Myanmar; Sarah Prestridge, Australia; Juliana Elisa Raffaghelli, Italy; Jeroen van Kesteren, The Netherlands; Delores Zambrano, Ecuador; Henk Sligte, The Netherlands; Dominik Petko, Switzerland

**Introduction**

“Leading in a culture of change means creating a culture of change. It does not mean adopting innovations, one after the other, it does mean producing the capacity to seek, critically assess, and selectively incorporate new ideas and practices – all the time, inside the organization as well as outside it” (Fullan, 2001, p. 44).

The focus of TWG3 is professional development for school leaders with an emphasis on how to provide effective technology enhanced instruction from the perspective of a culture of learning. Learning technologies should support curriculum in ways that are not otherwise possible. Rather than focusing on the technology, learning activities should meet instructional goals and involve technology when it enhances the learning. Often teachers conceptualize integration as technological rather than primarily as curricular (Hutchison & Reinking, 2011). However, the focus should be on the learning and the curriculum, not the technology.

The success or failure of the effective use of technology for learning in schools can be linked to beliefs and ideas of instructional leaders (Hughes & Zachariah, 2001). School culture that emphasizes shared goals and collaboration has been shown to have a positive impact on innovative practices and learner-centered pedagogies by teachers (Jacobson, So, Teo, Lee, Pathak, & Lossman, 2010).

**Background**

**Effective Schools**

Productive schools are defined as having a clear and defined vision of high-quality learning, curriculum, instructional strategies, staff development and assessment (NCREL, 2001). Effective schools rely on effective leadership that creates opportunities for open dialog, idea generation and collaborative planning among stakeholders (Vanderlinde & van Braak, 2013). Leadership that guides learning in the classroom involves multiple participants including classroom teachers, school principals, instructional coaches, curriculum coordinators, professional development providers, and other individuals charged with guiding schools to be effective in preparing students for their future roles in society. “Modeling technology use, planning and articulating a vision, rewarding teachers as they strive to incorporate technology, and sharing leadership are common characteristics of successful technology leaders” (Baylor & Ritchie, 2002, p.3). School leaders can foster credibility and respect by modeling the use of technology, discussing ways in which technology can improve learning with teachers, and participating alongside teachers in technology professional development sessions (Baylor & Ritchie, 2002).

School leaders needs experience working with learning technologies to understand how to encourage and implement these tools in their school setting. However, most schools are not led by technology-savvy leaders (McLeod & Richardson, 2011) due to the fact it was not a part of their educational leadership programs or they do not feel otherwise prepared to make decisions related to technology in their schools. Most programs in higher education that prepare educational leaders do not dedicate courses in the degree program to the topic of school technology leadership (Richardson, Flora, & Bathon, 2013).

**Defining Learning Leaders**

These leaders may be curriculum specialists, technology coordinators, teacher team leaders, instructional technology specialists, teacher leaders or others charged with enhancing instruction. Characteristics of these leaders include the ability to: create independence, foster innovative pedagogical practices, empower classroom teachers to enhance learning through technology, lead change, adapt to new ideas and practices, share best practices with a broader audience, critically assess and selectively incorporate new tools and instructional practices, and collaborate with other educators. No matter who is the designated leader in a school, it is important for the community to have a shared vision for transforming learning. Technology is one tool that can be used to accomplish the learning vision in new and innovative ways.

**Principals as professional learning leaders for technology enhanced learning**

School principals often set the tone for the school in which they lead. Often these leaders have not been prepared in their university educational leadership programs to lead technology innovations. The role has changed significantly in the past decade and often preparation to lead with technology was absent or very fragmented. The school principals have typically been charged with setting the vision for the school but now the vision must include the integration of digital tools for learning. Researchers investigating factors that impact the effectiveness of technology on learning found the school leadership to be a critical variable (Anderson & Dexter, 2005). Specifically, in a meta-analysis of 12 studies, Tan (2010) found a transformational style of leadership to be associated with higher levels of technology integration and use. Transformational leadership traits include a shared decision making approach among stakeholders, including teachers.

