Principals’ Technology Leadership: A Mixed Methods Case Study

Abstract: Innovative leadership practices of principals involved in making school-wide improvements with technology in teaching and learning were examined using an explanatory mixed methods case study approach. Both quantitative and qualitative data were collected from principals and teachers in three school districts across Alberta over one school year using a variety of technologies for research. Ways in which principals utilize social and technological networks to support educational reform as a process of teaching and learning improvements were also explored. Key findings have implications for leaders, researchers and policy makers: (1) leadership preparation should focus on instructional leadership and increasing levels of technological fluency; (2) professional learning and growth for school leaders can be supported through online networks; and (3) school leaders need to make provisions for design based research, known as a collaborative partnership among practitioners and researchers for cultivating innovation in schools and advancing theory and practice in educational contexts.

Shifting to participatory learning environments with learner-centered approaches to meet the needs of today’s learners is highly complex. It is understood that strong leadership is central for instructional improvements (Chang, 2012; Leithwood & Louis, 2012; Levin, 2008; Marzano, Waters & McNulty, 2005; Reeves 2010; Wallace Foundation, 2013). Moreover, in a participatory culture (Davidson & Goldberg, 2010; Delwiche & Henderson, 2013; Jenkins 2009), networks can foster school leaders’ growth (Beach, 2012, Couros, 2006; McLeod & Lehmann, 2011; Richardson & Mancabelli, 2011; Shirky, 2008). At the same time there is growing concern about the competencies needed for quality school leaders (Friesen & Lock, 2010) and concerns about the challenges for future recruitment of school leaders (Alberta Education, 2010). As such, it is challenging to support leaders in developing technology-rich pedagogies, to develop technological expertise for digital age leadership, and to recruit leaders with a growth-orientation. Thus, principals’ technology leadership is a facet of leadership in the digital age that deserves increased attention and study.

The purpose of this study was to explore how school leaders in leading edge jurisdictions in Alberta cultivate school improvements in integrating technology that meet the needs of today’s learners and to inform professional learning for current and aspiring instructional leaders in a participatory culture. This presentation includes an analysis of literature on school leaders advancing instructional improvements integrating technology in a digital age. A theoretical conceptualization of principals’ technology leadership will be discussed as an interconnection of learning theory based on the learning sciences, transformative knowledge-building pedagogies for 21st century learning and the complexities for school leaders.
as they cultivate a growth-oriented culture. Several prevailing themes from the literature emerged as constructs for educational technology leadership, such as, visionary leadership for innovation, creativity and change; research-informed professional learning; attention to contexts for support; and monitoring for continuous learning and growth. Essential conditions for growth-oriented leadership and for meaningful technology integration and innovation include the use of social and technological networks and the way leaders network and learn in a digital age (Wallace Foundation, 2012; Zimmerman, 2011).

**Methods**

A case study approach was used in this research as the process and product of inquiry for organizing and reporting the data (Stake, 2006) and an explanatory sequential mixed methods research design was employed (Creswell, 2012) with multiple data sources. Phase one involved a broad survey with principals. Phase two involved interviews with principals and teachers and the maintenance of a researcher field journal (field notes from observations in the field, artifacts and qualitative documents provided by the interview participants as well as analytic memos developed by the researcher during coding) to gain a holistic and in-depth understanding of the phenomenon. Consistent processes in data collection for the rich and diverse range of data and the data triangulation of multiple data sources (i.e. different people, different types of data and different time period during the study), across multiple sites maintained the validity and reliability of the study. Various technologies were used for research purposes, from supporting participant communications and data collection to data analysis (Email, Skype, Elluminate Live!, iPad, Livescribe Pen, SurveyGold, IBM SPSS Statistics 21, Microsoft Excel, and Microsoft OneNote) with the associated benefits, constraints and ethical considerations. The data were validated through extensive coding processes and through triangulation. During the preliminary cycle of coding an emerging code perspective was used involving holistic coding and in vivo codes followed by lean coding where few codes were assigned to larger segments of text (Creswell, 2012). Subsequent analysis involved code aggregation, reorganization and development of matrices to track the convergence of data and to facilitate the synthesis of the data into descriptive categories. Follow up with participants occurred six months after the interview phase for review and validation of the study findings during online focus groups.

The overall response rate (26%) for the survey was considered adequate with 39 out of 152 invited responses from principals in three school jurisdictions. A total of 23 participants in
five schools (principals, assistant principals and teachers) volunteered for the semi-structured in-depth interviews. A summary of fifteen key findings will be presented relative to the following five sections: (1) perceived role of the principal in leadership; (2) social and technological networks for support; (3) changes in principals’ leadership practice; (4) leadership actions described by teachers; and (5) challenges in planning, implementing and sustaining improvements.

Results from this study suggest that school leadership is undergoing change and there are numerous areas for growth opportunity. Only one of every three principals in the study identified themselves as leaders in teaching and learning improvements integrating technology. Principals may lack knowledge and experience with pedagogies needed to cultivate meaningful technology integration but are managing with human and technological infrastructure supports and social supports. Study findings suggest a need to increase expectations of school leaders and to require principals to develop capabilities in technology-rich pedagogies and increasing levels of technological fluency. School leaders are confident in fostering effective relationships in the context of technology integration through personalization, trust and collaborative approaches. There was limited evidence of principals using networks for building relationships in online spaces and for professional learning purposes. From a methodological perspective, the findings suggest there is a need for school leaders to make provisions for collaborative partnerships among teachers and researchers in preparing students for a more technical and globalized world.

Educational Importance

Three key recommendations with implications for leaders, researchers and policy makers resulted from the study: technological fluency is needed for instructional leadership; technology-enhanced learning environments, such as technological networks are needed for ongoing professional learning; and design-based research should be considered for increasing practitioner-researcher partnerships and for intentionally cultivating innovation in schools. The results from this study may interest educational technology researchers, leaders in education departments, school authorities and school districts, administrators in school districts, and those scholars and practitioners interested in leadership professional development and those persons interested in the design, implementation and assessment of technologies for teaching and learning used in schools.
References


