Reframing Transformational Leadership

CONTEMPORARY APPROACHES TO RESEARCH IN LEARNING INNOVATIONS

Volume 8

Rationale:
Learning today is no longer confined to schools and classrooms. Modern information and communication technologies make the learning possible any where, any time. The emerging and evolving technologies are creating a knowledge era, changing the educational landscape, and facilitating the learning innovations. In recent years educators find ways to cultivate curiosity, nurture creativity and engage the mind of the learners by using innovative approaches.

Contemporary Approaches to Research in Learning Innovations explores approaches to research in learning innovations from the learning sciences view. Learning sciences is an interdisciplinary field that draws on multiple theoretical perspectives and research with the goal of advancing knowledge about how people learn. The field includes cognitive science, educational psychology, anthropology, computer and information science and explore pedagogical, technological, sociological and psychological aspects of human learning. Research in this approaches examine the social, organizational and cultural dynamics of learning environments, construct scientific models of cognitive development, and conduct design-based experiments.
Contemporary Approaches to Research in Learning Innovations covers research in developed and developing countries and scalable projects which will benefit everyday learning and universal education. Recent research includes improving social presence and interaction in collaborative learning, using epistemic games to foster new learning, and pedagogy and praxis of ICT integration in school curricula.

Reframing Transformational Leadership

New School Culture and Effectivness

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1. NEW SCHOOL CULTURE AND EFFECTIVENESS IN SCHOOLS

In the educational arena it is often claims that success and failure of the school system is explained by the type of leadership. The school leaders are expected to display the characteristics of change agents and facilitators who improve the school culture and effectiveness and transform the professional learning communities. They are expected to build human capital by working collaboratively with every teachers and employee in the school. Effective school leadership has been examined through the different lens, sometime from the distributed perspective and another time from the principle of servant leadership as well as from the moral imperative. But it is eminent that tomorrow's school will need a new breed of leadership who would bravely face the challenges and champion for sustainable development by leading from the centre, teacher empowerment, collective decision making and creating successful learning communities.

Chapter 2 presents how young people in the United States change their worlds with the unique use of mathematics as a pedagogy for transformative personal and civic leadership and the implications of this transformative leadership model for reshaping schools and teacher preparation. The chapter begins with the historical account of Algebra Project (AP) and Young People's Project (YPP) that have its roots in the Civil Right Movement. One of the key movers in these project is Moses who developed the project in Boston schools and expanded the Algebra Project to use as a tool to teach higher level mathematics and critical thinking skills to children who are stuck at the bottom of the delivery of bad education. He later describes his experience in the book "Radical equations: Civil rights from Mississippi to the Algebra Project." The mission of the project is based in a belief that only the students, once they are committed to actively pursue higher level mathematics and abstraction, can transform their schools and their world. AP has been a successful endeavour and it was noted that by 1996 AP had reached some 45,000 pupils, and its instructional materials were being used by teachers in 105 schools across the country.

Based on the experience of Algebra Project, youngsters organized a spin-off project named Young People's Project (YPP). The mission of the YPP is "to develops students aged 8-22 from traditionally marginalized populations as learners, teachers, leaders, and organizers through math and media literacy, community-building, and advocacy in order to build a unique network of young people who are better equipped to navigate life's circumstances, are active in their communities, and advocate for education reform in America." It was noted that "in

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the 16 years of the journey, YPP has evolved from primarily organizing youth to teach math in after-school programs, during Saturday schools, and summer camps to the more daunting work of developing workshops and campaigns to grow the civic leadership and organizing skills of the young to influence public policy. They have also raised funding from foundations as prestigious as the National Science Foundation to develop the research and analysis for documentation. And from school districts, foundations, and organizations within each local site, they have raised the compensation to pay the youth as "knowledge workers." In Mississippi they have created a garden on a small plot of land where they hope to one day "create an agricultural training center to help people learn to produce their own healthy foods."

The author notes that one of their major vehicles for teaching math to the young as well as their attempts to reach out to the community is a game they call Flag way, a game patented by Bob Moses in 1996. The game is a vehicle to encourage students to see mathematics as fun and as part of their everyday realities, and has been used effectively in several cities to engage students and their parents in math in the same way they enthusiastically engage in sports. Another quality of YPP that lends itself to transformative action is it capacity to respond quickly to current realities. The chapter concluded that to transform the educational institutions, maybe we need to look toward the youth, align with their visions and digital world, raise their voices. In doing that, there will still be time and space for the eductaors to share our knowledge which can help build the scaffolds that will support them as they learn to teach themselves and their communities. The author provides a valuable suggestion to ourselves from dominating their learning.

In chapter 3, Teachers' Perspective towards the Effectiveness of a Programs in one of the Schools in the Middle East, the author attempts to investigate the effectiveness of national standards and programs by doing in-depth interview of 20 teachers and conducting an attitude survey to about 100 teachers in middle school in . In addition, the chapter also highlight concerns of teaching staff from a practical perspective. The findings of the questionnaire and interviews are further analysed to draw a common conclusion from available sources. Moreover, the results of national tests highlighted a general deficiency affecting English language education in public schools and in intermediate schools in particular. Such results stressed that there are various difficulties facing students in observing English as a second language. The Ministry of Education and the Quality Assurance Authority (QAA) have introduced various initiatives to improve the field of English as a second language teaching while continuously monitoring outcomes and results . These initiatives focused on key areas such as curriculum design, teaching methods, teaching mediums, session length, teachers' qualifications and other factors.

In Chapter 4, Sanrattana, Parkay and Wu presented a study to examine the multiple perceptions students, teachers, and parents have of the climate of Thai elementary schools with the title " Student, Teacher, and Parental Perceptions of Elementary School Climate: A Progress Report on Thailand's Quest for Educational Quality." They also determine the extent to which study results show

that Thailand is making progress toward achieving the goal of educational quality called for in the National Education Act of 1999 and the Act's Amendments in 2002 and 2010. They indicate that there are no recent studies of the climate that examine the multiple perceptions of students, teachers, and parents of Thai elementary schools. The author believe that an increased understanding of school climate and strategies for improvement is fundamentally important as Thai schools continue to move toward school-based management and instruction. This understanding will enable schools to move more efficiently and expeditiously to the next phase of educational reform in Thailand. The chapter begins with the educational system in Thailand that covers the basic, primary and secondary education. Since Buddhism is a predominant religion, the role of Buddhist monasteries in education is unique. Particularly in towns and villages particularly, it is common for the monasteries to be centers of both religious and secular education where boys are taught reading, writing, and arithmetic. The Climate Rating Scale Questionnaire (CRSQ) developed by the researchers was used to collect data from a sample of 395 schools. The CRSQ Version 1 comprises of 3 scales to measure the students' perceptions of school climate. These scales are (i) Collaborative Development of Learning Activities (ii) Collaborative Development of Learning Activities and (iii) Teacher Behaviors. CRSQ Version 2 measures teachers' perceptions of school climates and it covers 3 scales namely (i) School Organizational Health, (ii) Physical Environment of the School and (iii) Principal's Leadership Style. CRSQ Version 3 measure parents' perceptions of school climate. In general, the results indicate that the three groups have a "high" level of positive perceptions of school climate. Two factors are identified that appear to have a strong influence on these perceptions: the 1999 National Education Act, and national efforts at educational reform (first decade, 1999-2008, and second decade, 2009-2018). In addition, the results indicate a critical need to enhance the "opportunity for self-expression of students" at Thai elementary schools. In light of study findings, the chapter concludes with a discussion of Thailand's ongoing quest for educational quality.

In Chapter 5, Hannay and Earl write about the transformational cultural norms supportive of knowledge-management. The chapter begins with the needs for new skills sets for students, teachers and educational administrators in order to function well in the knowledge based twenty-first century. These skills include: collaboration, problem framing, critical thinking, 'thinking outside of the box,' innovation, and creativity. They urge that educational organizations need different operational norms with transformational leadership focussed on managing the conversations between practitioners in order to address the education for the knowledge based society.

The authors refer to their previous study that investigated if and how a large (184 schools) Canadian school district can facilitate systemic reform. The longitudinal data documented that in order to change educational practice, individuals had reconstruct their professional conceptional models and this required that they engaged in the knowledge creation and dissemination processes. In addition, the longitudinal evidence documented that managing knowledge

required that the organizational culture be adapted from operating from separate silos to a culture that emphasized: teamwork, collaboration, deprivatization and risk-taking.

They stress that transformational leadership practices were required to support the new culture and particularly the educators should play a role as knowledge workers and knowledge leaders.

The authors then present their study designed to learn from school level participants as to their understanding of the actions and impact of the school district in facilitating systemic reform and knowledge management. Therefore, in all studies, individual interviews were conducted in schools. They asked senior administrators to recommend schools that were representative of their administrative areas. In the selected schools, they interviewed the principal plus 2 teachers who were actively involved in school improvement efforts.

The data had documented the importance of trust and risk-taking in order to facilitate significant changes to practice is. The data also suggests that trust is essential for sustained teamwork, professional dialogue, and deprivatization. Through this process, the cultural norms changed and supported systemic thinking and knowledge-creation. The authors indicate that without the adaptations to the organizational culture, it would have been problematic for individuals to reconstruct their perspectives and professional practice. In retrospect, the action of the senior administrators to make improved student learning the prime school district goal was pivotal because it directly reflected the moral imperative of educators. This suggest that any organization seeking to develop into a knowledge managing organization must place the major organizational purpose at the centre of any actions.

This chapter examines the emerging cultural norms and practices developed in the studied school district that facilitated and sustained systemic reform congruent with the knowledge based paradigm

In chapter 6, “Coaching Principal Interns: How External Coaches Deepen Theory-Practice Connections in a Principal Preparation Program,” Danzig, Collier and Fernandez from Arizona State University explores the concept and application of learner-centered leadership (LCL) in a coaching program for Master’s and doctoral students during their principal internship experiences.

The objective of the chapter is to provide research based evidence describing a coaching program aimed at teachers and teacher leaders in the early stages of the school leadership continuum. This chapter describes a coaching program and provides evidence concerning the satisfactions, benefits, and learning’s of coaches and interns, applying leadership principles during their administrative internships. The program used external coaches to supplement coursework and apply learning in internships associated with a master’s degree/principal certification program involving teachers with three or more years of experience. The chapter describes the experiences of coaches and interns, and contributes to a better understanding of the usefulness of coaching at the early stages of the administrator professional development continuum.

The authors begin the chapter with an overview of learner-centred leadership as a new framework which proposes that leaders need to be learners, first and foremost. This perspective takes the pragmatic theory of education in which children are learners, and applies it to all of the adults in school settings – teachers, administrations, staff, parents, and community members. The authors note that being a learner requires certain vulnerability not normally associated with leadership and authority; it involves understanding and exploring personal meaning in relationship with others, and this closeness inevitably creates new vulnerabilities. Identifying the central quality of leaders around learning implies that new knowledge and skills will be needed for those aspiring to leadership positions. This research explores the ways in which a cohort of aspiring administrators experience their role as learners, and move from initial to deeper levels of understandings of learner-centered leadership. The article also describes the cohort's experiences with coaching as they move through the program. The theoretical framework of LCL embraces the role of learner in the skill set of school leadership: it transforms school structure into an environment where individuals treat each other as colleagues, sharing and collaborating to develop solutions, rather than following traditional, hierarchical relationships. This chapter describes a coaching program and provides research evidence concerning the satisfactions, benefits, and learning related to the coaching program for improving the internship experience and deepening theory-practice connections. Data were collected and analysed related to the experiences of interns as well as coaches. Benefits are presented in terms of skill development and overall satisfaction with the program by participants, and reflections on the importance of coaching to professional identity of both interns and coaches. The benefits presented explore the reflections of both interns as well as coaches. Short and long-term benefits of participation, for those who delivered and for those who received services, are examined in the chapter.

In Chapter 7, Supporting Science Teachers in the Unfamiliar, Uncharted Waters of Curriculum Reform: Lessons for Transformational Leadership by Ken Elliott and Anila Asghar looks at challenges experienced in bridging theory and practice in the reform of science education in Quebec, Canada. The authors explain in the importance of 'integrating science and technology within a constructivist and inquiry-based pedagogy. The authors farther address the challenges that teachers are facing such as teachers' unfamiliarity and discomfort with technology and this challenges being as one of the road blocks for the implementation of science and technology. The authors' also explores the second major challenge which the content subject area being heavy. The authors' also mention that Science consultants in Canada play an important role by facilitating between school administrators and teachers. The authors conclude that chapter by examining how science consultants can help in leading individual teachers and as a result transform organizations.

In conclusion, this book builds upon the international success of our previous attempt in publishing *Transformative Leadership and Educational Excellence: Learning Organizations in the Information Age* (2009, Sense Publishers) and takes

a closer look at leadership related issues in schools. This book will explore the why, how and what type of transformational leadership can bring the necessary changes, continuous improvement and effectiveness in the learning organizations. The book will also bring new ideas, insightful experiences and best practices in invigorating the leadership endeavours.

JOAN WYNNE

2. WE WHO LOVE FREEDOM CANNOT REST

Young People Transforming Their Worlds

To me young people come first, they have
The courage where we fail
And if I can but shed some light, as they
Carry us through the gate

The older I get the better I know that the
Secret of my going on
Is when the reins are in the hand of the
Young, who dare to run against the storm

The above two stanzas from Sweet Honey in the Rock about the work and words of U.S. Civil Rights Leader, Ella Baker, always remind me that one of our jobs as educators is to get out of the way of the children so they can transform not only their world but also ours. This chapter will examine a national program in the United States, the Young People's Project (YPP), its roots in the Civil Rights Movement, its unique use of mathematics as a pedagogy for transformative personal and civic leadership, and the serious implications of this transformative leadership model for reshaping schools and teacher preparation.

HISTORY OF THE ALGEBRA PROJECT AND YPP'S EMERGING FROM THE CIVIL RIGHTS MOVEMENT

"Without the Algebra Project and Doc, I would not be in college today. Many of us wouldn't even finish high school," said Whitney Brakefield, a student at Mississippi State University, when she spoke to an audience at the "Quality Education as a Constitutional Right" (QECR) seminar at Florida International University featuring Civil Rights icons, John Doar and Bob Moses.

I watched Moses, who seemed to wince at the reference to him, as he listened to Brakefield and a panel of Algebra Project (AP) graduates and Young People's Project (YPP) participants from Jackson, Mississippi and Miami, Florida. They were part of the QECR national movement first convened at Howard University by Moses in 2005, then passed to YPP to lead. This particular QECR event was hosted at FIU's College of Law. These students each took their turn to talk about how AP, YPP and "Doc" had changed their lives. It was their mention of "Doc" that seemed

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to make Moses uncomfortable. A grassroots leader whose humility is legendary, he prefers to take a backseat to the people he "leads by not leading" (Wynne, 2009)

Nevertheless, the students continued their stories, giving the audience a glimpse into the history of these organizations' impact. The students insisted that they intended to continue to be part of this movement toward quality education as a constitutional right for all of the nation's children, a seed planted years ago in the sixties.

In 1960, at the suggestion of Ella Baker, Moses travelled the south to begin a dialogue with Black leaders to discover how to support their work for liberation from the Jim Crow South. From the discussions in Mississippi came the "bottom up" campaign for voting rights for all Blacks in the south.

Over forty years after those bloody battles and ultimate voting rights' victories and his work organizing Freedom Summer and the Mississippi Freedom Democratic Party, Moses returned to Mississippi to work with those sharecroppers and insurgents' grandchildren and great grandchildren, who were still being denied a quality education in the public schools there and across the nation (Moses & Cobb).

To those children in 1991, Moses brought the Algebra Project, a project he began developing with his own children in Boston schools. And later through a "Genius" fellowship from the MacArthur Foundation, he expanded AP, designing it as a tool to teach higher level mathematics and critical thinking skills to children stuck at the bottom of the delivery of bad education. He saw access to mathematics as the next civil right. To gain political power in the south, black citizens had to win their right to vote. To win access to college and to economic security in a technology driven 21st century society, poor children will need to become proficient in mathematics. Moses insists that "The absence of math literacy in urban and rural communities is as urgent an issue today as the lack of registered voters was 40 years ago … And I believe solving the problem requires the same kind of community organizing that changed the South then. If we can succeed in bringing all children to a level of math literacy so they can participate in today's economy, that would be a revolution" (Mother Jones).

Moses describes AP as "a process, not an event" (Moses) It uses Dewey's experiential learning pedagogy while at the same time being responsive to youth culture. Neither it nor YPP is afraid to integrate the music, the digital images and interests of the hip-hop culture into its curriculum and methodology to entice the young into the study of mathematics. AP's work is a deliberate attempt to prove to the nation that all children, no matter how poor or how alienated from the society at large, can and will learn higher level mathematics, given the appropriate curriculum, pedagogy, and support (Wynne, 2010).

What I have found to be unique about AP is its demand for excellence from children at the bottom, a demand that these low-performing students grapple with higher level abstract thinking. Instead of delivering "remedial" curriculum and uninspired instruction, AP delivers accelerated content and strategies typically reserved for the "gifted" programs. Moses refuses to settle for these struggling learners to meet only minimum standards. He requires that AP students take

mathematics 90 minutes a day, five days a week for four years so that they will be ready not only to graduate from high school but to be admitted and to excel in college mathematics, or as he often suggests, get them ready so "They will land on their own two feet in college" (Center).

But the insistence on accelerated learning for "children at the bottom" is not the only radical philosophy and practice of AP. Inherent in its mission is a belief that only the students, once they are committed to actively pursue higher level mathematics and abstraction, can transform their schools and their world, a kind of "earned insurgency" (PBS 2007, Wynne 2010). Moses further insists that the only ones who can really demand the kind of education they need and the kind of changes needed to get it are the students, their parents, and their community (Moses, 18-21) – a radical idea in educational institutions in the U.S.

School reformers often use the rhetoric of parent involvement in school change, but the actual practice and policies of reform for low-performing schools are typically dominated by legislators, educators, and politicians – not parents, not students. However, AP's philosophy puts the power in the hands of the people who are being abused by inadequate education, not in the hands of well meaning advocates, or worse, in the hands of people who are intent on maintaining a "sharecropper" education for the descendents of slaves, or other children of color (Moses, 2001; Wynne, 2010). For me as a seasoned educator whose career has been dedicated to teacher education, being exposed to this practice of student and parent demand created an epiphany; and as a consequence, I have changed every undergraduate and graduate teacher preparation course I teach to include this practice of parent and community partnering as an indicator of teacher competence.

In addition to its insistence on community involvement, is AP's belief that "a real breakthrough would not make us happy if it did not deeply and seriously empower the target population to demand access to literacy for everyone. That is what is driving the project" (Moses, 2001, p. 19). Because of this belief, which is deeply rooted in the Movement, and the practices which evolve from it, students broaden their context to include not only personally acquiring a quality education, but also sharing it with their community. They begin to see their academic gains as an obligation to raise the achievement of others. By 1996 AP had reached some 45,000 pupils, and its instructional materials were being used by teachers in 105 schools across the country (Henry).

ENTER THE YOUNG PEOPLE'S PROJECT

Steeped in the traditions of the Southern Freedom Movement, Moses' progeny, who seemed to have heard the echo of Ella Baker's words, grabbed the reins from the Algebra Project and dared "to run against the storm." These youngsters organized a spin-off of AP and named it the Young People's Project (YPP). They have driven the effort to take mathematics into their communities. Founded in 1996 by two of Moses' sons, Omo and Taba Moses, their friend who was a graduate of AP in Boston, and nine 8th grade AP students in Mississippi, YPP explains its mission to be one that:

> … develops students aged 8-22 from traditionally marginalized populations as learners, teachers, leaders, and organizers through math and media literacy, community-building, and advocacy in order to build a unique network of young people who are better equipped to navigate life's circumstances, are active in their communities, and advocate for education reform in America. (TYPP website)

YPP credits the Algebra Project for securing a space for them as young people to organically grow their own organization from the principles they learned from their experiences in AP. The YPP organizers believe that young people can and must make significant changes in their own lives and in the moral life of the nation. They use what they call "math literacy work" as the vehicle to begin that journey of individual and societal transformation.