Principals, who are learning leaders rather serving in a strictly administrative function, are charged with leading transformative approaches in schools. These leaders must be risk-takers, forward thinking, problem solvers and confident in their pedagogical understandings (Hew & Brush, 2007; Pelgrum, 1993). Leading technology-enhanced learning must move beyond a management approach but must engender the role of being a change agent for technology adoption to be innovative and implicit within teaching and learning in a school (Fullan, 2014; Leithwood & Riehl, 2003; Macneill, Cavanagh, & Silcox, 2005). School leaders should create change-oriented environments supporting experimentation and innovation, as well as include teachers in the decision-making processes (Reio & Lasky, 2007) for sustainability and ownership of such change.

To support technology use, the school principal must develop a vision of how school reform will be influenced by technology use (Chang, 2012). The development of this vision requires that the school principal understands the potential benefits and can articulate how and why technology used in particular ways will enhance learning (Bridges, 2003; Chang, 2012) In this way pedagogical thinking leads choice of ‘tooling’ or resourcing the curriculum.

Research suggests that principals’ and teachers’ pedagogical beliefs about technology should align (Alghamis & Prestridge, 2015) to ensure a more fruitful integration. The alignment of beliefs among these stakeholders can make leading school wide reform less challenging.

**Teachers as professional learning leaders for technology enhanced learning**

Enabling teacher leadership can assist in creating an environment of innovative learning with technology (Hughes & Zachariah, 2001). Classroom teachers who are learning leaders were defined as having a behavior reflecting a high level of engagement with the profession of teaching and with other teachers (Riel & Becker, 2008). Teacher leaders were found to be more constructivist in their teaching style and used technology substantially more than those teachers who were defined as traditional teachers. The research also found that these teacher leaders were more likely than traditional teachers to place emphasis on higher cognitive processes for learning and to use more active learning strategies (Riel & Becker, 2008). Some of the defining traits of these learning leaders included learning from one’s own teaching, collaborating and sharing responsibility for student success, participating in diverse communities of practice and making personal contributions to the teaching profession. Riel and Becker (2008) found a high correlation between teacher leaders and innovative technology users. Teacher leaders were ten times as likely as traditional teachers to be designated as exemplary technology users. In addition, these leaders used technology in more sophisticated ways to impact learning.

Teachers who believe in the positive learning benefits of technology-enhanced learning are more likely to persist to overcome first order barriers, such as access and time constraints (Ertmer & Ottenbriet-Leftwich, 2013). These teachers often are the ones who persist and experiment over time to refine the way technologies are used (see Ertmer et al 2012 use of technologies as a transformed approach). Dweck’s (2010) growth mindset, that acknowledges effort and resilience for prosperous outcomes, can be applied to these teachers. This shaping and reshaping has been described by Prestridge (2017) as a reforming process between teacher’s beliefs and practices that are triggered to change as they implement technologies. Triggers could be dissatisfaction/satisfaction with student learning outcomes, the way/s students use or don’t use the technology or underlying beliefs that are challenged.

Leading with technology enhanced learning involves demonstrating innovative practice in the classroom but more so it involves supporting others to lead, grow and develop. At the core of such a proposition is leader as mentor and knowledgeable-others who collaborate with and from the side rather than in front. The benefits of collaborating have been analyzed by Blitz (2013) through teachers’ engagements in professional learning communities which are based around improving student learning outcomes through response driven change enabled through structured collaborative interchanges. As a professional learning process to improve pedagogical practice, teacher collaborative activities have been shown to provide a space and place for dialogue that supports the growth of new ideas (Meirink, Imants, Meijer, & Verloop, 2010), improve technological competencies (Egodawatte, McDougall, & Stoilescu, 2011) and broaden teaching strategies (Shipley, 2009). Fundamentally, teacher leaders are co-designing, co-constructing, critiquing, participating in teams, special interest groups, in professional networks or with colleagues online, in schools and across districts providing evidences of leading through many forms of collaboration.

**Professional Development for Leaders**

As roles are redefined for teachers and leaders, it requires all to be learners (Hughes & Zachariah, 2001). Leaders who will successfully integrate technology must be able to model the technology and understand how it can be used as an instructional or transformational tool while retaining a focus on systemic thinking as they assist others through the transformation of teaching and learning (Hughes L& Zachariah, 2001). Leaders should be learning both alongside teachers and from their peers in other locations who face the same issues and challenges. School leaders need guidance and preparation for leading schools into the modern digital learning environment (Richardson, Flora & Bathon, 2013). Guidelines have been created by different organizations to help guide educational leaders in the realm of technology leadership.

