School Leadership in a 1:1 iPad Initiative: Lessons Learned from a Small Elementary District

Abstract

Previous research suggests that effective leadership for technology integration in a school is one of the critical factors for its successful use by teachers and students. This qualitative study included a series of formal interviews and focus groups conducted across a K-6 school district to examine the relationship between the characteristics of school technology leadership and the levels of technology integration in teaching practices. Findings indicated the three main categories of school-wide technology use (learner-centered, device-centered, and pockets of innovation) based on school leaders’ and teachers’ vision of 21st century learning, systems for professional learning, and examples of instructional practices. These findings provide insight into the pivotal role of school leaders for effective technology integration in schools.
**Introduction**

The last decade has seen a growing trend towards researching, adapting and applying the principles and constructs of the theory of transformational leadership to the pedagogical use of technology in schools (Franciosi, 2012; Ng, 2008). To date, several studies have indicated that a transformational leadership style is most conducive to realize the full potential of educational technologies in contemporary schools characterized by change and innovation (Afshari, Bakar, Luan, & Siraj, 2012; Dexter, 2008; Ottestad, 2013).

The paper draws on previous studies on the relationship between transformational school leadership and the integration of technology in teaching (Franciosi, 2012; Ottestad, 2013; Ng, 2008) together with data from a series of formal interviews and focus groups conducted with the Assistant Superintendent, the Teacher on Special Assignment (TOSA), six principals and eight teachers in a K-6 district that recently implemented a 1:1 iPad initiative.

**Literature Review**

Data from several studies have identified the positive relationship between transformational leadership and the integration of educational technologies in teaching. For example, in schools with transformational leaders, Moolenaar, Daly and Sleegers (2010) found that teachers were more likely to take risks to develop and implement new knowledge and practices. Similarly, surveys conducted by Ottestad (2013) among 247 school leaders and 386 teachers from Norwegian primary and lower secondary schools have shown a positive correlation between the transformational leadership characteristics in terms of school leaders’ decisions and beliefs regarding educational technology in their
schools and the time teachers spend teaching with digital tools in the classrooms, and teachers’ attitudes towards student-centered instructional approaches.

In a study of the effects of school leadership style on student achievement, Marks and Printy (2003) found that a combination of transformation and instructional leadership styles positively influences quality of teaching practices and gains in student achievement. A different perspective has been adopted by Ng (2008) who field-tested a questionnaire based on characteristics of transformational leadership (Leithwood, 1994) and administered it to 80 secondary school teachers from Singapore schools regarding the use of ICT. The participants on the whole agreed that the characteristic of transformational leadership (such as developing a widely shared vision for the school, establishing consensus about school goals and priorities, providing individualized support, offering intellectual stimulation, providing appropriate models, creating high performance expectations, building collaborative structures, and strengthening school culture) could have a positive influence on the integration of digital tools into their teaching practices.

**Conceptual Framework**

For this study, transformational leadership is characterized as 1) empowering and inspiring followers to achieve great success; leading with a vision, confidence and greater sense of purpose (Castanheira & Costa, 2011) 2) providing opportunities for continuous learning that are cyclical, participatory and reflective (Robertson, 2010) and 3) developing a system of reciprocal accountability to ensure that instructional decisions have the desired impact on teaching and learning (DuFour & Fullan, 2013). The conceptual framework of this study is depicted in Figure 1.
Vision

Identifying and articulating a vision imply “practices aimed at identifying new opportunities for the school, and developing, articulating, and inspiring others with a vision of the future” (Ng, 2088, p. 5). The literature on school technology leadership has emphasized the importance of developing, articulating, and communicating a shared vision of the intended change in general (Tearle, 2004) and school planning and vision with regard to technology in particular (Fishman & Pinkard, 2001; Hall & Hord, 2011; Lim & Khine, 2006).