In the 16 years of that journey, YPP has evolved from primarily organizing youth to teach math in after-school programs, during Saturday schools, and summer camps to the more daunting work of developing workshops and campaigns to grow the civic leadership and organizing skills of the young to influence public policy. They have also raised funding from foundations as prestigious as the National Science Foundation to develop the research and analysis for documentation. And from school districts, foundations, and organizations within each local site, they have raised the compensation to pay the youth as "knowledge workers." In Mississippi they have created a garden on a small plot of land where they hope to one day "create an agricultural training center to help people learn to produce their own healthy foods" (TYPP).

To be such a young organization and to be run only by the young for the young, their successes might surprise us. Annually over 400 High School and College students are trained and employed to do math literacy work. At least 5000 elementary students, family and community members participate in math literacy workshops, events and initiatives each year. YPP employs 20 full and 35 part-time staff. Their median age is 26 and 85% are African-American and Latino. Local sites exist in major cities across the nation from Los Angeles to Miami. They have instituted 3 Local Advisory Boards (Boston, Chicago, and Mississippi) and a National Board of Directors with representation throughout the country. The simple majority of both boards are young people who have been part of the organization (TYPP).

FLAGWAY GAME BUILDS COMMUNITY ENGAGEMENT WITH MATHEMATICS

One of their major vehicles for teaching math to the young as well as their attempts to reach out to the community is a game they call Flagway, a game patented by Bob Moses in 1996. The game is a vehicle to encourage students to see mathematics as fun and as part of their everyday realities, and has been used effectively in several cities to engage students and their parents in math in the same way they enthusiastically engage in sports.

The intent is that, ultimately, through Flagway, students will form Leagues that create opportunities for teams, coached by high school and college students, to compete locally, regionally and nationally. Schools, churches, community-based organizations are invited to enter teams in designated leagues. The underlying purpose of these events is to encourage disenfranchised communities to take ownership of mathematics as an accessible academic discipline and to counter, what Lisa Delpit indicates, is the notion in some Black and poor communities that mathematics is for White people (Delpit, 2012).

The Flagway Game can be played with students as early as 1st grade and has been enjoyed by adults. In general, the game is played with 3rd–6th graders. During game play students navigate a Flagway or course of radial "paths" based on the Flagway rules (derived from the "Mobius" Function). Speed counts, so as students develop into skilled players several may be running through the course simultaneously, creating dynamics similar to that of a sporting event. Part of the beauty of Flagway is that students can play the game without knowing the rules, allowing all students access to the game and the underlying mathematical principles (TYPP website). YPP in collaboration with TIZ media has created an On-line Flagway Challenge Game so that young people can enter into the world of mathematics no matter their skill level or age. The fundamental structure of the game changes as higher level abstraction is demanded (TYPP).

CAMPAIGN ORGANIZED BY YPP

Another quality of YPP that lends itself to transformative action is it capacity to respond quickly to current realities. Because it is rooted in the Southern Freedom Movement, its MO seems to be one that looks at the realities affecting those at the bottom rung of society's economic ladder, raises the voices of those people, ignores old paradigms that resist change, and organizes to create a new response to the present exigency. It doesn't get stuck in rigid traditions that often cripple large bureaucracies when facing sudden calamities.

One example is YPP's response to the devastation of Hurricane Katrina in New Orleans and the governmental debacle of neglect for its citizens. Over 300,000 survivors had been dispersed across the nation, living in armed camps, housed in churches, auditoriums, living with relatives, etc. Researcher, Elizabeth Fussell, suggests in her report that "Virtually the entire population of the city was displaced and forced to resettle, which some did temporarily and others permanently" (Fussell et al., 2010, p. 1).

Within weeks after Katrina, YPP began organizing students and young adults from across the south, to "Find our Folks." Along with the New Orleans Hot 8 Brass Band, they went, to Atlanta, Baton Rouge, Jackson, Mobile, New Orleans, and Houston to find the hurricane's dispossessed. They networked with community agencies, churches, schools, colleges, volunteers, friends in each city who might support the tour and its work with dispersed populations. YPP organized local meetings and workshops, performing arts events, concerts, media blitzes to find America's citizens exiled to other locations. And through this effort they educated

many of us about resistance to hegemony, celebration of cultural histories, music, art and movements, as well as self reflection for healing and growth.

Their vision for this tour speaks to their comprehensive view of the multiple layers of innovation and cultural traditions needed for personal and societal transformation:

We seek to raise the voices of Katrina's survivors and connect them with the voices of America's survivors, the brothers and sisters in all corners of the country who remain on the margins of citizenship. We seek to use the tools of education, documentation, healing, and organizing to explore and discuss the conditions that led to the devastating impact of Katrina; to join the voices of resistance, the veterans of past and continuing movements, with the voices of Hip-Hop, Blues and Jazz; to celebrate African and indigenous cultures as they have been expressed in New Orleans and throughout the world; to find our folk, to reconnect the individuals, families and communities that are scattered across the country, living in exile. In finding our folk, we hope to find ourselves (TYPP).

One of the products resulting from the Finding Our Folks tour was a DVD produced by the young people showcasing specific workshops and events from the cities visited, including a visual tour of the devastated neighborhoods in New Orleans. I have used that video as a tool for my pre-service and in-service teachers to explore the power and creativity that young people in and outside their classrooms can bring to the table to democratize us all. Too often my university students feel powerless and are unconscious of their social agency as students and teachers. I have found that this DVD elicits from them serious conversations. During those conversations, they often, from the experiences of the FOF young people, extrapolate a sense of their capacity as teachers to change their professional world.

The kind of reality-based curriculum and Movement pedagogy, reflected in Ella Baker's vision and used by YPP in developing this tour is a content and strategy that can revolutionize our classrooms and schools. If creative young people grappling with daunting realities, grounded in the wisdom of their elders are given space and time in their local schools and colleges to instruct and inform, might our halls of education breathe new life and become more innovative in meeting the academic needs of their students? In this regard, the legacy of Ella Baker is clear. Giving space, support, and advice when needed, she, like Moses with YPP, stayed in the background as she protected the young in the Student Non Violent Committee (SNCC) from being subsumed by the adults in the Southern Christian Leadership Council. She was committed to a methodology that would allow youth to develop their own leadership. She made it possible for SNCC to organize and educate itself, and grapple amongst themselves with the philosophies and methods they would need as they confronted the dangers of the Jim Crow South. Moses elaborates, "What Ella Baker did for us, we did for Mississippi" (Ransby, 2003, p. 331) and I would add, what he has done for YPP.

In her biography of Ella Baker, Barbara Ransby describes Baker as a "Freirian teacher, a Gramscian intellectual, and a radical humanist" (p. 357). Those qualities seem manifested in the work of the Algebra Project and the Young People's

Project whose history also seems inextricably bound to the vision and practices of Baker. Like Freire's philosophy in *Pedagogy of the Oppressed*, AP and YPP are more concerned with creating an educational space that allows the young to look critically at their own lives and surroundings and creatively participate in the transformation of those worlds. And like Freire, they, too, foster resistance to hegemonic systems of thought. In the tradition of Baker, they want the young to think radically. Baker insisted that "For us as oppressed people to become a part of a society that is meaningful, the system under which we now exist has to be radically changed" (Moses, p. 2). For large populations of disenfranchised students condemned to low-performing schools, radical, transformative thinking seems "the only way out of no way out." For decades, rescue programs that target only the top 10% of the students attending low-performing institutions have never addressed the curriculum nor the pedagogy, as Moses explains, needed to "raise the floor" of academic achievement for students stuck at the bottom, thus sustaining a "sharecropper" education for most black and brown students in urban public schools (PBS).

FLORIDA INTERNATIONAL UNIVERSITY PARTNERS WITH AP AND YPP

For five years, from 2004-2009, FIU and AP collaborated in the first pilot in the nation of a school-based/university affiliated school reform grounded in accelerated mathematics for low-performing students. While Moses and AP were partnered with the university, the Young People's Project received local funding and started a site housed in FIU's College of Education. The Research & Development work done in Miami by AP, YPP, & FIU in those five years propelled the National Science Foundation to explore the efficacy of this mathematics cohort model in five other cities with African-American, Latino, and White Appalachian populations.

In February 2011, when the Colleges of Education and Law hosted the previously mentioned QECR forum with Doar and Moses, community and university responses to this dialogue fostered a renewed partnership between FIU and the Algebra Project with the local community. Compelled by a joint vision of Bob Moses and the Senior Associate Dean of the College of Law, Michelle Mason, the university initiated a 2011 summer institute on mathematics, civics and rhetorical structures to capitalize on the earlier R&D work with the Algebra Project and YPP.

"The intent of the partnership with AP and the institute," Michelle Mason suggested, "is to build a new national model for transforming disenfranchised young people into educational change agents in their communities" (mtg. 2011). The summer institute was designed also to demonstrate the Flagway game as a tool to get elementary students excited about learning mathematics, while at the same time, to create a space where FIU law students could teach youngsters' rhetorical and civic skills.

MIAMI ALGEBRA PROJECT GRADUATES AND YPP LITERACY WORKERS

Six of the Miami Algebra Project cohort graduates who were still engaged with YPP work were selected to teach the math to 3rd, 4th, 5th grade students. One of those YPP math literacy workers (MLW), Wilkens Desire, passionately testified in a planning meeting that his cohort is committed "to doing whatever it takes to make sure that all the children in my community receive the kind of quality education that we received from the Algebra Project."

These six MLW's agreed to meet for 12 weeks before the summer with a renowned mathematics researcher, Dr. Ed Dubinsky, for 4 hours a day, 4 days a week to prepare the instruction necessary to teach the elementary school students from Liberty City at the institute. During that period, two FIU professors, a former local director of the Miami YPP site, and a professor/grant writer from the local community college met also once or twice a week to work with the students on presentation and leadership skills. As testament to their commitment, these students showed up day after day without knowing if enough money would be raised to support them in their professional development or to support the institute. Only one of these students had a part-time job. The other five had no employment. The professors, the director, and the math researcher also met with no compensation.

With budget adjustments and funding from the College of Law and a few patrons, ultimately, the program ran for four weeks in the summer in the law school. Though there was not enough funding in 2011 to hire a researcher, funding has been currently pledged from the FIU Office of Global Learning Initiative to support research for the 2012 math and civics summer institute.

Education undergraduate and graduate students, professors, law interns and professors (even a courtroom judge), university student affairs staff, Miami Dade College students and professors, and Miami Dade County Public School teachers and administrators, joined this effort to use Movement philosophy and pedagogy to transform the way we educate in universities and public spheres.

INFLUENCE OF THE YOUNG ON PRE-SERVICE AND IN-SERVICE TEACHERS

Each year for six years, high school students from the Miami Algebra Project and Young People's Project made presentations to university students enrolled in education courses, both undergraduate and graduate level. These courses were selected by the professors who engaged with and researched the program. Twice some of these same students also presented at the Annual Research Conference of the College of Education. Several students, who were both AP and YPP participants, presented at National Educational conferences with the intent of sharing their knowledge of mathematics, what it takes to commit to learning mathematics, and what they believe are the qualities that make a good teacher.

In the summer of 2010, six of the YPP students presented their stories and a math lesson to one of my classes. A cohort of teachers, engaged in an Urban Education Master's Degree Program, were enrolled in this class. When the YPP

students told their stories of being transfigured by their experiences as math literacy workers, the graduate students asked them to come to their classrooms to tutor and mentor their students. Yet when the YPP students moved to the next piece of their presentation, asking the cohort to participate in a mathematics lesson, the cohort resisted saying they weren't really good at mathematics. The YPP students told them not to worry that they would make it easy for them in the way that AP and YPP had made math easy to learn. Reducing the cohort's anxiety, the newly graduated high schoolers taught the lesson. The graduate students responded with comments like, "I wish I had learned math that way. I might have done better in college algebra."

As important as the lesson was the conversation with the graduate students after the YPP students left. Many of them talked about how they had assumed that students from that particular high school in the district would not be as articulate, confident, and knowledgeable as these YPP students demonstrated. The breaking down of stereotypes about the capacity of disenfranchised urban children to academically excel is crucial to the instruction of pre-service and in-service teachers. No theory, no pedagogy seems to assault those stereotypes as powerfully as the presence of the young in these classrooms exposing their knowledge and their power to learn and change their realities.

In sync with the Movement philosophy of inviting the wisdom of the elders into the work, YPP networks, both nationally and locally, with professional and community adults to share the expertise that can develop the skills youth need to change their lives and their world. In Miami a COE professor, expert in teaching videography as action research, tutored YPP students to use visual media to examine their concerns in their schools and communities. During this process students learn to critically examine the media's "mis-representation" of disenfranchised youth, to learn research methodology of data collection and analysis, and to disseminate their findings in communities and at professional conferences. The video productions of the Miami contingent were shown to an audience of COE faculty, graduate students, and some local district principals and administrators.

CONCLUSION

If we are to transform our educational institutions, maybe we need to look toward the youth, align with their visions and digital world, raise their voices. In doing that, there will still be time and space for us to share our knowledge which can help build the scaffolds that will support them as they learn to teach themselves and their communities. But to do this, we must disengage ourselves from dominating their learning. As Kahlil Gibran suggests in *The Prophet*, when speaking about the young, "You may strive to be like them, but seek not to make them like you" (p 17).

Gibran insists that the teacher "If he is indeed wise he does not bid you enter the house of his wisdom, but rather leads you to the threshold of your own mind" (p. 56). The vision and practices of Ella Baker, Bob Moses, The Young People's

Project seem to embody Gibran's ideal of teaching. They seem to sense that the "houses of wisdom" in this country, the educational institutions, have often become rigid walls of hegemonic, top-down structures that leave most students "to freeze and crystallize and be bound in a mould" (p. 4). Yet AP and YPP, operating in integrity with Baker's legacy, consistently turn the reigns over to the young, whether students are grappling with mathematical abstraction, organizing an event, meeting with the community, or learning research and documentation – always there to guide, but never there to dominate.

The organic, fluid nature of these organizations is often misunderstood and undervalued in the context of a Western Eurocentric model of education that dominates U.S. American schooling. The organic takes time. Like food and plants, it cannot be mass produced and retain its whole nutrients, nor can it be quickly assimilated and turned into "scaled up" prescriptive magic bullets. Yet because it is fluid, it can and does respond quickly to sudden shifts in reality. YPP demonstrates all of these organic qualities by its insistence on growing its organization from the bottom via local control. Young people in communities take it, get allies to fund it, and begin to shape it to suit their neighborhoods, their needs, their dreams. In contrast, the Western model traditionally and presently operates from a hierarchal mode of assimilating the young into the culture of the status quo. When changes are made, they are typically driven by the top for the benefit of the top or driven by marketing rhetoric of the corporatocracy. Russell Berman, President of the Modern Language Association (MLA), in his address at the annual conference remarked:

> In this past year, we have seen threats to education at all levels: in many individual institutions, in state capitals, and in Washington, D.C. We have seen a public denigration of humanistic learning, and a culture of shrill hostility toward teachers and teacher organizations. … I call on all members to participate in the defense of education under assault. (Berman, 2012, p. 3)

Only last week, I sat as an observer/facilitator in a room of faculty where the dominant theme of the conversation was how to more effectively teach students so that their skills are marketable. No one was discussing education for transformation or liberation, only education for the best job. Two weeks ago I was on a conference call with university educators and administrators from diverse urban sites, who were discussing themes for panels in an upcoming conference. Two of the themes discussed were "Building a 21st Century Workforce" and "Building Job Skills through Service Learning." The corporate agenda seems to have become the "new norm" for too many public universities.

As a counter to those kinds of experiences, studying and engaging with youth from YPP, an educational experiment that is profoundly rooted in a tradition of radical transformation, keeps me grounded in the democratic ideals that Moses and Baker espoused. It also helps lessen the desperation that wells up after participating in university dialogue driven by corporate interests.

While thinking and writing about the roots of YPP in the revolution of the Southern Freedom Movement (Harding), I happened to hear an interview with Wael Ghonim, a major participant and instigator in the Egyptian revolution

sparked in Tahrir Square on January 25, 2012. He created anonymous Facebook pages and Twitter messages to advertise meetings and plans for the largest protest in modern Egyptian history. During that "Fresh Air" interview, Ghonim told Terry Gross that the revolution was about the people who risked their lives, "not about google, or facebook." These were just the tools, he said, used to communicate quickly and widely to the brave young who found the courage to act heroically in the face of tyranny. He passionately explained to Gross that he did not want to be the face of the revolution, that he was against "personalizing a cause … definitely against personalizing a revolution … this was leaderless and it should continue leaderless, and no one should be taking the lead after all these people sacrificed their lives." His words harkened back to the same transformational, "leaderless," model of Baker and Moses, practiced also in YPP.

Moses in Mississippi, in spite of beatings, death threats, arrests and jail time, pushed against the limits imposed by those who thwarted democratic, constitutional law, yet he continued to create a space where youth could challenge those who stood in the way of a nation's dream for a real democracy. That space still remains for YPP to occupy and "pay it forward."

In his keynote, Berman insisted that through his contacts in D.C., he believes "A purposeful standardization of education is under way, driven less by a concern with students than with product placement for testing agencies" (p. 8). So I wonder if we might oppose those forces by learning something new about schooling from these serious young people in YPP – these young adults who use every creative tool possible to teach mathematics to children who no one believes have the capacity to learn. I wonder if, like the youth in the FOF tour, all professors in colleges of education and teachers in public schools flung open their doors and invited the young and community elders into their classrooms to tell their stories, teach their knowledge, share their art, music, theories, might then institutions come alive? With this kind of agenda, might those 50% of college freshmen, who typically drop out of college (Miller), find something in classrooms relevant to their lives, invigorate their interest in learning other wisdom traditions, and get ready to participate in a diverse global society? Might those students condemned to low-performing public schools find a reason to come to school and stay because school no longer would be an alien place that negates their home culture? Do we have the courage to ignore the drill and kill experts, the test mongers building their great fortunes, and the corporate moguls who want public schools to train "worker bees" who will continue to flip their burgers, pick up their trash, and fill their prisons (Alexander)? Can we be honest with one another and suspend our ego's as experts, especially in these times when education is under siege, and learn what Ella Baker knew, to turn over the reins to the "young who dare to run against the storm"?

Marcelo Suarez-Orozco, in a keynote address (FIU, 2011), said that from a survey used in his research about global immigration patterns, the number one complaint cited about schooling by students across the planet was "boredom." Given that indictment, can we use the experiences and documentation of the Young People's Project – with its history rooted in Movement pedagogy, its mutual

respect for the wisdom of its elders as well as hip-hop culture, its facility with mathematics and the digital world, its capacity to respond quickly to the immediate, and its faith in democratic ideals – to counter the hum drum, mind numbing, low quality, uncreative teaching that is being demanded by phony assessment tools and legislative bodies tied to corporate hierarchy who want to maintain a class of worker who must work for peanuts in order to survive.

Since 2005 as a seasoned educator observing, interviewing, and working with YPP participants, I have seen in their founders what Ella Baker may have seen in Bob Moses and SNCC – a group of new intellectuals ready to jump off the page of history into the present world and reshape American democracy.

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ISSA M. SALEH

3. TEACHERS' PERSPECTIVE TOWARDS THE EFFECTIVENESS OF A PROGRAM IN ONE OF THE SCHOOLS IN THE MIDDLE EAST

Since the beginning of formal programs for teaching English as a second language (TESL) in the early 1940s, various methods has been used in an attempt to achieve the best learning outcome possible (Light, 1978).

It is as useful to ask "Does bilingual education work?" as it is to ask, "Does Education work?" The questions raised here "What are the problems in Education?" "How can we go about solving them?" "What does research tell us about settings that are successful?" Similar questions can and should be asked about bilingual education. Bilingual Education is not essentially a language program, it has broad education goal (Hakuta, 1986).