The International Society for Technology in Education (ISTE) has been known for creating standards for students, teachers and more recently for administrators. The administrator standards are focused on five areas: (1) visionary leadership to inspire, engage and advocate; (2) digital age learning culture that includes creating a learner-centered environment to support meeting diverse needs of learners; and (3) excellence in professional practice intended to promote an environment of empowerment for educators; (4) systemic improvement to provide necessary tools and resources for learning; and (5) digital citizenship in which administrators model and facilitate social, ethical and legal issues related to teaching and learning in a digital culture (ISTE, 2009).

In addition to the ISTE standards, the Teacher Leadership Exploratory Consortium (2012) developed standards relating to teacher leadership. These standards relate to advocating for students, mentoring new teachers, informing others/sharing knowledge, connecting with community, connecting with parents and families, teaching others, communicating/advocating and collaborating with others.

**Innovative practices or models for creating leaders**

Innovative models for developing learning technology leaders need to be underpinned by notions of pedagogical and curriculum change, personal qualities of adaptability, drive and resilience as well as professional qualities of collaboration, mentoring and contribution. No longer can professional approaches sustain models of learning that are based on ‘experts’ delivering content to teachers replicating traditional top-down training based on the assumption that “teachers need direct instruction about how to improve their skills and master new strategies” (Lieberman & Miller, 2014, p. 7). Models or approaches founded on this premise provide little to those teachers who are leading with technologies in their schools. Professional development needs to equip leaders to act as shapers, promoters and well-informed critic of innovations and reform (Little 1999).

With the advent and accessibility of the Internet, there are many opportunities for technology leaders to direct their own professional learning (Prestridge & Main, in press). These could be part of their own social spaces that merge with their professional spaces such as Facebook groups; free or user pay Massive Open Online Courses (MOOC); or professional learning networks through Twitter. One example of a learning network that connects like-minded leaders who share their collective wisdom is connectedprincipals.com (Shrum & Levin, 2016).

Fundamentally, the move to self-directed professional learning provides greater possibilities in developing one’s own needs and interests but also and more significantly, the possibility for leaders to contribute to the growing community’s knowledge (Prestridge & Tondeur, 2015). In this way teacher leaders do not just consume content but rather through active participation in an online community, they contribute to the growing knowledge of that community and can collaborate, co-design and mentor colleagues (Prestridge, 2016). Professional learning that is driven by the teacher leader is more organic in nature where teachers move in and out of learning spaces based on their timely needs, interests and school based professional agendas (Sumuer, Esfer, & Yildirim, 2014).

Creating leaders who are able to motivate, communicate and facilitate the development of other stakeholders in the implementation of the vision of the school is critical for thriving in a digital culture in education. Researchers in the educational leadership field have suggested that it is important to make a distinction between leader and manager for innovative change in educational systems (Franciosi, 2012). The distinction is further made between transformational leadership versus transactional leadership as a better model for successful technology enhanced learning in schools. “Transformational leadership focuses on developing the organization’s capacity to innovate…focuses on developing a shared vision and shared commitment to school change” (Hallinger, 2010, p.4). The three key components of Transformational Leadership include the establishment of a vision to set the direction, the development of the faculty members to accomplish the vision and the redesign of the organization to support work towards the vision (Graziano, Herring, Carpenter, Smaldino, & Finsness, 2017).

Leaders with the ability to transform learning will need to provide support for teachers in creating a collaborative learning environment in their classroom that is also supported by digital tools. Leaders need to reconfigure time to allow educators to spend quality time planning together (Schrum & Levin, 2012).

To lead successfully in the twenty-first century, administrators will have to address the ubiquitous nature of technology, bring it into their schools to be used as a tool for learning and accommodate students and teachers who are accustomed to using technology as a tool for learning both inside and outside the classroom. (Schrum & Levin, 2012, p. 21).

In recent years, new models of learning that capitalize on the power of technology and artificial intelligence are changing the way students learn. The Khan Lab School in California uses software they developed to pursue individual goals and schedules (The Economist, 2017). The role of the teacher is now as mentor for both academics as well as developing character traits such as curiosity and self-awareness (The Economist, 2017). In addition, the AltSchools foster personalized learning and student agency. They began in California in 2013 and have several lab schools in California and New York but are allowing schools to become partner schools using their model. Instead of textbooks, students have playlists they use to access their online lessons and tests. Software is used to assess student progress allowing teachers to focus on other tasks such as social skills and one-on-one tutoring (altschool.com, 2017).