Systems for professional learning

To facilitate the changing role of the teachers, effective technology integration requires understanding the dynamic relationship between pedagogical, content, and technological knowledge, known as TPACK (Mishra & Koehrel, 2006) (See Figure 2).

In a large-scale international study of the elements of technology-enhanced learning, Innovative Teaching and Learning (2011) found that innovation flourished when teachers collaborated on best teaching practices, were provided opportunities to learn and practice new methods, and were guided by a common vision and continuous support. Transformational leaders create systems to embed this work into the school day and facilitate teachers in the same content area in continuous planning, analyzing and reflecting on student learning through small collaborative learning communities (Joyce & Showers, 2002; Marzano, Waters, & McNulty, 2005).

Reciprocal Accountability

When teachers understand the school vision for integrating technology into the educational environment and have clear expectations for teaching and learning and share
collective responsibility for student learning, it increases student achievement and personal satisfaction (Louis & Wahlstrom, 2011). According to Fullan and DuFour (2013), a loose-tight system allows principals to foster improvement through reciprocal accountability rather than top-down management. DuFour and Mattos (2014) argue that to improve student achievement school leaders and teachers must focus the bulk of their energy on the collective analysis of evidence of student learning rather than the inspection of teaching.

While previous studies have shown the importance of transformational leadership to implement school innovations, there have been few empirical investigations into the relationship between leadership conditions promoted by school leaders in terms of their vision, systems for professional learning, and reciprocal accountability for student outcomes and the levels of mobile technology use in classrooms by teachers in one school district. The purpose of this paper therefore is to examine several aspects of the school technology leadership in relation to the school’s integration of mobile technology.

**Research Question**

*To what extent do leadership conditions promoted by school leaders in terms of their vision, systems for professional learning, and reciprocal accountability for student outcomes influence the use of mobile technology in classrooms by teachers?*

**Methodology**

**Context of the Study and Participants**

This case study examined the implementation of a 1:1 iPad initiative in a small, affluent K-6 district in the US. The school district expanded the mobile technology pilot program district-wide in an effort to foster 21st century learning environments in all schools. The district distributed an iPad to every teacher, equipped every classroom with an Apple TV.
Nearly 50% of the district’s students had access to devices with student to device ratios of 1:1 in 25 classrooms across the district.

The study included interviews with the Assistant Superintendent and the Teacher on Special Assignment (TOSA), as well as with each of the district’s six principals. The interviews of key district personnel were supplemented by focus groups composed of selected teachers. Teachers at each of the six schools who were at the forefront of mobile technology integration were nominated by the district teacher leader to participate. These teacher focus groups were intended to provide a district-wide look at teachers’ use of mobile technology. Teachers from three of the six schools in the district participated in focus groups for a total of eight teacher participants.

**Data Collection and Analysis**

A semi-structures interview guide was used to collect qualitative textual data. This guide included questions about a principal’s clarity and communication of the vision of technology integration, related expectations for desired learning environments, and the level of support provided. Interview and focus group protocols were audio recorded and transcribed verbatim. All interviews and focus groups were used in the analyses. A team of researchers analyzed and coded the transcripts using categories identified in the existing literature on transformational leadership and school technology leadership. At least two researchers coded each transcript and coding discrepancies were resolved through discussion.

**Findings**

Based on data from the interviews and focus groups, the context within the district and in each school resulted in varied approaches of teaching and learning using mobile
technology. Despite a coherent and well understood district vision, three main categories of school-wide technology use emerged: learner-centered, device-centered, and pockets of innovation. These three categories are discussed in greater detail below.

**Learner-centered Technology Integration**

Learner-centered technology integration is aligned to both the learning goals and the strengths and needs of the learners (An & Reigeluth, 2011). The technology accelerates facilitation of learning experiences that deepen understanding through collaboration, creation, and critical thinking to apply new learning in a relevant context. Pervasive technology use that facilitated learner-centered teaching practices was observed more often in schools with leaders who had a clear vision, diverse opportunities and support for teacher development, and created systems for reciprocal accountability. Although these principals did not necessarily see themselves as experts in technology, they were innovative and led with the belief that mobile technology is the mechanism to transform learning environments.