Increased understanding of bilingual education will disseminate the demand for demonstrations of success. In fact during the beginning years of the bilingual education movement, there was not a great deal of solid research supporting bilingual education. Since that time positive research evidence has been accumulating that students educated bilingually in carefully designed and well-implemented programs do extremely well academically and do learn English (Crawford, 1987; Cummins, 1986; Krashen, 1988; Willig, 1985).

THE SIX BASIC CHARACTERISTICS OF EFFECTIVE BILINGUAL EDUCATION

The literature identified six general characteristics that affect student achievement in bilingual classes. These characteristics are:

1. A working knowledge of the subject material:

English teachers should have a working knowledge of the subject they teach. (Glasser, 1990) argues this point by simply stating. "Teachers have to previously learn a lesson somewhere along the line before they can teach it." The teacher who knows the subject content area is better prepared to present the material and redirect any misconceptions held by the students (Glasser, 1990).

English teachers not only know the subject matter they intend their students to learn, but also the misconceptions their students bring to the classroom that will interfere with the learning of the subject matter. One characteristic of the teaching staff in high performing schools seems to be their knowledge of the structure and substance of the subject being taught (Glasser, 1990).

I.M. Saleh & M.S. Khine (eds.), Reframing Transformational Leadership, 21–34.

2. Specific learning outcomes to be taught to students:

The specific learning outcomes desired upon completion of the course should be identified at the onset of the bilingual educational program. The outcomes must then be adjusted to fit the abilities and needs of the students (Berline, 1984). believes that the most important variable in determining the effectiveness of a bilingual education is whether the delivered curriculum of that classroom is linked logically to the desired outcomes.

3. High expectations for the students:

Bilingual education has some goals for their students to achieve. Teachers can expect too little or too much in their instructional assignment interactions with students (Good, 1984). Teachers who expect too little from their students do not expose their students to all the curricular material needed to master concept and subject areas. Bilingual teachers who expect unreasonable outcomes from their students will cause the students to become discouraged. Teacher should strive to achieve appropriate expectations of their students. Expectations of students should be high enough to achieve optimal goals, but not unreasonable, causing students to abandon efforts (Brophy, 1986). Several researchers (Cummins, 1994; Dong, 2004; Genesee, 1994) have emphasized the need for mainstream subject-matter teachers to develop English language learners' higher-order thinking skills, along with language and literacy skills.

4. Selection of high quality instructional materials:

Bilingual education select high quality instructional materials to use in their teaching lessons (Good,1984). If bilingual educators carefully select instructional materials to us during instruction that fit the curriculum goals and the characteristics of the students, teacher will be able to devote more of their time and energy to educational practices that enrich the lesson content.

5. Planning structured classroom activities:

The selection and development of instructional materials should be accompanied by well-organized and structured learning activities. In a review of studies examining the relative effects of "open" and more traditional forms of education Gage (1978) found more structured programs were associated with greater student achievement. One of the more consistent findings from aptitude treatment interaction research is that students with low pretest scores need more structure than students with higher pretest scores (Good, 1979). Clearly, structured lessons and activities are associated with increased student achievement, especially when teaching students who produce below average results. Most successful English teachers are those who continually keep their students working up to their capacities (Good, 1979).

6. Using structured lesson to present subject material:

Effective bilingual education typically use a structured approach to present their lessons that usually includes four basic components: These are:

6.1. Introducing the lesson:
English teachers prepare their lessons with a format introduction to prepare the students to learn and begin to gain control of their classroom during the initial phases of instruction. The introduction typically contains a specific plan to manage student behavior and a statement of the expected activities and outcomes of the lessons to the students. Good introductions appear to prepare students to learn more effectively by giving them a general summary of what to expect during a lesson or course of study. Kounin (1970) identified three major components of an effective classroom management system:

1. Clearly specified definition of teacher expectations regarding student behavior with clear guidelines of what constitutes an infraction.
2. The use of fair and consistently applied standards for evaluating student behavior.
3. The firm, dispassionate and consistent application of disciplinary actions by the teacher when necessary.

6.2. Focusing on academic content:
Effective English teachers stress academic content in their lessons. The academic content of the lesson usually begins with a review of previous material and the checking of any homework assigned from previous lesson (Good, 1979).

The presentation of new lesson material begins by initially linking the new information of the lesson to past concepts (Good, 1979). This occurs briefly to improve the students' accommodation of the material. Bridging new concepts to experience improves the students' development of a schema related to the subject to the subject material.

The effective English lessons are highly structured and well prepared. Smith and Sanders (1981) found those teacher presentations exhibiting high degrees of structure produced higher student achievement and ratings of teacher effectiveness. Smith and Sanders (1981) in their review of research on classroom instruction see a general pattern of results suggesting the central importance of a structured approach. Indications of a structured approach might be the availability of detailed teacher lesson plans for classroom activities with specific instructional objectives, a logical progression of instructional units, frequent monitoring of student progress, and provisions for feedback on student performance. Generally, successful teachers move their students briskly from step to step, but the steps themselves are kept small and easily within the grasp of most students.

6.3. Assigning follow up activities and practice:
More effective English teachers give their students' opportunities to us the information they present in their lesson. Although independent seatwork is

probably overused, it is not a substitute for active teacher instruction or drills recitation, and discussion opportunities; seatwork and homework assignments provide needed practice and application opportunities for students (Brophy & Good, 1986).

Teachers should monitor student progress during seatwork assignments. Brophy and Good (1986) found that students who spend most of their time being instructed by their teachers or working independently under teacher supervision made greater gains than students who spend large amount of time in nonacademic activities or who were expected to learn largely on their own.

In addition to establishing procedural and behavioral expectations during seatwork, teachers must also demand that students use their classroom time to complete curriculum tasks. Effective managers assume that students will complete assignments and hold students accountable for work. Students know what to do when they finish assignments and do not waste time trying to determine the next step they are expected to complete. Effective managers construct classroom environments in which expectations for student behavior are continuous (Good, 1979).

6.4. Providing Accurate and Timely Feedback to Students:

Effective English teachers provide accurate, timely, feedback to students. Research indicated that providing academic feedback to students keeps their success high. Feedback keeps children from being failures too long. One basic requirement for feedback is that teachers provide accurate feedback to students on their responses to class questions, test, and written assignments. A considerable amount of research indicated that the pattern of teacher reinforcement for correct and incorrect student responses is highly erratic and often inaccurate (Doyle, 1979).

The following data collection methods have been used :

Questionnaires

A questionnaire was completed by fifty respondents, the questionnaire focused on the five research objectives that were translated into seventeen questions. Each respondent was provided the ability to express his level of agreement with each statement.

Interviews

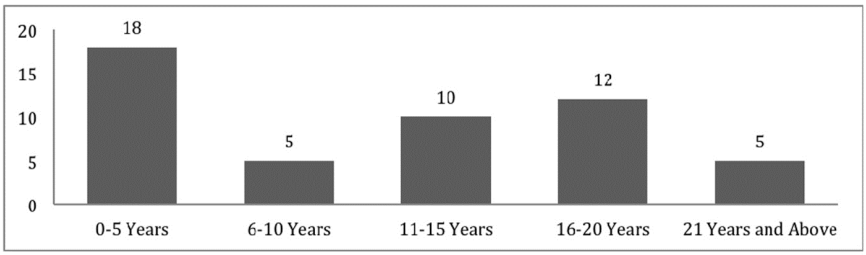
Interviews were completed by ten respondents, the interviews focused on the five research objectives that were translated into seventeen open ended questions. Each respondent was provided a basic explanation of each question.

QUESTIONNAIRE RESULTS

36% of the sample had less than 5 years of teaching experience, followed by teachers with 16-20 years (24%). Teaching staff with 11-15 years of experience

represented 20% of the sample. 16-20 and above 21 years segment representing the remaining 20%, with 10% each.

Table 1. Years of experience



The majority of the sample strongly disagreed with the statement, while 26% disagreed. Both giving a very strong negative view of the effectiveness of the Ministry of Education and Quality Assurance Authority's programs and initiatives. 10% remained neutral. And 34% showed support that such initiatives are improving education in Bahraini schools.

Table 2. National programs effectiveness

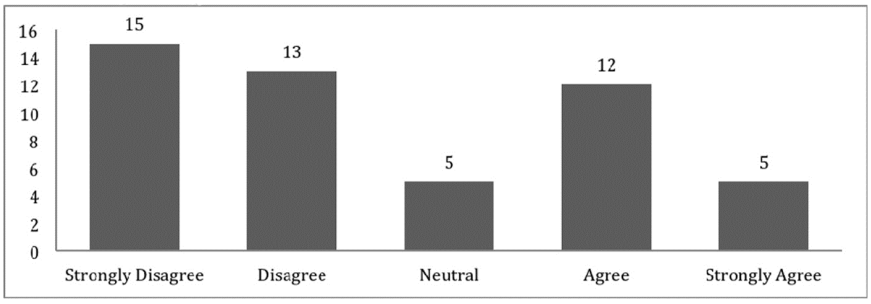
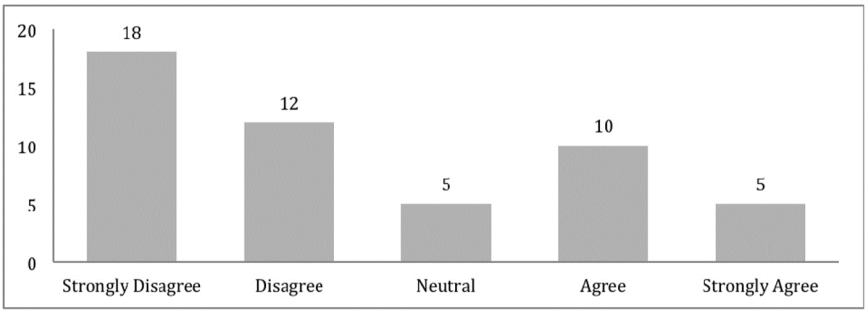
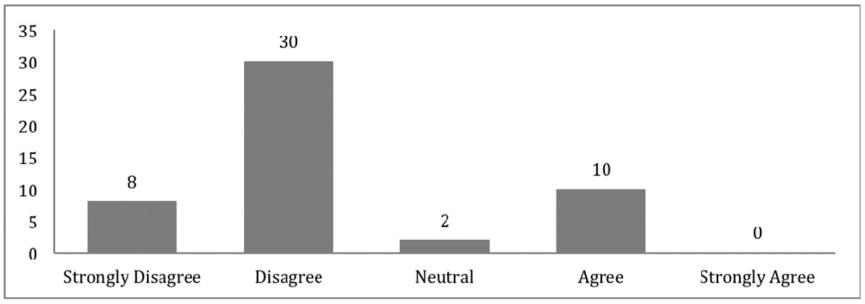


Table 3. Internal and external standards



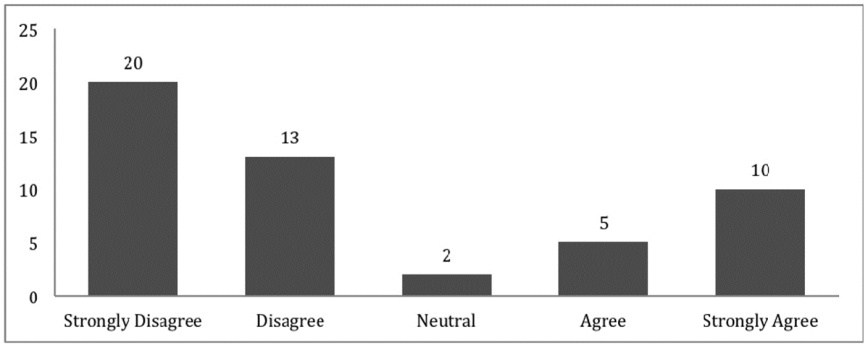
When asked about the benefits of internal and external standards enforced on teaching staff, 60% of the sample had a very negative view on their effectiveness. 30% supported the standards and only 10% remained neutral.

Table 4. Curriculum and books effectiveness



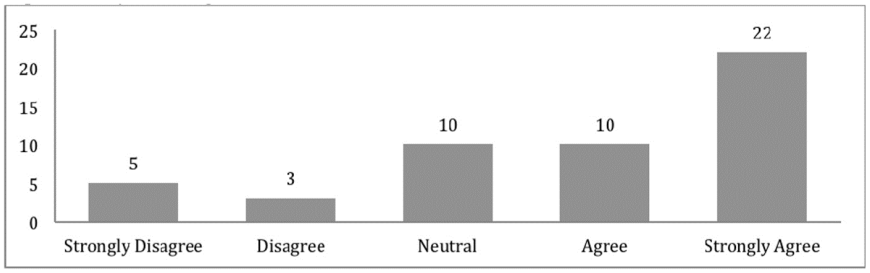
16% of the sample found that English language curriculum and books are extremely ineffective, followed by 60% who found them ineffective. Only 20% were somehow satisfied and 4% remained neutral.

Table 5. Books and Curriculum Relevance



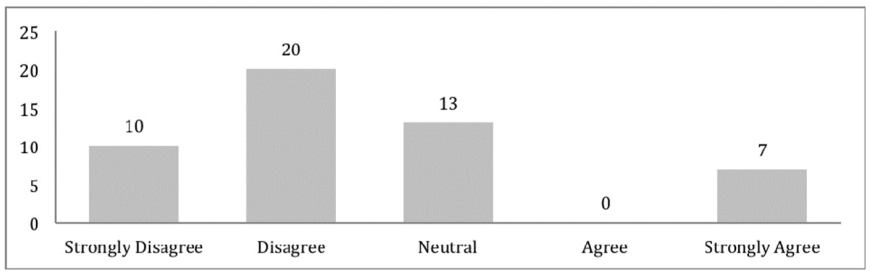
66% of the sample highlighted that books and curriculum are irrelevant to Bahraini culture. 10% found them somehow relevant and 20% expressed strong support.

Table 6. Importance of teaching methods



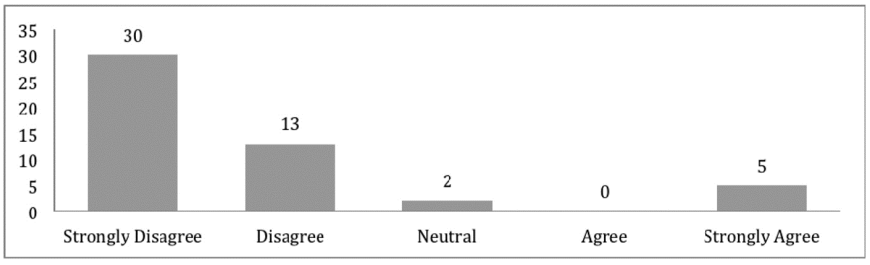
The majority of the sample (44%) strongly supported the importance of various teaching methods. 20% agreed with the statement and 20% remained neutral. Only 6% expressed disagreement and 10% strongly disagreed.

Table 7. English skill development



The overwhelming majority of the sample (60%) highlighted that students are not provided with unique skills at each educational level. 26% remained neutral and only 14% strongly agreed.

Table 8. Curriculums adequacy



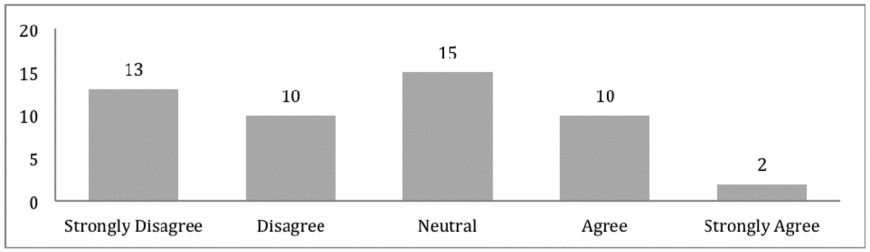
The absolute majority of the sample expressed strong and general disagreement with the statement. Highlighting that curriculum are not adequately designed to

cater for abilities and differences in students' performance and background. Only 10% strongly supported current curriculum and 4% remained neutral.

Central Testing

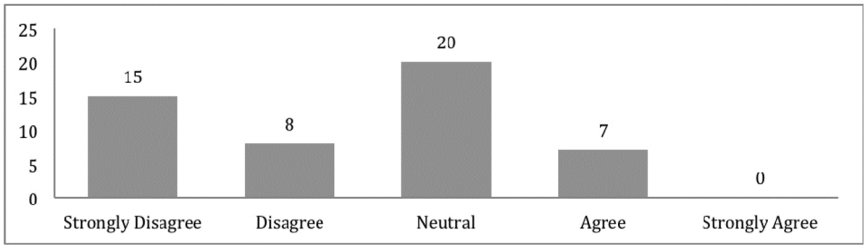
86% of the sample expressed a very negative view on the effectiveness of centrally developed examinations and their abilities to evaluate students. Only 6% agreed with the statement and 4% strongly agreed. The remaining 4% remained neutral.

Table 9. Benefits of new technology



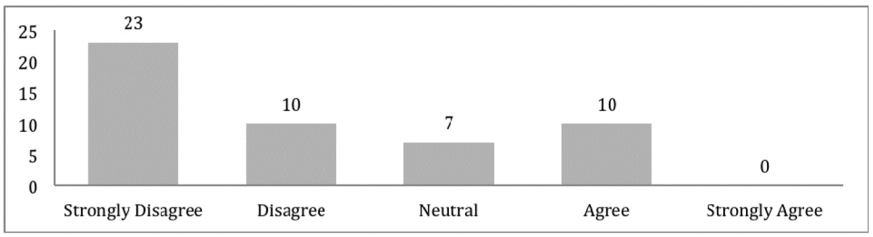
46% of the samples were extremely critical of the effectiveness of technologies utilized in their school. 24% supported new technologies and 30% remained neutral.

Table 10. E-Learning lesson development



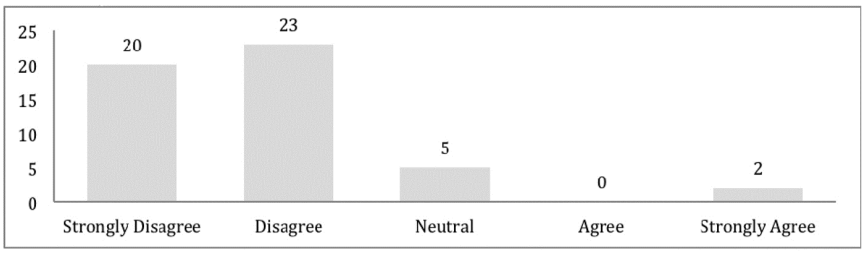
46% disagreed with the current method of allocating teachers the responsibility of developing E-learning lessons. Only 14% supported the approach and 40% remained neutral.

Table 11. School facilities adequacy



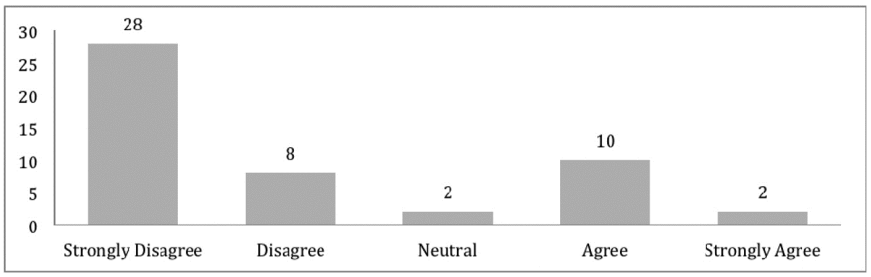
66% of the sample found that school facilities are not adequate. On the other hand, only 20% found them somehow adequate. The remaining 14% remained neutral.