**Implications and Recommendations for Researchers, Practitioners, and Policymakers**

**Key issues and questions to be discussed during EDUsummiT 2017**

Characteristics of technology-enhanced learning leaders

Role of learning leaders in using technology in schools

Preparing teaching leaders

Role of the universities in preparing and training pre-service teachers (for the classroom of tomorrow)

How TEL leaders learn

Challenges for providing professional development to learning leaders

Assessing Leadership Impact

Leadership Role in Bridging the Gap of Research informing Practice

**References**

Alghamdi, A. & Prestridge, S (2015) Alignment between principal and teacher beliefs about technology use. *Australian Educational Computing*, 30(1).

AltSchool. (2017). About AltSchool. http://www.altschool.com

Anderson, R.E. & Dexter, S. (2005). School technology leadership: An empirical investigation of prevalence and effect. *Educational Administration Abstracts, 40*(3), 49-82.

Baylor, A.L. & Ritchie, D. (2002). What factors facilitate teacher skill, teacher morale, and perceived student learning in technology-using classrooms? *Computers & Education, 39*(4), 395-414.

Blitz, C. L. (2013). Can online learning communities achieve the goals of traditional professional learning communities? What the literature says. *REL 2013-003*. Regional Educational Laboratory Mid-Atlantic.

Bridges, J. W. (2003). Principal influence: Sustaining a vision for powerful new forms of learning using technology. (Dissertation/Thesis), ProQuest.

Chang, I. Hua. (2012). The effect of principals' technological Leadership on teachers' technological literacy and teaching effectiveness in Taiwanese elementary schools. *Journal of Educational Technology & Society, 15*(2), 328-340.

Dweck, C. S. (2010). Mind-sets. *Principal Leadership*, *10*(5), 26-29.

Egodawatte, G., McDougall, D., & Stoilescu, D. (2011). The effects of teacher collaboration in Grade 9 applied mathematics. *Educational Research for Policy and Practice, 10*, 189-209. doi:10.1007/s10671-011-9104-y

Ertmer, P.A., & Ottenbreit-Leftwich, A. (2013). Removing obstacles to the Pedagogical changes required by Jonassen’s vision of Authentic Technology- Enabled Learning. *Computers & Education*, 64, (2013), 175-182.

Ertmer, P. A., Ottenbreit-Leftwich, A. T., Sadik, O., Sendurur, E., & Sendurur, P. (2012). Teacher beliefs and technology integration practices: A critical relationship. *Computers & Education, 59*(2), 423-435.

Franciosi, S.J. (2012). Transformational leadership for education in a digital culture. *Digital Culture & Education, 4*(1), 235-247.

Fullan, M. (2001). *Leading in a culture of change*. San Francisco, CA: Jossey-Bass.

Fullan, M. (2014). *The principal: Three keys to maximizing impact*/Michael Fullan. San Francisco, CA: Jossey-Bass.

Graziano, K.J., Herring, M.C., Carpenter, J.P., Smaldino, S., & Finsness, E.S. (2017). A TPACK diagnostic tool for teacher education leaders. *TechTrends, 61*, 372-379.

Hew, K. F., & Brush, T. (2007). Integrating technology into K–12 teaching and learning: Current knowledge gaps and recommendations for future research. *Educational Technology Research and Development, 55*(3), 223–252. doi:10.1007/s11423-006

Hughes, M., & Zachariah, S. (2001). An investigation into the relationship between effective administrative leadership styles and the use of technology. *International Electronic Journal for Leadership in Learning (IEJLL), 5*(5).

Hutchison, A., & Reinking, D. (2011). Teachers’ perceptions of integrating information and communication technologies into literacy instruction: A national survey in the United States. *Reading Research Quarterly, 46*(4), 312-333.

ISTE Standards for Administrators. (2011). NET•S for Administrators. www.iste.org/standards/standards/standards-for-administrators

Leithwood, K. A., & Riehl, C. (2003). *What we know about successful school leadership*. Nottingham, UK: National College for School Leadership.