Principals at both sites where learner-centered teaching practices were perceived to exist on a large scale credit their school culture of learning and innovation. This corroborates the ideas of previous research by Tondeur, Devos, Van Houtte, van Braak, and Valcke (2009), who links cultural characteristics of a school with high quality and sustained integration of technology into classrooms. Furthermore, these provided learning opportunities to keep abreast of best practices to guide and support the desired pedagogical shifts.

**Device-centered Technology Integration**
In schools with leaders who recounted the district vision without building a shared understanding or clear expectations for instruction, the majority of technology integration described was focused on the device rather than learner-centered instruction. Although there were multiple opportunities for collaboration and support for teacher development, this lack of clear expectations and reciprocal accountability to meet the desired expectations failed to develop teaching and learning aligned to the district’s vision. The structures set in place at these schools helped facilitate collaboration and the exploration of one another’s practices. Beyond the collaboration to share new pedagogical approaches, however, teachers did not have clear goals for implementation or a sense of reciprocal accountability to ensure the implementation improved learning outcomes. Without clear expectations of how the technology was to be used and support to integrate, the implementation resulted in device-centered instruction.

**Pockets of Innovation**

Innovative educators seek new and better resources and approaches to facilitate powerful learning experiences aligned to both the learner’s needs and the learning goals. “Pockets of innovation” exist in schools when these innovative educators are isolated or learning and creating experiences apart from the rest of the school. This phenomenon existed in schools where leaders, who lacked a level of comfort and interest in using mobile technology, articulated a less nuanced understanding of the district vision of 21st century learning. Their vision of technology integration was based on tools (i.e., is driven by devices), rather than on innovative pedagogy. These principals responded to teacher’s technological inclinations in isolation, rather than through school-wide support to foster dissemination of ideas and innovations. Additionally, they reported letting teachers who
were excited about technology integration lead the way based on experience rather than a shared vision.

This leadership style led to a small percentage of teachers experimenting with technology and learning from network outside of the school, thus creating pockets of innovation. For example, in one of these schools, two teachers who had access to professional development and a Personal Learning Network (PLN) to continuously develop their use of 1:1 iPads were seen as the innovators on campus and set apart from the rest of the faculty. Their teaching was described as learner-centered and they were highly regarded for their effective technology integration. Beyond their classrooms, however, these teachers lacked additional structured time to share newly acquired knowledge with the rest of the staff. Without time to share new thinking with their peers, these innovative teachers remain isolated and their ideas failed to spread beyond their rooms.

**Discussion**

In this particular district, the district’s vision was shared across stakeholders, but the extent to which that transformational leadership existed influenced the implementation at school-level. The principals and teachers in schools with a culture of learner-centered instruction provide evidence of progress towards the district’s vision to transform teaching and learning with mobile technology. To realize desired shifts learning and teaching in all schools and classrooms, it is necessary to examine the contexts that exist to support the changing role of the teacher, including visionary leadership, systematic support for teacher development and reciprocal accountability to ensure students learn in environments that foster the skills necessary for future success.
The schools that reported the most widespread change in their practice worked in schools where there was a clear vision for the use of mobile technology, teachers collaborated regularly around best practices with their peers, coaches and outside experts to develop their instructional practices, and there was a shared responsibility for desired students outcomes built on reciprocal accountability.

To realize the vision of powerful learning accelerated by technology, systems that foster personalized professional learning and robust support are necessary to fully integrate new learning into classrooms. Building an ecosystem that cultivates a culture of learning requires safe opportunities to practice, observations of models, time for reflection and revision, and capacity building collaboration.
References


Figure 1. *Transformational Leadership: A Conceptual Framework For the Integration of Learning Technology*