Table 12. English department activities



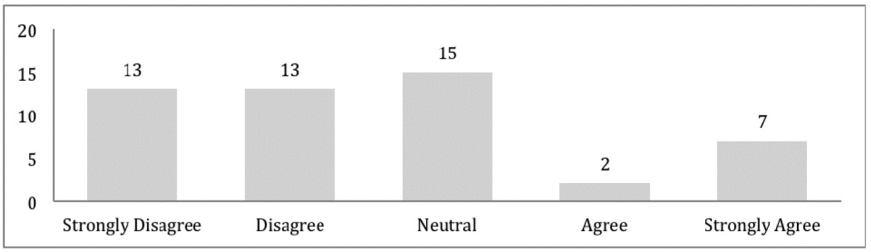
An overwhelming majority of the sample (86%) expressed their strong or general dissatisfaction with the adequacy of activities carried out by English Language Department. Only 10% remained neutral and 4% strongly supported existing activities.

Table 13. Teachers' motivation



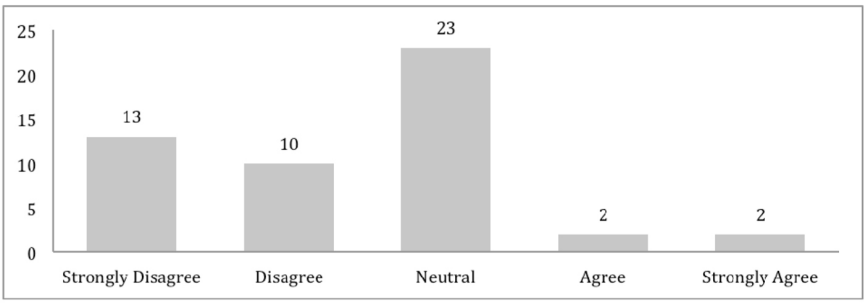
72% expressed strong and general levels of demotivation across teaching staff. And 24% stated that they are motivated.

Table 14. Teachers' interest in education



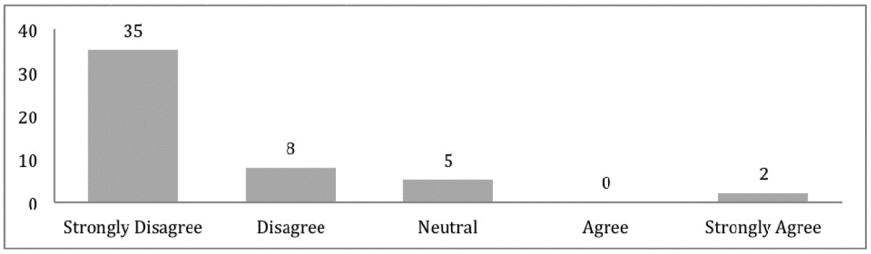
52% of the sample stated that teachers are not genuinely interested in the field of teaching. Only 18% supported the claim and 30% remained neutral.

Table 15. Teachers' changing teaching methods



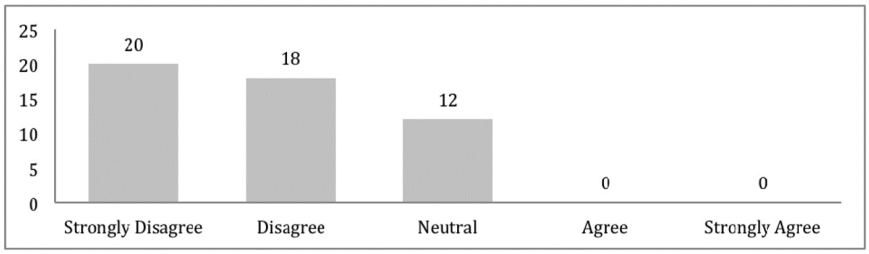
46% of the sample expressed strong disagreement with the claim that teachers are willing to change their teaching methods. On the other hand, 8% supported the claim. The remaining 46% remained neutral.

Table 16. Students English background adequacy



86% of the sample expressed serious concerns about the adequacy of students English Language backgrounds. And 4% supported the statement. 10% of the sample remained neutral.

Table 17. Students' assessment adequacy



40% expressed strong disagreement with adequacy of student assessment methods currently used. While 36% disagreed. The remained 24% remained neutral and no respondent expressed her agreement.

CONCLUSION

External/Internal Elements

It was clear that national programs are not widely accepted by teaching staff and that there is a significant level of scepticism on the actual benefits and motivation behind initiating such programs. Teaching staff expressed their disagreement with the theoretical approaches enforced by the Ministry of Education, Quality Assurance Authority and Internal School Administration, highlighting their inadequacy in real life schooling environment. Curriculum and Methods.

During our research we observed a general discontent with current curriculums and books, most teaching staff expressed their dissatisfaction with quality of books and relationship with Bahraini culture.

It was also observed that curriculums are designed with minimal emphasis in gradually building students' background across educational levels.

Technology and School Facilities

Although technology is generally known as an excellent facilitator in rapidly enhancing students' abilities and enhancing teaching practice, teaching staff expressed their dissatisfaction with the way technology is applied, where the focus is targeted in demonstrating the use of advanced technology rather than creating a strong foundation to use technology as an alternative mean to disseminate and convey knowledge.

It was also observed that school facilities are generally poor and inadequate and require a major renovation and enhancement to fulfil teaching objectives.

Teaching Staff

Teaching staff express their dissatisfaction with activities and programs initiated by English Language Department and highlighted that English teaching staff are unable to perform additional activities due to time and resource limitation.

It was also observed that many teaching staff are in the field for various reasons and interest in education is not one of them. Most respondents highlighted that teaching staff are in the field to benefit from long holiday, exclusive female environment and shorter working hours.

Students

Students' background in English was extremely weak due to insufficient foundation and basic education. A number of respondents also highlighted that there are major issues faced by students from foreign nationalities who moved recently to Bahrain and have extremely insufficient English language background. The results also highlighted a major dissatisfaction with the methods used to evaluate and assess students' abilities and progress.

RECOMMENDATION

External/Internal Elements

It is strongly recommended to involve teaching staff in the development of standard, especially ones developed and enforced internally. This will effectively ensure that programs are effective and realistic, and that they can be applied with the available resource and not as an additional burden.

Curriculum and Methods

It was also recommended that teachers are provided the ability to participate in the selection and development of curriculum. And that national curriculums selected are appropriate and related to local culture.

Technology and School Facilities

It's recommended that e-learning lessons are developed by specialized trained staff for lessons that require additional aids and an alternative mean to ensure easier comprehension of knowledge.

In addition, school facilities require a major revamp, to ensure that the schooling environment is comfortable and adequate to fulfil educational goals and objectives.

Teaching Staff

It's recommended that teaching staff must undergo extensive practical training programs that are not focusing on theoretical aspects of education.

In addition, school administration and the ministry must evaluate teaching staff candidates prior to joining any organization.

Students

It was recommended that students from foreign backgrounds are provided with additional programs to enhance their background in English or they are placed in lower classes to ensure that their capabilities are adequately built and developed.

It was also recommended that current assessment methodologies are enhanced to ensure that students are evaluated using a fair and objective approach instead of the current method focusing on exam performance and inflated markings.

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WIROT SANRATTANA, FORREST W. PARKAY AND MEI WU

4. STUDENT, TEACHER, AND PARENTAL PERCEPTIONS OF ELEMENTARY SCHOOL CLIMATE

A Progress Report on Thailand's Quest for Educational Quality

INTRODUCTION

> Education shall aim at the full development of the Thai people in all aspects: physical and mental health; intellect; knowledge; morality; integrity; and desirable ways of life so as to be able to live in harmony with other people. (Thailand's National Education Act of 1999)

The statement above from Thailand's *National Education Act* of 1999[1] sets forth an educational goal held by all countries of the world. For Thailand, and virtually every country today, education is essential to the collective and individual wellbeing of its citizens.

In other words, there is no single, "right" definition of *quality*. Thus, there can be no adequate measurement of this elusive concept. Moreover, "no assessment of the quality of education is really objective and impartial" (Mounier and Tangchuang, 2010, p. 39).

An additional point can be made about using test scores as the primary measure for the quality of Thai education: "relying too heavily on measuring educational achievements and using it to determine educational quality as in the Thai case is

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[1] The Act was amended in 2002 and 2010. Thailand's economic, social, political, and technological future is critically linked to its ability to strengthen all aspects of its educational system. As an editorial in Thailand's English-language newspaper, the *Bangkok Post*, put it: "If Thailand and its people are to move forward economically, socially and politically, it will be through education" (*Bangkok Post*, April 1, 2011).

The process of strengthening a nation's school system begins with its elementary schools. A strong system of elementary education provides students with excellent preparation for their subsequent schooling and/or entry into the workforce. Additionally, a weak system of elementary education limits the possibility that meaningful reform can occur at the secondary level and beyond.

There are various approaches to assessing the strength of a nation's elementary schools. The most common approach is to assess the achievement of students. However, as the following statement by the editors of *Education and Knowledge in Thailand: The Quality Controversy* indicates: "measuring educational achievements does not adequately reflect the conceptualization of quality of education, not withstanding that it is generally held to do so" (Mounier & Tangchuang, 2010, p. 39).

I.M. Saleh & M.S. Khine (eds.), Reframing Transformational Leadership, 35–54.

not doing justice to other factors left out or plainly ignored" (Ponqwat and Rupavijetra, January 2010, pp. 10-11).

Educational quality is a complex, multifaceted concept. A more informative approach to assessing educational quality, then, is to assess the climate of a school. Examining the climates that characterize elementary schools provides us with a powerful and nuanced measure of the quality of a nation's school system.

PURPOSE OF THE RESEARCH

Within the context of ongoing educational reform in Thailand, the primary purpose of this study was to survey the multiple perceptions of students, teachers, and parents on various dimensions of school climate at Thai elementary schools. A secondary purpose was to determine the extent to which study results show that Thailand is making progress toward achieving the goal of educational quality as outlined in the *1999 National Education Act.*

SIGNIFICANCE OF THE RESEARCH

Since there are no recent studies of the climate of Thai elementary schools, this study aimed to examine the multiple perceptions of students, teachers, and parents. An increased understanding of school climate and strategies for improvement is fundamentally important as Thai schools continue to move toward school-based management and instruction. This understanding will enable schools to move more efficiently and expeditiously to the next phase of educational reform in Thailand.

BACKGROUND

To provide appropriate background for the current study of the climate of Thai elementary schools, this chapter begins with (1) a brief overview of Thailand's system of education and (2) a brief summary of various perspectives on school climate.

EDUCATION IN THAILAND

According to the *National Education Act* of 1999, the purpose of education is to promote "the learning process for personal and social development through imparting of knowledge; practice; training; transmission of culture; enhancement of academic progress; building a body of knowledge by creating a learning environment and society with factors available and conducive to continuous lifelong learning."

The Ministry of Education (MOE) is responsible for the management of education at all levels, including the pre-primary to secondary level, post-secondary level, and tertiary level. The MOE also provides non-formal education and supervises private schools at all levels. In addition, the MOE oversees programs related to religion and culture (UNESCO, 2011).

Since 2002, the MOE has operated according to a new organizational structure. This structure consists of the Office of the Permanent Secretary (OPS), the Office of the Education Council (OEC), the Office of the Basic Education Commission (OBEC), the Office of the Vocational Education Commission (OVEC), and the Commission on Higher Education (CHE).

At the local level, the reorganization of the Thai education system led to the establishment of 175 Education Service Areas (ESAs) in 2003. The number of ESAs increased to 185 in 2008 (Ministry of Education (2008). And, in 2010, the ESAs were reorganized into 183 primary education service areas and 42 secondary education service areas (Office of the Minister Newsline, 2010).

Each Educational Service Area is comprised of an area committee, which is responsible for approximately 200 educational institutions and a population of 300,000 to 500,000 students (Ministry of Education, 2008). Each Educational Service Area fulfills the following functions: implementing governmental education policies; monitoring, empowering, and supporting the educational management activities of the ESA; and managing educational programs to achieve objectives that lead to students reaching educational standards as well as developing "with happiness appropriate to their age" (National Educational Commission, 2007, pp. 14-20).

The *National Education Act of 1999* has also led to major reforms in methods of teaching and learning and the development of more effective learning environments. For example, the Ministry of Education is leading the transformation of Thailand's education system by emphasizing moral and ethical values and a "core program" to improve educational quality.

A leading example of Thailand's educational reform efforts is His Majesty's philosophy of "Sufficiency Economy" which promotes "moderation and harmony among local communities in order to meet their needs in a sustainable manner." Key elements of this program include the following: moral education through the philosophy of Sufficiency Economy, professional development, a laboratory school project, embracing diversity, international partners for reform, transforming language learning, supporting small rural schools, twelve years of free education, an educational loan fund, an interactive e-learning project, a learn@work Catch Your Dream Project, a Fix It Center, One District One Scholarship (ODOS) Program, and One Laptop Per Child (Ministry of Education, 2008).

In addition, the National Education Act of 1999 led to two additional educational reform policies for Thailand: the First Decade of National Education Reform (1999-2008) and the Second Decade of National Education Reform (2009-2018). These reform acts focus on four changes: the "modernization" of Thai people, new teachers, new schools and learning centers, and a new educational administration. With these reforms in place, "Thai students and learners will become academically keen and professionally wise, an important ingredient in being able to positively develop society for the future" (Ministry of Education, 2010).

BASIC EDUCATION

According to the *National Education Act of 1999*, formal education is divided into two levels: basic and higher education (UNESCO, 2011). The basic education system provides nine years of compulsory education, with 12 years of free basic education guaranteed by the Constitution. (In early 2009, the Abhisit administration put into effect a program to provide 15 years of free education [3 years in preschool and grades 1-12]) (U.S. Department of State, 2011). Basic education is divided into six years of primary education *(Prathom Suksa)* and six years of secondary education *(Mathayom Suksa)*. Secondary education is further divided into three years at the lower- and upper-secondary levels. The kindergarten levels of pre-primary education, also part of the basic education level, span 2–3 years depending on the locale, and are variably provided.

The Basic Education Core Curriculum 2008 focuses on the learner's development. The curriculum is composed of nine core subjects: Thai language, mathematics, science, social studies, religion and culture, health and physical education, arts, occupations and technology, and foreign languages. To integrate local wisdom and culture, flexibility is built into the curriculum so that it is consistent with learning standards in each of the core subject areas. The promotion of thinking skills, self-learning strategies, and moral development is at the heart of teaching and learning in the Thai national curriculum (Ministry of Education, 2008).

In 2010, approximately 408,000 teachers taught at public schools at the pre-primary through upper secondary levels; and approximately 126,000 taught at private schools at the same levels (Office of Basic Education Commission, 2011; Office of the Private Education Commission, 2011).

PRIMARY EDUCATION (PRATHOM SUKSA)

Primary education in Thailand is the fundamental level of education. Every Thai citizen is required to acquire education at this level. Primary education "aims at enriching children's multi-faceted development, with an emphasis on reading and writing ability, cultivating morality, thinking ability, life skills, and problem solving ability according to their personal needs. (Sangnapaboworn, 2007). Primary education is provided at more than 21,722 public elementary schools (Office of Basic Education Commission, 2011) and 2,054 private schools (Office of the Private Education Commission, 2011), most of which are coeducational.

Currently, about 3.5 million students (or 71 percent of the population ages 6-11) attend free, government-operated public elementary schools, and almost 1 million attend private elementary schools (Office of Basic Education Commission, 2011; Office of the Private Education Commission, 2011). Most students attend elementary school in rural communities, since three-fourths of the Thai population resides in rural areas.

SECONDARY EDUCATION *(MATHAYOM SUKSA)*

Secondary education is divided into *Mathayom Suksa* 1-3, or lower-secondary education (i.e., grades 7-9), and *Mathayom Suksa* 4-6, or upper-secondary (i.e., grades 10-12). At the lower-secondary level, more than 2.1 million students (or 73 percent of the population ages 12-14) attend government-operated schools, and 367,000 attend private school. At the upper-secondary levels, more than 1 million students (or 57 percent of the population ages 15-17) attend public schools, and almost 159,000 students attend private schools (Office of Basic Education Commission, 2011; Office of the Private Education Commission, 2011).

In 2010, Thailand had 6,998 public and 1,186 private lower-secondary schools (Office of Basic Education Commission, 2011; Office of the Private Education Commission, 2011). The lower-secondary education emphasizes focuses on "learners' intellect, ethics morality and basic skills. It allows the learner to explore his individual interests and aptitudes through a wide choice of both academic and vocational subjects" (Southeast Asian Minister of Education Organization [SEAMEO], 2006).

At the upper-secondary level, the number of public schools in 2010 was 2,527, and the number of private schools was 577 (Office of Basic Education Commission, 2011; Office of the Private Education Commission, 2011). The upper level aims to "provide appropriate academic and vocational knowledge and skills correspondent with the learners' interests and aptitudes" (Southeast Asian Minister of Education Organization [SEAMEO], 2006). In 2010, there were 2,143,430 Mathayom Suksa 1-3 students and 1,057,389 Mathayom Suksa 4-6 students enrolled in public schools (Office of Basic Education Commission, 2011). During the same year, there were 366,838 Mathayom Suksa 1-3 students and 158,549 *Mathayom Suksa* 4-6 students enrolled in private schools (Office of the Private Education Commission, 2011).

BUDDHIST MONASTERIES AND THAI EDUCATION

Since the advent of Buddhism in Thailand nearly 1,000 years ago, monks have played a crucial role, especially in the moral education of the public. "The Thai mind, in general, is thus inculcated with compassion, friendliness, and love of peace" (Sirikanchana, 1998, cited in The India Gandhi National Centre for the Arts [IGNCA], 2011).

Similar to the role that Catholic schools and schools with other religious affiliations play in U.S. education, Buddhist monasteries make an important contribution to education in Thailand. Since about 95 percent of its population practice the Buddhist religion, Thailand has more than 30,000 private and community monasteries throughout the country. In towns and villages particularly, it is not uncommon for monasteries to be centers of both religious and secular education where boys are taught reading, writing, and arithmetic. In remote villages, particularly in the "upcountry" region (i.e., northern Thailand), poor youngsters unable to gain access to public education may receive at least a basic

education at a local monastery. Thai males may even become "novice" monks at about age ten, and it is still a fairly widespread practice for Thai males at the age of 20 to become "temporary" monks during the vassa or rainy season (about three months in duration). Though largely unavailable to female children, the monastic systems of education in present-day Thailand partly serve the educational needs of the Thai society.

PERSPECTIVES ON SCHOOL CLIMATE

To date, research on school climate has been conducted almost exclusively in the United States and other Western countries. Nevertheless, findings from these studies have been used to develop school improvement policies in many developing countries. For example, the educational reform policies contained in Thailand's *1999 National Education Act*, and the *Tenth National Education Development Plan* (2002-2016) are based, in large measure, on research on effective school climates in Western contexts.

Studies of schools as organizations have distinguished between school *climate* and school *culture*. In general, *climate* refers to the behavior of individuals within an organization, while *culture* refers to the values and norms that characterize the organization. Some researchers suggest that school culture is a dimension of school climate (Heck & Marcoulides, 1996; Hoy, 1990). Additionally, "effective" and "ineffective" schools have been found to have different climates, and the effects of climate factors on achievement can be very powerful (Anderson, 1982). As a result, enhancing climate factors is typically identified as a key target for change and improvement of schools.

Although elementary schools are very much alike, each school is unique. Each has its own climate. Each school reflects a network of beliefs, values and traditions, and ways of thinking and behaving that distinguishes it from other schools.