Levin, B.B., & Schrum, L. (2017). *Every teacher a leader: Developing the needed dispositions, knowledge and skills for teacher leadership*. Thousand Oaks, CA: Corwin Publishing.

Lieberman, A & Miller, L. (2014). Teachers as professionals: Evolving definitions of staff development, in L. Martin, S. Kragler, D. Quatroche & K. Bauserman, K (Eds.). *Handbook of professional development in education: Successful models and practices, Prek-12*. Guilford Publications. Chapter 1. 3-21.

Little, J. W. (1999). Organising schools for teacher learning. In L. Darling-Hammond & G. Sykes (eds.), *Teaching as the learning profession: Handbook of policy and practice* (233-262). San Francisco: Jossey Bass.

Macneill, N., Cavanagh, R. F., & Silcox, S. (2005). Pedagogic leadership: Refocusing on learning and teaching. *IEJLL: International Electronic Journal for Leadership in Learning, 9*(2).

McLeod, S., & Richardson, J.W. (2011). The dearth of technology coverage. *Journal of School Leadership, 21*(2), 216-240.

Meirink, J. A., Imants, J., Meijer, P. C., & Verloop, N. (2010). Teacher learning and collaboration in innovative teams. *Cambridge Journal of Education, 40*, 161-181.

NCREL, 2001. Preliminary characteristics of productive schools. Online: www.ncrel.org/Cscd/pubs/lead31/31prdlst.htm.

Pelgrum, W.J. (1993). Attitudes of school principals and teachers towards computers: Does it matter what they think? *Studies in Educational Evaluation, 19*(2), 199–212. doi:10.1016/0191-491X(93)90007-E9022-5.

Prestridge, S & Main, K. (in press) Teachers as drivers of their professional learning through teams, communities and networks. In J. Voogt, G. Knezek, R. Christensen, and K.-W. Lai (Eds) *International Handbook of Information Technology in Primary and Secondary Education, 2nd Edition*.

Prestridge, S. (2017). Examining the shaping of teachers’ pedagogical orientation for the use of technology. Technology, Pedagogy and Education, 1-15.

Prestridge, S. (2016) Conceptualising self-generating online teacher professional development, *Technology, Pedagogy and Education,* DOI:10.1080/1475939X.2016.1167113

Prestridge, S. & Tondeur, J. (2015). Exploring elements that support teachers’ engagement in online professional development. Special Issue: Web-Mediated Approaches to Teachers’ Professional Development, *Education Sciences*, 5 (1) doi:10.3390/educsci50x000x

Reio J., Thomas G., & Lasky, S. (2007). Teacher risk taking changes in the context of school reform. *Standards in Education, 7*, 13.

Richardson, J.W., Flora, K., & Bathon, J. (2013). Fostering a school technology vision in school leaders. *NCPEA International Journal of Educational Leadership Preparation, 8(*1), 144-161.

Riel, M. & Becker, H. (2008). Characteristics of teacher leaders for information and communication technology. In J. Voogt and G. Knezek (eds.) *International Handbook of Information Technology in Primary and Secondary Education*, pp. 397-417. New York: Springer.

Schrum, L., & Levin, B.B. (2016). Educational technologies and twenty-first century leadership for learning. *International Journal of Leadership in Education, 19*(1), 17-39.

Shipley, W. (2009). *Examining teacher collaboration in a kindergarten building: a case study* (Unpublished doctoral dissertation). Duquesne University, Pittsburgh

Sumuer, E., Esfer, S., & Yildirim, S. (2014). Teachers’ Facebook use: their use habits, intensity, self-disclosure, privacy settings, and activities on Facebook. *Educational Studies*, 40(5), 537-553.

Tan, S.C. (2010). Technology leadership: Lessons from empirical research. *Ascilite* (p 891-895). Sydney, Australia.

Vanderlinde, R., & van Braak, J. (2013). Technology planning in schools. An integrated research based model. *British Journal of Educational Technology, 44*, E14-E17.

**Recommended readings**

Riel, M., & Becker, H. (2000). The beliefs, practices and computer use of teacher leaders. Paper presented at the American Educational Research Association, New Orleans, April 26, 2000.

Snoek, M. (2014). Developing teacher leadership and its impact in schools. Dissertation, University of Amsterdam.

Van der Heijden, M. (2017). Teachers who make a difference: An investigation into teachers as change agents in primary education.