DESCRIPTIONS OF SCHOOL CLIMATE

Much like a community, an elementary school has a distinctive climate – a collective way of life. In addition to *culture*, other terms that have been used to describe school climate include *ethos, atmosphere,* and *character*. Some schools may be characterized as community-like places where there is a shared sense of purpose and commitment to providing the best education possible for all students. Other schools lack a unified sense of purpose or direction and drift, rudderless, from year to year. Still others are characterized by internal conflict and divisiveness and may even reflect what Deal and Peterson (2009) term a "toxic" school culture; students, teachers, administrators, and parents may feel that the school is not sufficiently meeting their needs. The following comments by a teacher who worked at two different schools during his first year describe the climate at the two types of schools:

> [One school] had many well-trained teachers and administrators. Teachers formed small communities among themselves, and one hosted a monthly inquiry meeting. Teachers felt free to speak out at the large monthly staff meetings. We could also give anonymous feedback and ask questions of the principal, and we were given typed-up answers.
>
> [The other school], in contrast, has had six principals in the last eight years. There is high teacher turnover, and the administration has had a very difficult time finding substitute teachers. Many students sit in the cafeteria waiting for a solution. (Oakes & Lipton, 2007, p. 339)

Given the wide variation in elementary schools and their climates, many models have been proposed for describing their distinguishing characteristics. One approach is to view elementary schools metaphorically; that is, what is a school like? Some elementary schools have been compared to factories; students enter the school as raw material, move through the curriculum in a systematic way, and exit the school as finished products. Terrence Deal and Kent Peterson (2009, p. 31) have suggested that exemplary schools "offer, like tribes and clans, deep ties among people, and the values and traditions that give meaning to everyday life." Others have suggested that schools are like banks, gardens, prisons, mental hospitals, homes, churches, families, and teams. In the school-as-family metaphor, for example, the effective elementary school is a caring community of adults who attend to the academic, emotional, and social needs of the children entrusted to their care.

SCHOOL CLIMATE AND EDUCATIONAL QUALITY

Freiberg and Stein (2004) suggest that school climate is the "heart and soul" of a school. Climate is the "essence" of a school that, ideally, leads children, teachers, administrators, and staff to "love" the school and to look forward to being there each school day. In a general sense, climate is a metaphor. The term *school climate* evokes metaphors (a family, tribe, community, and so on) that convey a feeling of well-being, health, safety, openness, and caring – in short, a climate conducive to learning and growth. School climate is the quality of a school that creates a healthy place for learning, nurtures children's and parents' dreams and aspirations, stimulates teachers' creativity and enthusiasm, and elevates all of its members. Most importantly, school climate is the special quality of a school that allows the voices of the children and youth to be heard (Reeves, 2006; Rogers & Freiberg, 2008; Robbins & Alvy, 2009)

The authors maintain that meaningful educational reform requires a deep understanding of the learning climate at elementary schools. To acquire that deep understanding, school climate must be measured from multiple perspectives, so that each person responsible for the education of children can see how healthy the learning climate is and what needs to be changed or sustained.

DESIGN OF THE STUDY

This study focused on an analysis of data gathered from students, teachers, and parents at elementary schools in Thailand. With respect to students, the objective was to determine the degree to which students believe (1) they can collaborate with teachers to design learning activities, (2) they have opportunities for self-expression, and (3) teacher behaviors reflect a "student-centered" school climate. With respect to teachers, the objective was to examine teachers' perceptions of (1) the school's organizational "health," (2) the school's physical environment, and (3) the principal's leadership style. And, with respect to parents, the objective was to examine their perceptions of 19 climate-related factors at the school site.

METHODOLOGY

This study used a mail survey research methodology. The population was comprised of 28,930 public elementary schools (Ministry of Education, 2010). Krejcei and Morgan's (1970) table for determining a sample size at a significance level of 0.05 was subsequently used. Schools were initially selected using a stratified random sampling technique according to their geographic location within the five regions of Thailand. According to this procedure, a sample of 395 schools was identified for data collection.

INSTRUMENTATION

The researchers developed a Climate Rating Scale Questionnaire (CRSQ) in two steps. First, the researchers conducted a content analysis of the National Education Act of 1999 to identify climate-related elements embedded in these important pieces of legislation. Second, the researchers synthesized school climate inventories developed by Creemers and Reezigt (1999), Fraser (1999), Hoy and Feldman (1999), Hall and George (1999), James and Connolly (2000), Smith and Piele (2006), Collinson and Cook (2007), Davies (2009), and Reeves (2009). The CRSQ consisted of three versions – Version 1 for students, Version 2 for teachers, and Version 3 for parents. Each version contained items based on a 5-point Likert scale.

Using a panel of six Thai professors of educational administration, the resultant three-part CRSQ was analyzed to determine construct validity and content validity. In addition, the CRSQ was pilot tested with 25 students, 25 teachers, and 25 parents not included in the final sample. Reliabilities of .8765, .8452, and .7932 were obtained for the student, teacher, and parent versions, respectively.

Version 1, CRSQ

Version 1 presented student respondents with the following five items that focused on the degree to which students collaborate with teachers to design learning

activities. In the main, these five items reveal the extent to which teachers focus on students' learning, rather than on the mere transmission of academic content.
- Student usually helps teachers plan what he/she is going to learn.
- Student usually helps teachers decide how well he/she is taught.
- Student usually helps teachers decide which activities are best for him/her.
- Student usually helps teachers decide how much time to spend on activities.
- Student usually helps teacher assess his/her learning in the classroom.

The following seven items focused on opportunities for students to express themselves through interactions with other students and their teachers. In particular, these seven items reflect the degree to which students can monitor their own learning and express their lack of understanding to classmates and to the teacher.
- Student usually gets the chance to talk to other students.
- Student usually explains his/her ideas to other students.
- Student usually asks other students to explain their ideas.
- Student usually asks the teacher "Why do I have to learn this?"
- Student usually asks questions about the way he/she is being taught.
- Student usually complains about activities that are confusing.
- Student usually complains about anything that prevents him/her from learning.

Lastly, Version 1 presented student respondents with the following ten items that addressed the degree to which teacher behaviors reflect a "student-centered" school climate. Such a climate makes students feel safe and secure as they are engaged in meaningful learning activities.

Teachers show a relaxed attitude and do not "act superior."
- Teachers create a safe atmosphere.
- Teachers make students feel free to ask and answer question.
- Teachers encourage students to engage in discussions.
- Teachers involve all students in the learning process.
- Teachers value student participation.
- Teachers act according to rules when students break the rules.
- Teachers provide a rich learning environment and stimulate by discovery.
- Teachers are not constantly talking.
- Teachers show respect for all students.

Version 2, CRSQ

Version 2 of the CRSQ presented teacher respondents with the following twelve items that focused on the school's organizational "health." These 12 items describe a school climate that Glickman, Gordon, and Ross-Gordon (2010, p. 6) term a *collegial climate*. Such a school is "characterized by purposeful adult interactions about improving schoolwide teaching and learning. Professional respect is a byproduct of discussing issues with candor, accepting disagreements as integral to change, and respecting the wisdom and care of all for arriving at educational decisions for students."
- Teachers respect others who perform well.

– Teachers identify with the school.
– Teachers accomplish their job with enthusiasm.
– Teachers do favors for each other.
– Teachers are protected from unreasonable community and parental demands.
– The morale of teachers is high.
– There is a feeling of trust and confidence among the staff.
– Academic achievement is recognized and acknowledged by the school.
– Extra materials are available if requested.
– The principal is willing to make changes.
– This school is not vulnerable to outside pressure.
– The school is open to communication with the public.

The following nine items on Version 2 of the CRSQ focused on the school's physical environment. These nine items reflect the fact that "the physical environment of the school both reflects and helps to create the school's overall climate. [Such a school is] clean, pleasant, and inviting, and teachers and students take pride in their building. Overall, the physical environment has a positive impact on those who spend time in the school; it encourages learning and a spirit of cohesiveness" (Parkay, 2013, pp. 81-82).

– Necessary materials are available in the classroom.
– Learning materials are looked after by teachers.
– Schoolyard is divided for younger and older students.
– No trash is on the schoolyard.
– Wastebaskets are emptied regularly.
– Playground equipment is safe for students.
– Corridors and eating areas are clean.
– Students assist in the maintenance of the school.
– Student work is displayed on classroom walls.

Lastly, the following ten items on Version 2 of the CRSQ focused on the principal's leadership style. These items reflect a leadership style that reaffirms and supports teachers' commitment to excellent teaching – a leadership style that fosters a climate of ongoing learning for teachers and the students whom they teach:

1. Principal discusses school problems in an innovative way.
2. Principal knows a lot about teaching and curriculum.
3. Principal shares many ideas for improving teaching and curriculum.
4. Principal knows a lot about programs and innovations.
5. Principal keeps everyone informed about procedures.
6. Principal provides guidelines for efficient operation of the school.
7. Principal is primarily concerned about how teachers feel.
8. Principal is willing to make changes.
9. Principal chats socially with teachers.
10. Principal has a clear picture of where the school is going.

Version 3, CRSQ

Version 3 presented parent respondents with the 19 items listed below. These items were keyed to climate-related factors gleaned from the researchers' analysis of school reform legislation in Thailand and a synthesis of research on school climate. School climates that reflect these factors are made up of collaborative teams of teachers, school administrators, and other stakeholders who are committed to working together to increase student learning. Teacher leadership teams; parent and community representation on school councils; and open, two-way communication with all stakeholders are examples of a strong, positive school climate. Such a climate encourages teachers to grow and to develop in the practice of their profession.

1. School provides a variety of activities for students.
2. School is clean and safe.
3. School assigns the right amount of homework.
4. School provides necessary instructional materials in the classroom.
5. School encourages parental involvement.
6. School lets parents know how their children are doing.
7. School staff responds promptly to parental concerns.
8. School motivates students to learn.
9. School staff works as a team to improve the school.
10. School communicates what is happening at the school to parents.
11. Teachers encourage students to do their best.
12. Teachers expect children to learn.
13. Teachers expect children to work hard.
14. Parents have access to the principal.
15. Parents are asked to help the school with planning.
16. Parents can discuss their children's progress with teachers.
17. Students are well behaved at school.
18. Students respect the school staff.
19. Students enjoy classes.

DATA COLLECTION

The CRSQs were sent by mail to administrators at the 395 schools contained in the sample. Each school administrator was asked to randomly identify five students, five teachers, and five parents to complete the CRSQ. After follow-ups at each school, 291 complete sets of the CRSQ were returned, for a return rate of 73.67 percent. Data were analyzed by computing basic descriptive statistics, including means and standard deviations. The values of the means were interpreted according to the following: 1.00-1.50 = "Very Low (VL)"; 1.51-2.50 = "Low (V)"; 2.51-3.50 = "Moderate (M)"; 3.51-4.50 = "High (H)"; and 4.51-5.00 = "Very High (VH)."

Table 1. Students' perceptions of school climate

CRSQ Items, Version 1	$\overline{X}$	SD	*
Collaborative Development of Learning Activities	**3.81**	**0.82**	**H**
1. Student usually helps teachers plan what he/she is going to learn.	3.04	0.77	M
2. Student usually helps teachers decide how well he/she is taught.	3.31	0.88	M
3. Student usually helps teachers decide which activities are best for him/her.	4.18	0.83	H
	4.07	0.76	H
4. Student usually helps teachers decide how much time to spend on activities.	3.51	0.63	H
5. Student usually helps teacher assess his/her learning in the classroom.			
Opportunity for Self-Expression	**3.55**	**0.83**	**H**
1. Student usually gets the chance to talk to other students.	4.21	0.88	H
2. Student usually explains his/her ideas to other students.	3.03	0.75	M
3. Student usually asks other students to explain their ideas.	3.30	0.79	M
4. Student usually asks the teacher "Why do I have to learn this?"	3.62	0.64	H
5. Student usually asks questions about the way he/she is being taught.	3.82	0.65	H
	4.08	0.81	H
6. Student usually complains about activities that are confusing.	4.21	0.84	H
7. Student usually complains about anything that prevents him/her from learning.			
Teacher Behaviors	**3.72**	**0.89**	**H**
1. Teachers show a relaxed attitude and do not "act superior."	4.20	0.83	H
2. Teachers create a safe atmosphere.	4.12	0.77	H
3. Teachers make students feel free to ask and answer question.	3.41	0.84	M
4. Teachers encourage students to engage in discussions.	4.03	0.80	H
5. Teachers involve all students in the learning process.	3.88	0.79	H
6. Teachers value student participation.	3.32	0.90	M
7. Teachers act according to rules when students break the rules.	3.45	0.77	M
8. Teachers provide a rich learning environment and stimulate by discovery.	3.15	0.83	M
	3.52	0.81	H
9. Teachers are not constantly talking.	3.39	0.94	M
10. Teachers show respect for all students.			
Overall	**3.65**	**0.78**	**H**

**Mean Value*

RESULTS

Students' Perceptions

As Table 1 shows, the overall school climate perceived by students was at the "high" level ($\overline{X}$ = 3.65, S.D. = 0.78). The following three dimensions were also found to be at the "high" level: collaborative development of learning activities, opportunity for self-expression, and teacher behaviors. The collaborative development of learning activities was the dimension with the highest average value ($\overline{X}$ = 3.81), the teacher behaviors dimension the second highest ($\overline{X}$ = 3.55), and the opportunity for self-expression dimension the third highest ($\overline{X}$ = 3.72).

Teachers' Perceptions

As Table 2 shows, the overall school climate perceived by teachers was at the "high" level ($\overline{X}$ = 3.59, S.D. = 0.85). The following three dimensions were also at the "high" level: the school's organizational "health," the school's physical environment, and the principal's leadership style. The principal's leadership style was the dimension with the highest average value ($\overline{X}$ = 3.70), the school's organizational "health" dimension the second highest ($\overline{X}$ = 3.55), and the school's physical environment dimension the third highest ($\overline{X}$ = 3.51).

Parents' Perceptions

As Table 3 shows, the overall school climate perceived by parents was at the "high" level ($\overline{X}$ = 3.51, S.D. = 0.85). The highest-rated of the 19 climate-related factors at the school site was "students enjoy classes" ($\overline{X}$ = 3.99). The lowest-ranked factors were "school staff works as a team to improve the school," "parents are asked to help the school with planning," "school communicates what is happening at the school to parents," and "school encourages parental involvement" ($\overline{X}$ = 2.45, 2.54, 2.56, and 2.97, respectively).

DISCUSSION

The results of this study indicate that, on the whole, the perceptions students, teachers, and parents have of the elementary school climate in Thailand is at a "high" level. This finding is similar to the results reported in a study titled "The Climate of Large Secondary Schools: A Report on the Perceptions of Students, Teachers, and Parents in Northeast Thailand" (Sanrattana, 2004). That study found that large secondary schools in Northeast Thailand had a "high" level of school climate.

Table 2. Teachers' perceptions of school climate

CRSQ Items, Version 2	$\overline{X}$	SD	*
School Organizational "Health"	**3.55**	**0.78**	**H**
1. Teachers respect others who perform well.	3.79	0.74	H
2. Teachers identify with the school.	3.18	0.83	M
3. Teachers accomplish their job with enthusiasm.	3.62	0.80	H
4. Teachers do favors for each other.	3.21	0.93	M
5. Teachers are protected from unreasonable community and parental demands.	3.03	0.82	M
	2.92	0.77	M
6. The morale of teachers is high.	2.93	0.86	M
7. There is a feeling of trust and confidence among the staff.	3.94	0.83	H
8. Academic achievement is recognized and acknowledged by the school.	2.82	0.72	M
	4.00	0.81	H
9. Extra materials are available if requested.	2.76	0.81	M
10. The principal is willing to make changes.	3.16	0.83	M
11. This school is not vulnerable to outside pressure.			
12. The school is open to communication with the public.			
Physical Environment of the School	**3.51**	**0.87**	**H**
1. Necessary materials are available in the classroom.	2.66	0.87	M
2. Learning materials are looked after by teachers.	2.82	0.80	M
3. Schoolyard is divided for younger and older students.	2.88	0.77	M
4. No trash is on the schoolyard.	3.76	0.82	H
5. Wastebaskets are emptied regularly.	3.84	0.90	H
6. Playground equipment is safe for students.	3.69	0.91	H
7. Corridors and eating areas are clean.	3.85	0.81	H
8. Students assist in the maintenance of the school.	3.61	0.83	H
9. Student work is displayed on classroom walls.	2.92	0.94	M
Principal's Leadership Style	**3.70**	**0.84**	**H**
1. Principal discusses school problems in an innovative way.	4.22	0.88	H
2. Principal knows a lot about teaching and curriculum.	2.88	0.81	M
3. Principal shares many ideas for improving teaching and curriculum.	2.55	0.84	M
	3.62	0.83	H
4. Principal knows a lot about programs and innovations.	2.97	0.82	M
5. Principal keeps everyone informed about procedures.	3.78	0.87	H
6. Principal provides guidelines for efficient operation of the school.	3.57	0.86	H
7. Principal is primarily concerned about how teachers feel.	3.70	0.93	H
8. Principal is willing to make changes.	2.96	0.85	M
9. Principal chats socially with teachers.	3.94	0.82	H
10. Principal has a clear picture of where the school is going.			
Overall	**3.59**	**0.85**	**H**

Mean Value

Table 3. Parents' perceptions of school climate

CRSQ Items, Version 3	$\overline{X}$	SD	*
19 climate-related factors at the school site			
School provides a variety of activities for students.	3.45	0.87	M
School is clean and safe.	3.67	0.86	H
School assigns the right amount of homework.	3.67	0.88	H
School provides necessary instructional materials in the	2.98	0.91	M
classroom.	2.97	0.93	M
School encourages parental involvement.	3.06	0.79	M
School lets parents know how their children are doing.	3.11	0.84	M
School staff responds promptly to parental concerns.	3.78	0.83	H
School motivates students to learn.	2.45	0.79	M
School staff works as a team to improve the school.	2.56	0.92	M
School communicates what is happening at the school to	3.56	0.91	H
parents.	3.98	0.89	H
Teachers encourage students to do their best.	3.57	0.87	H
Teachers expect children to learn.	3.78	0.86	H
Teachers expect children to work hard.	2.54	0.85	M
Parents have access to the principal.	3.11	0.91	M
Parents are asked to help the school with planning.	3.56	0.94	H
Parents can discuss their children's progress with teachers.	3.48	0.82	M
Students are well behaved at school.	3.99	0.81	H
Students respect the school staff.			
Students enjoy classes.			
Overall	**3.51**	**0.85**	**H**

Mean Value

The results also indicate that "the opportunity for self-expression of students," "the school's physical environment," and "school staff works as a team to improve the school" were climate-related weaknesses that all stakeholders must develop.

Lastly, the results indicate that "the opportunity for self-expression of students" is a serious climate-related weakness and should receive immediate attention. This finding is echoed in a recent Reuters News analysis of the Thai educational system – Thai education can be criticized because its "inward-looking curriculum emphasizes rote-learning and basic literacy and ignores critical thinking" (Ahuja, 2011).

POSITIVE INFLUENCES ON SCHOOL CLIMATE

Two factors appear to have contributed to the positive results reported in this chapter: (1) educational reform efforts by the Thai government and related agencies (for example, the *National Education Act* of 1999, the nationwide emphasis on "Achievement, Morality, and Happiness") and (2) national efforts at national educational reform (First decade, 1999-2008, and Second decade, 2009-

2018). These factors support the observation by Mounier and Tangchuang (2010, p. 44) that, in Thailand, "great progress has been made in terms of quality, although there is much room for further improvement" (p. 44).

An additional factor contributing to the "high" level of perceptions is the focus by the Office for National Education Standards and Quality Assessment (ONESQA) (created as an autonomous "public organization" in Thailand) on "learning and teaching," and "managing and leading" (Ministry of Education, 2010). For example, Round 1 of ONESQA's quality assessment of more than 30,000 basic education institutions in Thailand revealed that as many as 65 percent failed to meet the criteria set by ONESQA. Most of these were small-sized schools in the rural northern and northeastern regions of Thailand. Regarding students' learning, the students scored less than 50 percent in the core subjects; i.e. English language, mathematics, science and social studies. Moreover, a majority of graduates of vocational and higher education lacked basic knowledge and skills. They did not have competencies that met the requirements of Thailand's industrial sector.

However, Round 2 of ONESQA's assessment of a total of 22,425 primary and secondary schools revealed that 79.7 percent of students met established standards, and the remaining 20.3 percent still needed improvement.

THE NEED TO MONITOR SCHOOL CLIMATE

The researchers believe that school climate is a critical element of educational quality and has a strong influence on student achievement. School climate development should be ongoing and based on a purposeful and systemic process (Guskey, 2000). All education stakeholders (school administrators, teachers, parents, and other educators) must participate in the ongoing process of school climate development because the quality of a school's climate depends upon a complex set of internal and external factors. Some factors are very sensitive to changes, and they must be monitored closely, not ignored. Moreover, without ongoing monitoring and continuous development, a school's climate may "decline."

EDUCATIONAL REFORM AND THE FUTURE OF THAILAND

Critics say that "without an overhaul to bring its system of education into the 21st century, Thailand will lose out in the race with Asian rivals for foreign investment" (Ahuja, 2011). Thailand would lose its competitive status with other ASEAN (Association of Southeast Asian Nations) countries, though Thailand is among the world's top education spenders relative to its size and allocates 20 percent of its annual budget to education. This difference is even more striking when it is noted that the Thai education budget for 2009 was 4 percent of GDP and the education budget for Singapore was 3.1 percent; however, Singapore ranks 13th in education performance, while Thailand ranks 47th (Ahuja, 2011).

CONTINUING THE QUEST FOR QUALITY

Clearly, the quest for quality education in Thailand must continue. For example, in the recently released *Education and Knowledge in Thailand: The Quality Controversy,* Gerald Fry, a well-known American expert on Thai education reform, notes that "there is broad consensus about quality as a desired educational outcome both in Thailand and globally. However, there is complex controversy … about the extent to which quality exists and how to move toward greater quality" (2010, p. xi). Similarly, the National Council for Education's latest report to the public entitled *Summary of Nine Years of Educational Reform Operations 1999-2008* points out that "… some (reform) proposals have legally been implemented and successful… However, others still remain to be quickly and urgently improved, e.g., educational quality … student and teacher quality."

While quality remains elusive, we do know that quality educational programs result in greater student learning. The major difference between school climates that foster student learning and those that do not is the *quality* of educational programs that characterize those climates—not the *quantity* of educational resources. The importance of quality, not quantity, was recently noted by Fry in comments he made to *The Nation*, an English-language newspaper in Thailand*:* "The main problem in Thai education [is] the overemphasis on material concrete outcomes, like buildings and school entrances …. Beautiful buildings are concrete, but teaching and studying are abstract. The buildings are easily recognized. To raise the quality of education, [Thailand] should focus more on classrooms" (Khaopa, May 30, 2011).

RECOMMENDATIONS

Near the end of 2009, Thailand's Ministry of Education identified the following seven quality indicators that should provide the focus for continued educational reform in Thailand. Clearly, these are ambitious goals; to achieve them will be a major challenge. Whether all or some of these goals are met, the authors of this chapter strongly support the pursuit of these goals.

1. Students' learning achievement in each core subject at Grades 6, 9 and 12 must be increased by 2013 as follows:

    a) **Grade 6**: 55.62 percent mastery, up from 46.16 percent at present.
    b) **Grade 9**: 45.76 percent mastery, up from 37.59 percent at present.
    c) **Grade 12**: 45.76 percent mastery, up from 36.08 percent at present.

All basic education institutions, Grades 1-12 schools, will be externally evaluated by the Office for National Education Standards and Quality Assessment (ONESQA) during 2013. Among these schools, 97.09 percent will pass the Quality Assessment criteria. In addition, all vocational and higher education institutions that undergo the assessment will pass the criteria.

2. Students will learn to become "good and virtuous persons," and they will be evaluated on the basis of the three Ds Policy: *Democracy, Decency,* and *Drug-Free*.
3. Students will also become "happy persons" and be proud of being Thai. By 2013, the number of "happy and proud" students will reach 72.8 percent, up from 52.8 percent at present.
4. The number of school libraries equipped with "good books, good atmosphere, and good librarians" will increase from 8,090 throughout the country to no less than 30,746 in 2013.
    - The illiteracy rate for Thailand will decrease from the current 2.87 percent to 0.7% in 2013.
5. Students will show evidence of "increased knowledge about the Southeast Asian Region."

CONCLUSION

In closing, it is clear that the excerpt from Section 6 of Thailand's *National Education Act* that opened this chapter will not become a reality without continued dedication, hard work, and collaboration on the part of school leaders, teachers, parents, students, and education policy makers. The results of our study of elementary school climates in Thailand, however, provides clear evidence that education is changing in fundamental and positive ways in Thailand. We believe there is ample evidence that Thailand is making good progress toward attaining the goals originally set forth in the *National Education Act.*

Clearly, Thailand is "moving in the right direction" to transform its educational system for the 21st century. Our study of elementary school climates provides evidence that new, collaborative forms of leadership are emerging. These transformative approaches to leadership are the key to transforming the nation's educational system so that it enables *all* children and youth to realize their goals, dreams, and talents.

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LYNNE M. HANNAY AND LORNA EARL

5. TRANSFORMATIONAL CULTURAL NORMS SUPPORTIVE OF KNOWLEDGE-MANAGEMENT[1]

The knowledge based twenty-first century requires changes to educational organizations and practices. Success in this emerging paradigm requires new skill sets for students, for teachers, and for educational administrators. These skills include: collaboration, problem framing, critical thinking, 'thinking outside of the box,' innovation, and creativity (eg., Kay, 2010; Scardamalia, Bransford, Kozma, & Quellmatz, 2010). The scope of the such changes require much more than merely mandating or legislating reform initiatives. Indeed, Dede (2010, p. 55) maintains that implementing the 21st Century skills requires:

> helping teachers, policymakers, and local communities unlearn the beliefs, values, assumptions, and cultures underlying schools' industrial-era operating practices.

To accomplish this, educational organizations need different operational norms with transformational leadership focussed on managing the conversations between practitioners. 'Managing the conversation' (Von Krogh, Ichijo, & Nonaka, 2000, p. 9) entails knowing when to push, to question or to allow an individual to momentarily disengage. Such a scenario requires school cultures different from the 'egg carton culture' described by Sarason (1982). If individuals are to challenge their existing and to reconstruct their professional knowledge, they require cultures where it is safe to be a learner.

Since 2000, we have investigated if and how a large (184 schools) Canadian school district can facilitate systemic reform. Our longitudinal data documented that in order to change educational practice, individuals had reconstruct their professional conceptional models and this required that they engaged in the knowledge creation and dissemination processes. Moreover, the longitudinal evidence documented that managing knowledge required that the organizational culture be adapted from operating from separate silos to a culture that emphasized: teamwork, collaboration, deprivatization and risk-taking. Transformational leadership practices were required to support such a culture. This chapter examines the emerging cultural norms and practices developed in the studied school district that facilitated and sustained systemic reform congruent with the knowledge based paradigm.

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I.M. Saleh & M.S. Khine (eds.), Reframing Transformational Leadership, 55–80.

EDUCATING FOR THE KNOWLEDGE BASED PARADIGM

Globally, educational organizations are facing a paradigmic tsunami as the knowledge based paradigm challenges fundamental and traditional educational practices. The warnings of such drastic changes are clearly documented in the business and organizational literature with knowledge considered as a critical resource for social and economic development (Hakkarainen, Palonen, Paavola, & Lehtinen, 2004). Indeed as Drucker warned educators in 1989:

> Within the next decades education will change more than it changed since the modern school was created by the printed book over 300 hundred years ago. (p. 224)

Similarly, Senge (2010, x) recently called "for a new vision of the purpose of education." Such a new purpose is not just a matter of introducing new classroom techniques or expectations, but involves fundamental shifts in the structures, processes and goals of educational organizations for teachers, school and system administrators at the classroom, school, school district levels.

The calls for changes to educational practice to include 21st century skills are global (for instance: Dede, 2010; Earl & Hannay, 2011; Hannay, 2011; Hargreaves & Shirley, 2009). In an OECD report, Dumont and Istance (2010, p. 20) maintain that:

> Our societies and economics have experienced a profound transformation from reliance on an industrial to a knowledge base. Global drivers increasingly bring to the fore what some call "21st century competencies" – including deep understanding, flexibility and the capacity to make creative connections, a range of the so-called "soft skills" including good team-working.

In the twenty-first century, educators need to be knowledge leaders (Earl & Hannay, 2011) who collaboratively construct, challenge, and share professional knowledge. In the knowledge based 21st century, a fundamental challenge for education is facilitate on-going knowledge building and sharing among members of the community. As Hakkarianen et al. (2004) remind us, community members need to develop competencies that allow them to function as "knowledge workers." Consequently, educational organizations need to be knowledge management organizations that quickly respond to emerging needs. In this chapter, we consider knowledge management to be a cyclical process of acquisition, creation, representation, dissemination, distribution, validation, utilization, and renewal of purposeful knowledge (Hannay & Earl, in press; Moteleb & Woodman, 2007; Lin, Wang, & Tserng, 2006).

EDUCATORS AS KNOWLEDGE-WORKERS

However, Dumont and Istance argue that managing knowledge "is seriously under-developed in education (2010, p. 26). The power of past knowledge and experience

to shape future interpretations and decisions makes transformational change to educational practice problematic. As Lam (2000, p. 494) argues, "professional experts have a tendency to interpret specific situations in terms of general concepts and place new problems in old categories." This means that educators are less likely to challenge existing tacit knowledge or question the 'black box' that frames their world views. Thus traditional tacit knowledge often remains unquestioned.

The transformational change required to create a knowledge managing educational organization cannot be merely mandated or proclaimed. The change process is messy, non-linear and must engage participants in shaping the process. This differs from the portrayal of change to practice as a mechanical process with new information being presented to participants who accept this information and then change their professional practice. Hoban (2002, pg. 13) maintains that educational change is considered a simplistic process: "innovation arrival ➔ teacher use ➔ teacher change." In education, the long history of unsustained innovation suggests that this model has failed to facilitate significant changes to practice (Elmore, 1996).

There is a simple, yet highly complex, explanation: change involves individual learning and yet external organizations typically orchestrate the change process. As Fullan reminded educators in 1982, individuals, not school buildings, change. This means individuals must do things differently if the innovation is to be implemented and institutionalized. Accomplishing such substantive educational change requires that individual educators collectively reshape their personal professional knowledge (Connelly & Clandinin, 1988; Elbaz, 1981) and adapt their personal professional mental models (Duffy, 2003; Senge, 1990).

EDUCATORS AS KNOWLEDGE LEADERS

Facilitating such significant educational transformation requires transformational leaders that can engage their communities collectively in developing new educational practices and goals. Successful leaders need to deliberately and skillfully facilitate professional dialogue in order to 'manage the conversation.' If the conversation is being managed effectively, and a sufficient level of trust has been generated, then the challenge for group members is, "to dwell in the experiences, perspectives, and concepts of other participants – to shift from a commitment to one's own interest to that of the group" (Von Krogh, Ichijo, & Nonaka, 2000, p. 58). Such a process develops a collective and community approach to change and requires a supportive organizational culture.

Case Study: Systemic Reform and Knowledge Management

Since 2000, we examined the role of a Canadian school district in addressing a myriad of educational reforms which often required that individuals reshape their mental models of educational practice. Through a retrospective analysis of the this longitudinal programme of research, we developed the evidence-based conceptual framework depicted in Figure 1.

Figure 1.FIGURE PLUS CAPTION MISSING!

While a detailed discussion of this framework is well beyond the scope of this chapter, a brief overview is warranted. Central for this school district to evolve into a knowledge managing organization was ensuring that all actions were focussed directly on the central organizational purpose of improving student learning throughout the school district (Hannay & Earl, 2006). We also identified other supportive components: embedded structures (Hannay & Earl, 2008); alignment (Earl, & Hannay, 2010); evidence-based inquiry (Earl & Hannay, 2009); and cultural norms (Hannay & Earl, 2009). Individual components were interconnected to create an environment supportive of knowledge management. Through this longitudinal research, we concluded that the studied school district was becoming a knowledge managing organization.

METHODS

The studied school district had a student population of almost 80,000 students in 154 elementary and 30 secondary schools across a large geographical area. This longitudinal research was initiated when the Ontario government forced four

smaller school districts to amalgamate into a new and large organization. This chapter reports data from a programme of research composed of several studies sequentially undertaken since 2000. These were individually externally funded studies which collectively examined the process through which a large organization could facilitate systemic change and move towards being a knowledge management organization. Table 1 summarizes the various studies.

Table 1. Summary of programme of research

Assigned Name of Study	Source of Funding	Research Reports	Coding
Study 1:	2000-01 Thames Valley District School Board	Attainment of the Vision, Focus Group Report Attainment of the Vision, Individual Interview Report	Three Focus Groups: (FG) year (00) and role teachers (T); administrators (A) and system personnel (S) 01 (Year data collected) alphabet (school) number (individual)
Study 2:	2001-02 Province of Ontario	Aligning School District Actions to Promote School Improvement and Accountability	Int or FG (data collection) (year) letter(school) P or T (role) number for teacher
Study 3	2002-05 Federal Government of Canada (Social Science and Humanities Research Council)	The Role of the School District in School Improvement	Int (data collection) (year) letter (school) P S or T (role) number for principal, senior administrator, or teacher, number (individual)
Study 4	2006-09 Federal Government of Canada (Social Science and Humanities Research Council)	Beyond tinkering: The school district's role in large-scale reconstruction of professional practice	Int(data collection)(year) letter (school) role S (senior administrator) P (school administrator or T (number for individuals)

Data Collection

The means of collecting data were similar in all studies. As previously noted, individual interviews (Int) were conducted with principals and two teachers in a given school. In several studies, we also conducted focus groups (FG) of individuals in similar roles such as principals, non-teaching support positions, central office teaching support staff (i.e. consultant). From the beginning of this programme of research, we coded data to indicate data collection technique, year collected, roles and location. This coding is included in Table 1 and made a retrospective analysis possible.

Data Analysis

Annually, the data were collected and analysed and then reported in detailed reports which were shared publically. Through analysing those data sets, we identified the role of the school district in facilitating knowledge management and systemic reform with the express purpose of improving student learning. In particular, the research reports from 2002 and 2004 shaped future research efforts as we began to question how individuals change their practice (instructional and administrative) and this lead us to consider the process of reconstructing professional knowledge in order to promote systemic change. Neither the researchers nor the school district began with that premise.

Recently, we conducted a retrospective data analysis. To accomplish this, we analysed all of detailed research reports. We sought to understand the experiences of this public organization as it dealt with externally created and mandated reforms. In creating and enacting processes to address these reforms, the school district took actions that gradually allowed it to move towards being a knowledge managing organization to promote systemic change. Through this retrospective analysis we identified the conditions and processes supportive of a knowledge managing organization and changes to professional practices. We then created data displays of these factors which are identified in Figure 1. The data in these displays were identified sequentially by year collected and the displays themselves were further reorganized into representative sub-categories. These dated displays allowed us to map the development and impact of each component. Individual components do not stand alone but are interconnected with each other to create an environment supportive of knowledge-creation.

Creating Safe Cultures to Reconstruct Professional Practice

Our longitudinal data documents that the systemic changes to professional practice promoted by the school district resulted in reconstruction of individual professional mental models and increased engagement with knowledge management processes. Such changes required several significant modifications to the organizational culture with culture being conceptualized as ‘how we do things around here’ (Deal & Kennedy, 1982).

First, in educational organizations, creating innovative knowledge to change professional practice requires that the organizational culture support the questioning of existing tacit knowledge related to student learning. This can necessitate that individuals consider and possibly reconstruct their mental models related to their professional practices. Research has clearly documented that such a reconstruction is furthered if individuals are addressing 'authentic problems of practice' (Hoban, 2002) because improving the educational experience of students is the strongest motivator for educators. Doyle and Ponder (1977) classify this connection as the 'ethics of practicality.' They maintain educators will deem something practical or authentic if it represents *real* issues and *real* needs connected to taking actions in *real* contexts. For educators, improving student learning is central to identifying a problem or an action as authentic.

Second, addressing educational reform initiatives often requires a collective process in which educational practitioners share 'what works' and 'does not work' in their practice to advance student learning. Working collectively can run contrary to the professional isolationism experienced in most educational settings as documented by scholars such as Lortie (1975) and Sarason (1982). Reconstructing mental models to reflect educational innovations and sharing 'failures' can create cognitive dissonance for the participants. For this to occur successfully, individuals require a supportive organizational culture where they can examine, personally and collectively, their practice related to improving student learning. Specifically, participants require a safe environment in which they can examine and question their tacit knowledge and assumptions incorporated into their mental models.

The studied school district gradually evolved their organizational culture to become supportive of practitioners involvement in knowledge creation and dissemination. Using data extracts from this longitudinal programme of research, the case study documents the evolution of the culture of 'how we do things here' (Deal & Kennedy, 1982). In 2001, 2002 and 2003, participants increasingly reported the existence of teamwork; in 2004, they included professional dialogue and collaboration; in 2005, they added deprivatiation of teaching practices; and in 2006, they emphasized risk-taking. Initially we called these cultural modification as attributes but in 2005, the data documented that the attributes had become cultural norms. This cultural evolution has facilitated reculturing (Fullan, 1999). The emerging cultural norms supported a safe environment through which individuals could question and challenge their past professional mental models in order to change their practice.

Reshaping the Culture

The studied school district was created by the Ontario government through the mandated amalgamation of four school districts. In 2000, as a response to this radical amalgamation, the new school district initiated a process of creating a vision (Caring, Learning Community) for the new organization. While initially the vision was placed at the centre of the organizational graphic, it was replaced with improved student learning placed at the centre. This evolution is critical as while

the retrospective data clearly demonstrates the importance of the vision in melding of the new school district into a cohesive organization, it was the 'improved student learning' focus that engaged the practitioners as it represented their 'ethics of practicality' (Doyle & Ponder, 1977).

The most recent data collection clearly indicates that the school district culture has been changed because of their efforts of developing the vision and subsequently shifting the focus to 'improved student learning.' According to a school administrator this meant that "The way we do business around here has been challenged" [Int06:YYP]. The result has been a significant change in the culture of the school district as noted by a senior administrator:

Over the last few years, cultural norms have changed significantly. We have made a huge foundational step in terms of creating that vision and embedding it. It is the culture. You hear Caring, Learning Community what we are about everywhere. [Int06SA3]

In our programme of research we noted that the identified cultural attributes of the earlier research gradually became cultural norms. As discussed later in this chapter, we maintain that these cultural norms are essential to create an environment supportive of knowledge management. The longitudinal evidence documents that this required the organizational culture be adapted from one that promoted separate silos to a structure that emphasized: teamwork, collaboration, professional dialogue, deprivatization and risk-taking. We next examine the evolution of the cultural norm of teamwork.

Teamwork

Teamwork was one of the key foundational principles contained in the vision initiative and from our first data collection, participants reported that it was increasingly important. Yet this teamwork was related to the implementation of the vision and not yet directly connected with improved student learning. When teamwork was unconnected to improved student learning, it was a pleasant but not vital activity. Rarely did the initial teamwork facilitate cognitive dissonance between the practitioners' past and future professional practice.

Yet the early data suggest that through teamwork related to the vision, practitioners were beginning to work together. For example, this comment was made during in 2001:

> We are now working together instead of each one in our own little room. A lot of competition was going on between us and that has been stopped now too. We started in divisions, we're starting to spread out now a little bit more. Of course, if you have that teamwork, then everything else can improve. It sort of has a domino effect. [01G2]

The teamwork and the resulting dialogue was enhanced as the vision initiative created a common language which facilitated communication. In 2001, a participant reported:

> We are speaking of common language because we're using [the foundational principles] professionally. We're starting to use those expectations as we talk to each other. All of which improves the school culture and the school climate, doesn't it? [01J1]

In 2002, teamwork was increasingly connected to classroom practice. For instance, a teacher claimed:

> I know in my class that my grade partner and I set a goal for ourselves for our grade so that we would know that the kids in our class are improving in writing. So then we designed a writing rubric. [Int02YT2]

The 2004 data noted that teamwork was practised and not just voiced. In this data collection, we documented that the senior administrators had taken two actions that resulted in a watershed changes in the school district. First, improved student learning was placed at the centre of the organizational graphic and the vision was depicted as supporting the centre. Second and concurrently, the senior administrators engaged Dr. Barry Bennett to implement his Instructional Intelligence approach in the school district. Thus senior administrators took action to assist practitioners in learning new instructional strategies to improve student learning. Through these two concurrent actions, teamwork was linked to the practical concern of improved student learning and thus incorporated the 'ethics of practicality' (Doyle & Ponder, 1977).

Teams of teachers and school administrators were engaged in implementing the concepts and strategies stressed by Bennett. Through the increased and embedded teamwork, most school teams were collaboratively making collective decisions and taking actions directly linked to improving instruction in order to improve student learning. A school administrator explained:

> As a result of the instructional policies initiatives, we are getting learning teams. I have a group of teachers sitting and talking to each other about teaching. [Int04:AAP]

Additionally, as a senior administrator noted in the 2006 data collection, deliberate efforts at fostering teamwork had embedded collaboration into the process of changing practice:

> A real plus of Instructional Intelligence has been the school administrator and a group of teachers from the school coming. So that it isn't just the principal coming and getting the in-service and then going back to his or her school. It's the school team coming … I think it has been a huge leap forward to have administrative and teaching staff working together. [Int06SA3]

Through this emerging process, teamwork went from being a cultural attribute to becoming an organizational cultural norm. Moreover, as this occurred the interactions identified in Figure 1 were documented. Teachers were engaged in teamwork to improve their practice in order to improve student learning (centre of Figure 1). For instance, they used an inquiry process (evidence-based inquiry

depicted in Figure 1) with the provincial test scores as data, to shape the K-6 students learning experience. A teacher explained:

> In our school the reason that they [test scores] have risen because we work as a team. We start preparing the kids not only grade 6. We start with them from the beginning. We start from grade 1, 2, 3, 4, 5 and we make sure that when they get to grade 6 they have all the tools that they have. It is mostly team work. It=s a whole process that has to start from grade 1 up to grade 6 using all the strategies possible to get these kids to succeed in EQAO [provincial testing]. [Int06:TT2]

A senior administrator reported in 2006 that dialogue, promoted through teamwork, was now connected to evidence-based practice:

> We are no longer talking about our practice. We're examining our practice. It's not surface anymore. It's more in terms of what are we really doing? [Int06SA7]

Engaging in teamwork advanced collaboration and professional dialogue. Further, as noted in the following section, this collaborative professional dialogue was also promoting knowledge sharing related to changing practice. Such dialogue provided a means of gently challenging the mental models of individuals.

Collaboration and Professional Dialogue

Our retrospective data analysis suggests that collaboration and professional dialogue are intertwined. Simplistic levels of collaboration were noted early in the data collection but a more complex conception of collaboration as sustained joint work was not documented until later in the process. Similarly, intense professional dialogue related to changes to professional practices was not apparent until mid-way through the programme of research. Although the concepts are intertwined, we first consider the data related to collaboration.

Collaboration

In education, collaboration is a carelessly over-used term. An useful demarcation of the term was proposed by Judith Warren Little (1990). She defined collaboration as work done among two or more teachers in a climate of trust open to scrutiny and criticism. Little suggests there are four levels of collaboration. Simply, the levels are: 1) storytelling and scanning for ideas: refers to teachers talking with each other; 2) aid and assistance: teachers helping one another and giving advice; 3) sharing: occurs in "cooperative cultures" and involves the sharing of resources and materials; 4) joint work: teachers developing materials and lessons with each other, co-teaching classes, visiting each others' classrooms and providing feedback. We have employed this continuum in our programme of research.

As noted in the previous section, teamwork provided the opportunity for collaboration. However, in the initial data collections we only documented

collaboration as storytelling/scanning for ideas and aid/assistance. For instance a school administrator noted:

> [The] staff has begun taking initiatives. They feel that they're in a safe environment and that they can come forward and do things. [01J3]

Yet working together was countering the Lortie (1975) vision of the teacher as the lone ranger and such low-level collaboration might have been the precursor to the deprivatization of professional practice documented much later in this programme of research. In 2002, we noted the work on the vision was promoting a more congenial culture because:

> We all are working on the same playing field and we have that knowledge, understanding and that data so that we can move forward with it. [Int02YT1]

Addressing the vision at the school level, facilitated teamwork, collaboration and professional dialogue and each had the possibility of shaping school culture.

By the 2003 data collection, the sharing noted by Little (1990) was more apparent as described by a school administrator:

> The doors are slowly opening between the classrooms. People are much more willing to step out, share what they're doing and not feeling threatened. The key thing, I think, is the professional dialogue. [Int03:LP]

Several principals referred to the importance of a collaborative culture where individuals felt secure in trying new practices. For example, a school administrator reported:

> You have to have time and you have to have people who are willing to meet to discuss improving student learning and to look at what's successful and what isn't. I think too you have to have a collaborative environment where relationships are really important among staff. You really have to build those. You have to look at what's working and what isn't and be willing to say, "These are our warts," and do something about them. [Int03:ZP] (italics added)

When the senior administrators adapted the system graphic to place improved student learning at the centre and engaged Bennett with the Instructional Intelligence focus, joint work became more of the norm. A school administrator described what was happening in his or her school in 2005:

> It's great because we can actually go and say, okay, in my school this is what we're trying to and this is where it's happening. This is where I'm falling apart. Can you help me? It's all about collaboration. It's all about dialogue, talking, and inviting people together. [Int05:PPP]

The term collaboration now meant joint work and joint work was the highest form of collaboration identified by Judith Warren Little (1990). A teacher, for example, commented:

> When I work with the grade 3 teacher it's neat, because the two of us just bounce ideas off each other and it just gets better every time. We're excited. [SInt05:QQT1]

Data collected in 2006 clearly reinforced that collaboration was now the organizational norm in the school district. A teachers reflected that:

> I think a lot of the initiatives that we've been doing in terms of collaborative teaching and collaborative learning for the teachers, has really been in the last three years. [Int06:YYT2]

School administrators also noted that collaboration was a cultural norm, for example:

> Now, everything is collaborative. Everything is a dual responsibility. Everything is shared. Everything is a team approach. [Int06:BBBP]

The transformational role of the senior administrators was very interesting. They modified their structures to practice and to model collaboration (Hannay, Mahony, Blair,& Earl, 2006 a & b). In essence their actions were similar to the relationship identified by Alice Lam (1997) when she stated that structures can dictate possibilities. Senior administrators ensured that their actions were designed to improve student learning. Correspondingly, they modified their weekly meetings to promote a cohesive and collaborative means of accomplishing that goal. A senior administrator explained:

> There is a much greater team work within the leaders of the senior executive level. There's not the personality and territoriality …. When we walk in here I really do believe that the focus is on what's best for the kids in the system. When you have everybody on executive council approaching it that way it makes it a lot easier. [Int06SA3]

As well, in 2003, senior administrators modified the monthly meetings of school administrators to promote collaboration in order to improve student learning. The importance of this modelling, promoted through the alternative and revised structure, was noted by a school and a senior administrator in the 2006 data collection:

> We [school administrators] do that a lot in our community of schools meetings. We share. We have a PD session at every single community of schools meeting. And we always try to provide professional dialogue and sharing. [Int06:BBBP]

> [School administrators] have seen the value of getting their colleagues' input not in a threatening format but just here's the way to maybe get better. What do you think of this? Collectively become smarter. So that development of understanding and knowledge, I think, is taking hold. There is a greater awareness of our ability to do it in a non-threatening manner. [Int06SA3]

Our retrospective analysis clearly documents that, by 2005, collaboration as joint work was deeply ensconced in the school district culture. The organizational culture shifted from one that focussed on "I" to one that stressed"we." The combination of teamwork and deep collaboration provided a venue through which an intense professional dialogue could flourish.

PROFESSIONAL DIALOGUE.

The increase in professional dialogue was a key component of the cultural shift that occurred in school district. We define professional dialogue as sustained dialogue between colleagues to examine and to question their professional practices with the goal of improving that practice in order to advance student learning. Certainly, the increased teamwork and collaboration previously reported provided a venue for the emergence of professional dialogue. Yet it was not until the fourth research report in 2003 that we identified professional dialogue as a key cultural attribute.

In the first two data collections, there was no data that suggested that professional dialogue was a normally occurring event. However, we did collect data indicating that professional talk was occurring and was connected to implementing the vision. For example, in the second report in 2001, a teacher reported, "There is dialogue about the process …. The language is being used, if reluctantly" [01F1].

In 2002, we documented the deliberate transformational actions of the senior administrators to promote dialogue between school administrators. The senior administrators purchased professional books on educational change. They then required that school administrators read and then collectively discuss the ideas. This was a cultural change as described by a school administrator. In the past, s/he "stated, "I didn't feel I could go and sit with another colleague and discuss professional issues" [Int02YP]. Another school administrator also commented on the apparent and deliberate changes:

> *It's almost like we're focussing on learning as opposed to teaching back in the schools*. At these meetings [Community of Schools] we're focussing much more on dialogue and reflection …. We're doing that much more than we ever did before and we're doing it consistently. I like the trend. I think it's the way to go.[Int02BP] (italics added)

The nature of the professional dialogue continued to change and to become richer. We noted that in 2003, the professional dialogue had moved beyond the superficial to be more focussed on practices associated with improving student learning. As a school administrator suggested:

> More to a debate over high end, pedagogical issues. We've gone from the hats to debates on instructional practice, debates on validity of tests, debates on quality of teacher work as a school. The little kind of sessions are changing from a very low level, mundane, banal sort of typical stuff you

> heard in staffrooms for years to these high end debates that really get people going. [Int03TP]

By 2004, using existing structures as a means of facilitating professional dialogue was widely practised district wide. For instance, senior administrators had re-shaped the Family of School meetings to incorporate professional dialogue about improving practice into regular school administrators meetings. A school administrator explained that "[School administrators] are working in groups, elementary and secondary, on material related to district initiatives. It is not optional" [Int04:AAP]. The resulting professional dialogue provided an opportunity for sharing of professional knowledge without a huge investment of time or the creation of new structures. A school administrator suggested professional dialogue needed to be frequent and embedded into regular practice:

> I know that I learn best by interaction with people. I need to understand. I do that personally by reading, by reflecting, by thinking, and often by writing about things. Then I need that interaction of what other people think, how they think and why they think. I don't need it to be structured. I need it to be on an ongoing basis, saying, what do you think, how do you think and why do you think. I need the understanding first then I need the interaction. [Int04:EEP]

Our data documented that school administrators were adapting school structures to facilitate and sustain professional dialogue as a means of questioning professional practice (Hannay & Earl, 2008). A teacher shared the types of questions that his or her staff were beginning to ask each other in 2005:

> How do you teach a kid in Grade 8 to read? What kinds of skills do they need? How do I, as a teacher who'd never been trained in that, do that? So we were developing a professional learning community around these kinds of topics [and] we were able then to get teachers to do it in a risk-free environment. [Int05:VVT2]

Participants reported that the professional dialogue occurring was focussed on the district and school goals of improved student learning--the centre of Figure 1. School administrators stated that professional dialogue was the cultural norm in their schools, for example:

> We have built a very collaborative culture here. I really do feel that the teachers are showing more commitment now to the goal, and they're talking. They're talking more. They'd be talking in the staffroom, "Well, I've tried this" and "I've tried that," or "I did this and it didn't work." They're not in their closets of the classroom anymore. [Int05:RRP]

The scope and intensity of the documented professional dialogue assisted individuals in examining and possibly reconstructing their mental models.

By 2005, professional dialogue shifted from being an useful cultural attribute to being a cultural norm of the school district. The 2006 data confirmed the

incorporation of professional dialogue into the organizational cultural fabric. According to a senior administrator, by 2006, the school district had:

> Created a culture of people who actually sat down and discussed pedagogical issues and discussed beliefs in terms of what do we want this place to look like. [Int06SA9]

A school administrator concurred:

> I really believe that you have to have ongoing professional dialogue and the collaborative part of the process has to be embedded in what we do. [Int06:BBBP]

Incorporating professional dialogue into the culture with the aim of changing professional practice was an intentional goal – not an accidental or amorphous occurrence. The senior administrators had first initiated the vision and then extended the focus to include Instructional Intelligence. These initiatives had provided a common language through which individuals across the system could engage in professional dialogue. The 2006 data collection documented the importance of such a language as noted by a school administrator:

> I didn't have that language to even understand what good lesson design even looked like. I did it intuitively but I couldn't talk about it. I think now we are actually giving them those tools and that language. We are all speaking the same language. [Int06:AAAP]

The professional dialogue that occurred in schools and across the school district meant that individuals were sharing ideas. According to a senior administrator this created:

> A real cross fertilization of ideas and the ability for people to look at things in a different way. [Int06SA9]

A school administrator stated that teachers were sharing knowledge:

> Teachers are bringing in ideas. People are asking to present at staff meetings. The informal talks in the hallways have changed. I would really say that a vast majority of interactions, walking down the hall here, are now something about learning and/or teaching. [Int06:TTP]

Throughout this programme of research, initially the senior administrators and then the school administrators began to use existing structures as a vehicle to facilitate professional dialogue (Hannay & Earl, 2008) and in this manner, they enacted the link between structure and possibilities noted by Lam (1997). Such sustained transformational leadership organizational processes, created a structural means and need for individual to engage in professional dialogue. In reporting the 2003 data, we noted that "Engaging in facilitated professional dialogue with the named purpose (Fullan, 2001) of knowledge creation, might well be the engine that can drive sustained and system-wide educational reform" (Hannay, Telford, Mahony, & Bray, 2004, p. 25). Professional dialogue is a cost-effective means of promoting

a system-wide perspective but such a dialogue must be collaborative, embedded, sustained, and respected in order to promote knowledge management. As well, a collaborative professional dialogue requires an environment that promotes deprivatization of professional practice.

DEPRIVATIZATION OF PRACTICE

Traditionally, teaching has been a private act in which individuals shut their door and seldom observe others teaching or engage in deep dialogue about the teaching/learning process. Lortie (1975) in his seminal book *Schoolteacher*, noted the isolated professional lives of most teachers. Recent research suggests that collaboration is almost a pre-requisite for sustained educational change and for teachers to reconstruct their mental models. Without such collaboration, it is more difficult for individuals to engage in discourse communities (Putnam & Borko, 2002) or experiential practices which are essential for the reconstruction of professional knowledge and mental models (Hannay, 2004). Without such reconstruction, sustained change to practice is unlikely. However, opening classrooms doors and sharing one's practice – both successes and failures – can necessitate a massive cultural shift.

Yet in 2004, the data indicated that individuals were sharing their practice with other educators. It is almost as if they had 'deprivatized' their practice through making it open to scrutiny with other educators. The deprivatization of practice represented a significant cultural shift for schools and the school district. A teacher explained the potential of such a significant cultural change:

> I think that we need to be able to move out of this egg crate type of system in the elementary school system and open it up so that we can then see what's happening on the other side of the wall from my own personal classroom. If I had the opportunity to teach, and have my peers watch me teach and then I could watch them teach. Not so that we're judging each other but for no other purpose than just to learn a few things from each other. Because we all have our expertises. I think we need to share what's within the walls of the school in more a effective manner. [Int04:EET1]

A teacher, from a different school, suggested that such a change was beginning to happen in his or her school:

> I think we work really well together. We share information. We share lessons. We share outlines. We share everything, really. [Int04:FFT2]

According to a school administrator, such interactions promoted the deprivatization of practice that was emerging in his or her school:

> I walk into the staffroom and I hear people interacting a lot more than they used to, at least when I first came here. It's just a process. We're moving in the right direction. I think, on a professional level. There are more people

> doing better things in their classrooms and sharing with other people on almost a daily basis. I see growth in that. [Int04:EEP]

Virtually all instances of deprivatization, documented in the 2004 data, involved an increase in questioning and professional dialogue. For instance, a school administrator commented:

> I can see it starting. I can see other people starting to say, what are you doing in your room? Will you come into my room? In fact, twice, three times this week, I've got teachers who are going to somebody else's classroom to teach a lesson. [Int04:EEP]

A teacher reflected that increasing such forms of interaction meant:

> I learn a lot from my colleagues. I will ask them, how are you addressing this? How are you teaching this? Or have you taught this? [Int04:KKT2]

One of the most powerful examples the deprivatizing practice was reported by a secondary school administrator. In this example, a massive barrier was being challenged as individuals from different secondary departments observed the instructional techniques of teachers in other departments:

> Every department was put into a group. We had three departments that would rotate so that the Math department would go and watch the Science department. They [science] did the lesson and then time was built in to discuss how we could make that work in Math or Phys. Ed. Then Science and Phys. Ed. would listen to the Math. [Int04:CCP]

Such interactions, resulting in the deprivatization of practice, were possible because of the common focus across the school district – the improved student learning depicted as the centre of Figure 1. Focussing on the vision and subsequently on Instructional Intelligence made it easier for the teachers to work together and to share their practice. The role of the common goal in supporting deprivatization of practice was noted by a teacher:

> We all have the same direction. We are all wanting the same goal in the end. That we put things aside so that it is a group effort instead of one department versus another. We realize that we can work together to make a positive experience being in high school. [Int04:CCT2]

The 2005 data reinforced the importance of this common goal in facilitating deprivatization as noted by a teacher comment:

> I think that the fact that we've been able to talk about one or two skills and be able to come back and practice that in our classroom. Then going back together and talking about how it worked – it bombed or it was great, or this is how I found it worked best in my classroom. Just that opportunity I think just to get together. [Int05:RRT2]

The 2006 data suggests that the senior administrators were deliberately seeking to "to break down those walls of privatization of teaching" [Int06SA3]. The same senior administrator explained that collaboration and deprivatization were foreign to his or her educational experience:

> The degree of collaboration is something that I was not familiar with in my teaching times or my school administrative times. This idea of the deprivatization of teaching, now I think there has been a greater degree of openness. [Int06SA3]

School administrators also noted that school staffs were increasingly more deprivatized as individuals talked openingly about their practice. There was an inherent recognition that their colleagues had professional knowledge to share as described by a school administrator:

> It's more collegial. There's more professional dialogue. There's more of a willingness to share what's going on in the classrooms – not just the good stuff but the failures. They look to each other for answers. [Int06:AAAP]

Deprivatization of practice meant that individuals were more vulnerable which is a huge cultural shift. A senior administrator commented on the change of practice for school administrators:

> [School administrators] have no compunction or embarrassment about calling me or talking to their colleagues. They don't see it as a weakness to call somebody and say, this is a head scratcher. What do you think? The climate of 'I had better not show my weaknesses to anybody.' Or, 'if this is a bit shaky no one had better know about it.' That's fallen by the wayside. [Int06SA1]

Teachers also commented in the 2006 data that they were sharing their practice in order to improve that practice to advance student learning. One teachers comment suggested a connection to the evidence-based inquiry depicted in Figure 1. In particular, this individual talked about dialogue on the data collected shaping actions:

> We have really made it a focus in our teaching practices and we have done a lot of sharing together about different strategies and what we can be doing … we are really examining the test and we are looking at the results …. We look at the specific areas where there are weaknesses and strengths and then for those weaknesses we target how we are going to teach. [Int06:AAAT1]

Another teacher suggested that the professional dialogue and deprivatization of practice was impacting student learning opportunities:

> Our focus in this school is reading. We've made huge leaps and bounds in the last few years because we are talking about reading amongst staff, what are your what strategies? [Int06:EEET2]

The ensuring reflective dialogue on the effect on the teachers action on student learning, promoted through deprivatization, has the potential of reconstructing mental models. A teacher described such a situation:

> Because the three junior teachers were comfortable with each other, we met together and we would actually share your lesson plan. Critical friends I think it was called. They would look at it and say, 'well, do you think this will work?' Do you think that will work?' Then we=d actually teach the lesson and then we would get back together and we would show them. This is what I taught and this is how it went. They would make suggestions. So we were used to doing that all the time with each other. [Int06:AAAT1]

This reflective process was important as noted by another teacher:

> If there's something I've learned more in the last few years, that I didn't grasp in my first years of teaching, is reflective practice. It's okay to sit back and think about what you did, what worked, what didn't. And [then] try and change it. [Int06:YYT2]

Such a reflective process was sought by the senior administrators of the school district:

> It is not an option to be reflective about your practice. You have to demonstrate to me that you are reflective about your practice. I need to see growth. [Int06SA9]

Another senior administrator connected reflecting on the evidence with increased student learning:

> Now it's in terms of what's going on instructional wise in your school? What results are you getting? What demonstrations are there? There is, to me, much more accountability for the learning that's going on in schools. [Int06SA7]

Deprivatization of practice was first noted in the 2004 data collection but quickly became a cultural norm as documented in the data collected in 2005 and 2006. Without the documented teamwork, collaboration, and professional dialogue, it would have been highly problematic for individuals to share the successes and failures of their practice. Without such sharing, reconstructing professional mental models would have been more difficult for individuals. All of this requires risk-taking as examined in the following section.

RISK-TAKING

Engaging in teamwork, collaboration, professional dialogue, and deprivatization of practice required that individuals felt safe in sharing and talking about their practice. Admitting a lack of knowledge about practice requires a very safe organizational culture. Throughout this programme of research, individuals have

frequently commented on the role of risk-taking in significant educational change. The 2006 data emphasized the importance of a culture that supported risk-taking.

In order to take a professional risk to use an innovation or question existing practice, individuals must trust that their supervisor and colleagues will support experiential actions which often involve an implementation dip (Fullan, 1982). Certainly, the 2006 data were replete with comments on the importance of a culture that promotes trust. For instance:

> We [teachers] are like the moon. We have a dark side that we don=t want people to see and we hide that … With the 5 of us in the division, we know each other well enough that we know our failings. We know our strengths and our weaknesses. So we don=t mind saying, here I blew this and I blew that. I tried this and that worked. [Int06:DDDT1]

A school administrator commented that building trust was a difficult process because:

> We are always worried about being judged. Teachers want to be the best they can be. Teachers really want to do a good job. It hurts them if they think that maybe they haven't and they tend to get very defensive. [Int06:BBBP]

Another school administrator made a similar comment:

> There [needs to be] trust. [Teachers] have to trust you that you are not going to jump on them because they said something. Then you have to build this trust amongst these people so that they can trust each other. [Int06:AAAP]

While data quotes stating the importance of risk-taking and trust are peppered throughout this programme of research, in the 2006 data the importance ascribed of trust rose to a crescendo. Perhaps this intensity of comments occurred in the later stages of this research because the development of trust requires time. Several school administrators noted that it took several years in their schools to develop the trust necessary for individuals to take risks in revising professional practice:

> [Teachers] knew that the whole year was focussing on team work. What did that look like in our school? How did the team behave? What are the team norms? That was **2** years ago, when we were really starting the culture of looking at [being] a Professional Learning Community. It was continuing that, deepening that and helping them to understand how the team works. [Int06:AAAP]

> Now they know that I'm open to almost anything and I think that took **3** years. [Int06:YYP]

> So critiquing conversations I don't think can happen until staff gets to the point where they truly trust each other. We are now there but it has taken us 5 years. [Int06:EEEP]

School administrators reported that the school district had created a culture where teachers felt safe to take professional risks in order to improve their practice:

> [Teachers] are just at a point now where they're starting to reach out, take a chance, a risk, do something you haven't done. [Int06:YYP]

Similarly, school administrators reported that they felt very supported by their supervisor:

> We are a lot more supported by superintendents now. I feel very needed. [Int06:EEEP]

In such an environment, school administrators reported that they were supported in taking professional risks in their administrative practice. For instance:

> I'm seeing more and more administrators taking risks in the way they run their schools. They're not really risks. They feel they've been given permission by their [supervisor] to try some things that are a bit risky, but lead to improved student learning and also perhaps more dialogue and working together as a whole group in a school. [Int05:SSP]

Schools administrators talked about having permission to consider alternatives, for example:

> I feel supported from my superintendent at least, I have permission to experiment. [Int06:TTP]

When trust and risk-taking were incorporated into school district culture, individuals could accept the invitation to engage in experiential learning. We documented numerous quotes from both school administrators and teachers about having permission to engage in experiential actions with the express purpose of improving student learning. Permission to take reasoned professional risks in order to improve professional practice aimed at improving student learning allowed individuals to engage in experiential learning. A school administrators described the experiential professional learning that was being facilitated:

> We're all experimenting. I told them that. You're allowed to fail. It doesn't matter. You just have to go and try. If it doesn't work, then just go next door and say, By George, what the heck. I tried that and it didn't work. Did you do it? Did it work? What did you do? [Int05:VVP]

Permission to fail is a critical component of a culture supporting knowledge creation but it was the permission to fail with the intent of learning. A individual explained:

> I think because of the type of school we have, most of the people really are open to new ideas and they are willing to try new things and not be intimidated if it doesn't work out. [Int06:AAAT1]

The learning that occurred was heightened through the analysing data related to the experiential action. As reported in far greater depth in Earl and Hannay (2009),

individuals were able to analyse data to determine the effect of their experiential actions on student learning. Participating in such a process required a culture supportive of risk-taking and experiential actions. Operating from data or evidence demonstrates the importance of the connections depicted in Figure 1 between cultural norms and evidence-based inquiry. A school administrator remarked on these connections:

> A 'willing to take risks culture,' working as a team because they had concrete evidence, for the first time, that if they work together, we moved all the kids educationally. [Int06:TTP]

Additionally, continual professional learning provided a means for individuals to question the conceptions within their professional mental models and to construct knowledge on alternative practices to improve student learning. A teacher reflected on the difficulty for individuals in revising their practice as it often required that they replaced a comfortable mental model:

> I'm hesitant to try something new [because] … I would be afraid of failure. So why change something if this seems to be ok. But once you=ve tried it, it's Ok. I like this now. I feel comfortable with the fear of failure and the fear of just being out of your element. [Int06:AAAT1]

In summary, almost from the beginning of this programme of research, the data had documented the importance of trust and risk-taking in order to facilitate significant changes to practice is. Our data suggests that trust is essential for sustained teamwork, professional dialogue, and deprivatization. Through this process, the cultural norms changed and supported systemic thinking and knowledge-creation.

CONCLUSION

In our programme of research we documented the actions of an educational organization moving towards becoming a knowledge managing organization. At the completion of our research, this organization was not yet functioning as a knowledge managing organization but it had laid the foundation for such an evolution. This evolution was advanced through a supportive organizational culture and transformational leadership practices.

In this chapter, we have documented that the emerging cultural norms supported individuals in questioning and exploring their practice in order to adapt their mental models. Without the adaptations to the organizational culture, it would have been problematic for individuals to reconstruct their perspectives and professional practice. In retrospect, the action of the senior administrators to make improved student learning the prime school district goal was pivotal because it directly reflected the moral imperative of educators. This suggest that any organization seeking to develop into a knowledge managing organization must place the major organizational purpose at the centre of any actions.

As our research has documented, the organizational culture of the school district needed to provide opportunities for the participants to consider whether their tacit professional knowledge facilitated improved student learning. To accomplish this, participants needed reflect on their past tacit knowledge which often lead to them reconstructing their mental models. Through the professional dialogue and deprivatization of practice, individuals began to take action to change their practice to improve student learning. Taking action is essential to knowledge creation as noted by Nonaka and Takeuchi (1995) and Von Krogh, Ichijo and Nonaka (2000). But the participants went beyond just taking action as they began to collect data on the effect of their actions. Acting through inquiry assisted individuals in questioning their mental models because if the data failed to support their past assertions about student learning, participants could experience cognitive dissonance. Positively addressing this cognitive dissonance promoted professional learning which further reshaped their mental models.

Moreover, dialogue about these relationships were incorporated into normally occurring school and school district structures and events which advanced the documented deprivatization. Publically voicing and sharing ideas was an important part of the process because "Information becomes knowledge through the social process" (Fullan, 2003, p. 47) or through discourse communities (Putnam & Borko, 2002). Embedding discourse communities on improving practice to advance student learning into the organizational structure ensured that such processes ceased being considered 'extra' or 'additional' activities but were perceived as normal practice. Additionally, as noted in Figure 1, such activities were contextually relevant and aligned with expectations in the organization. Professional dialogue on *real* issues aligned with system goals promoted the process of managing knowledge as individuals shared their learning to improve their professional practice.

Collectively the interaction of the components in Figure 1 provided opportunities for individuals to create professional knowledge related to their practice to improve student learning. Through the cultural norms that were created, individuals were sharing that knowledge in normally occurring structures and events.

When such collaborative cultures exist, transformational leaders can provide empowering opportunities to engage participants in reshaping educational practices in response to the unprecedented challenges facing education in the knowledge economy. However while facilitating these changes will require transformational leaders, transformational leadership in and of itself is insufficient to adapt educational practice to meet the challenge of the knowledge age. Transformational leaders need followers who feel comfortable in challenging their tacit knowledge and who are willing to collaboratively take risks to develop new explicit knowledge and practices. It is the 'followers' who are required to do something different in their practice in order to achieve the desired changes to practice. Leaders and followers require a supportive culture where it is safe to share dreams, to explore both failures and successes, and to continually learn about professional practice. Transformational leaders need to provide opportunities and expectations

that all participants can assist in expanding the professional knowledge base to continually improve the learning of students and educators.

We did documented such transformational leadership practices in our programme of research. The senior administration of this school district had facilitated the development of a supportive culture. As we have reported elsewhere (Hannay, Mahony, Blair,& Earl, 2006a & b), they did not just mandate the changes to practice for others but they modelled those actions in their own work as senior administrators. The senior administrators created collaborative opportunities for all school district employees to challenge their tacit knowledge and collectively to create new explicit knowledge. As well, senior administratorshad taken deliberate transformational leadership actions to engage the school administrators in changing their practice. Consequently, school administrators changed their leadership practice to work collaboratively with other school administrators to improve student learning across the district. In their own schools, the school administrators empowered their school staffs through creating opportunities to challenge and then to adapt classroom practice. All of this required a culture with 'permission to learn' and to take experiential actions with the express goal of improving student learning – back to the central purpose of the organization.

The educators in this school district had systemically reshaped the professional practice of all roles in their organization. This case study demonstrates that transformational leaders working in tandem with their 'followers' in an empowering and challenging organizational culture can meet the inherent challenges of the knowledge age.

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6. COACHING PRINCIPAL INTERNS

How External Coaches Deepen Theory-Practice Connections in a Principal Preparation Program

OBJECTIVE OF THE CHAPTER

The objective of the chapter is to provide research based evidence describing a coaching program aimed at teachers and teacher leaders in the early stages of the school leadership continuum. This chapter describes a coaching program and provides evidence concerning the satisfactions, benefits, and learnings of coaches and interns, applying leadership principles during their administrative internships. The program used external coaches to supplement coursework and apply learning in internships associated with a master's degree /principal certification program involving teachers with three or more years of experience. The chapter describes the experiences of coaches and interns, and contributes to a better understanding of the usefulness of coaching at the early stages of the administrator professional development continuum.

SCHOLARLY IMPORTANCE

Research on the important factors in professional growth for teachers and school leaders in urban, high-needs schools suggests the importance of: 1) essential core beliefs and values; 2) behaviors that focus on student learning, interactions and relationships; instruction and accountability and 3) professional development designs that promote collaboration and collegiality. Research also indicates school leadership is an important determinant of school effectiveness and student achievement (Darling-Hammond et al., 2007; Davis et al., 2005; Leithwood, Harris, & Hopkins, 2008).

The chapter adopts a *learner-centered leadership* framework for schools (Danzig, 2009; Danzig, Borman, Jones, and Wright, 2007). This framework embraces a shift in the professional norms of teachers and administrators based on a deeper understanding of how people learn (National Research Council, 2000) and the ways in which formal knowledge connects with understanding that comes from experience. The learner-centered leadership (LCL) concept balances the state's interest in providing standardized outcomes through regulation and accountability in schools with the individual and collective interests and aspirations of learners.

I.M. Saleh & M.S. Khine (eds.), Reframing Transformational Leadership, 81–97.

LCL provides this by arguing that school leadership should embrace democratic principles by which community members are valued for their willingness to confront authority and take ownership of their actions.

Learner-centered leadership views the press for standardization and efficiency as contributing to a dehumanizing process, which at the very least, results in many learners leaving school prior to graduation. Learner-centered leadership posits that leaders are learners themselves, and argues that the best interests of the state are served by creating schools as places to nourish learners, but it rejects high stakes testing as the best metric for understanding or measuring these goals (Danzig, 2009). Instead, LCL adopts an empowerment model that prioritizes the contribution of individual empowerment for the public good. People take responsibility for their individual growth and contribute to the greater public good.

AN OVERVIEW OF LEARNER-CENTERED LEADERSHIP

Learner-centered leadership (LCL) is a new framework which proposes that leaders need to be learners, first and foremost. This perspective takes the pragmatic theory of education in which children are learners, and applies it to all of the adults in school settings – teachers, administrations, staff, parents, and community members. Being a learner requires certain vulnerability not normally associated with leadership and authority; it involves understanding and exploring personal meaning in relationship with others, and this closeness inevitably creates new vulnerabilities. Identifying the central quality of leaders around learning implies that new knowledge and skills will be needed for those aspiring to leadership positions. This research explores the ways in which a cohort of aspiring administrators experience their role as learners, and move from initial to deeper levels of understandings of learner-centered leadership. The article also describes the cohort's experiences with coaching as they move through the program.

Learner-centered leadership is built on the foundation of democratic community (Putnam, 2000, 2007; Murphy, 2002; Furman & Starratt, 2002; Schubert, 2009). Democratic community involves: 1) open inquiry and the full and free interplay of ideas, 2) a commitment in which members work for the common good, 3) an environment which respects the rights of all including the less powerful, and 4) the need to change structures, processes, and curriculum (Furman and Starratt, 2002, p. 106). This view of democratic community emphasizes reciprocal (as opposed to hierarchical) relationships among community members, one in which authority is understood as authoring oneself rather than directing others what to do. In democratic settings, learners are best served when they control the conditions of their own learning. The actions and behaviors of leaders are those of learners, participating in communities with other learners.

The rationale for a new leadership framework which applies the role of learner across all participants in schools and other work settings comes from the recognition that schools are having great difficulty meeting the expectations placed upon them, from internal and external constituents alike. Many schools and districts are characterized by lower than hoped for student achievement, higher

student dropout, widespread teacher exit, and extensive administrator turnover. In the most recent international comparisons of student assessment data (OECD, 2010) of the approximately 65 countries examined, students in the U.S. students ranked 17th in reading, 31st in math, and 23rd in science. The U.S. high school graduation rate is 71% and in the 50 largest cities in the U.S., just over one-half (53%) of students graduate high school on time (Editorial Projects in Education Research Center, 2009). The data on teacher attrition show that nearly 50% of all teachers leave the teaching profession within five years (Alliance for Excellent Education, 2005). And many former teachers report that the opportunity for learning is greater in their new workplaces. Battle (2010) cites data from The National Center for Educational Statistics (NCES) that among teachers leaving the profession in 2008-2009 "about 40.8 percent of public school teachers reported opportunities for learning from colleagues were better in their current position than in teaching" (Keigher, 2010, p. 3). Regarding principals, the most recent (2007-2008) data report more than 20% turnover in the given year. The US Department of Education's National Center for Educational Statistics reports that for the year 2007-2008, "[o]f the 117,140 school principals … 6 percent moved to a different school ("movers"), and 12% left the principalship (leavers) … (and) 3 percent of principals were from schools that reported the principal had left but the schools were unable to report the current occupations status of the principal ("other") (Battle, 2010, p. 3). The population of school principals is also getting older, the average age at entry into the principalship has increased, and the rate of departure appears to be increasing (Gates, Ringel, & Santibanez, 2003 cited in Jacobson, 2005). For the three major participant groups in schools – students, teachers, and administrators – dropout, attrition, and turnover are the major stories.

IS LEARNER-CENTERED LEADERSHIP REALLY A NEW STORY?

The argument presented in this paper is that the central task of learner-centered leaders is to be engaged with others in learning. Lieberman Falk, and Alexander (1995, 2007) explain that the concept of learner-centeredness is built on a foundation where "the purpose of education was to create the conditions for student development and autonomy while establishing a pattern of support for continuous progress within a school community nurtured by a democratic ethic" (2007, p. 26). Learner-centered principles are also referenced by the National Research Council (2000) as "environments that pay careful attention to the knowledge, skills, attitudes, and beliefs that learners bring to the educational setting" (p. 133). The learner-centered approach prioritizes the need for learners to control their own learning as they define learning goals, and monitor progress in achieving them. Freedom, self-direction, and relevance are primary factors as learners bring real-world problems into classrooms and workplaces. Learners therefore need opportunities to get feedback on their work, scaffolding to support their understanding, and opportunities to reflect on their experiences. A learner-centered setting is also inclusive, one which builds local and global communities of learners that include peers, subordinates, supervisors and superordinates, and

community members, based on common interests (National Research Council, 2000, pp. 133-134).

The Concerns of Learner-Centered Leaders

Learner-centered leaders are concerned with the connections between what is learned and how it applies to other aspects of life. Leadership is simultaneously about engaging with others and changing oneself. Lieberman et al. (2007) outlines new roles for leaders in education settings as "educators, problem solvers, crisis managers, change agents, enablers, consensus builders, and networkers." They propose that learner-centered leaders give meaning to the many ways that the day-to-day activities of participants contribute to school and organizational purposes, with the aim of connecting individuals to a wider community of learners (pp. 27-28). We would add that the curriculum for learner-centered leadership is about culture, organizational and institutional history, human dynamics, and social interactions as learners engage in dialogue, critical inquiry, and reflection in- and on-practice (Schön, 1991).

Learner-centered leaders also prioritize the individual and collective interests and aspirations of learners above the state's interest in promoting standardized outcomes through regulation and accountability. This tension between the individual and the state is illustrated in David Wroblewski's novel *The Story of Edgar Sawtelle*. In the story, the author contrasts two different approaches to breeding dogs, one which values human and personal knowledge gained from experience, and the other, which emphasizes strategies based on standardization, assessment, and accountability.

> In the end, the difference between you and me comes down to the difference between the artist and the factory man. The artist does not know what he wants, but looks for good paint, good brushes, and good canvas. He trusts that talent will produce a desirable result. Sadly, for most people it does not. The factory man says, what can I make that I can rely on? It may not be the ideal, but I must be able to tell my customers that each time they buy, they will receive the same product. The factory man values predictability above "mere" excellence for good reason – would you frequent a bakery where one cake in ten was inspired, but the other nine inedible? (Wroblewski, 2008, pp. 190-191)

In the novel, the Sawtelle dogs are valued because of their practical (real world) intelligence and the capacity to form animal-to-human connections, and not because of consistency or pedigree of the breed. The ways to nurture these qualities is not through standardization and efficiency (the factory model), but through individuality and artistic expression.

WHAT TO APPRECIATE IN THE ACTIONS OF LEARNER-CENTERED LEADERS

Learner-centered leadership raises questions about what to appreciate in one's performance on the job. The answers recognize that variations and diversity in the ways that people learn are the norm, not the exception. Humans come to appreciate

the situations in which they find themselves by building upon current realities and prior experiences. Defining the leader as a learner opens up space for organizational leaders to ask questions, to build their own learning curricula. Learners take the lead in determining what needs to be learned in order to meet individual goals and accomplish job responsibilities.

To illustrate, Orr (2006) reports how practicing school district superintendents or chief executives view the importance of "learning from others and learning from their own experiences" in accomplishing their work. The superintendents have a good understanding of what they need to learn: 1) school culture, 2) school community, 3) sacred cows, 4) workplace history, 5) formal and informal power structures, 6) history of the position, 7) the ways issues and actions are interpreted, 8) board expectations, 9) who to trust, and 10) how to take time away from the job (Orr, 2006, pp. 1375-1379). Some of this knowledge comes from the formal school preparation and graduate curriculum – organizational culture, change theory, nature of leadership, human service administration, law and policy, power and politics. The curriculum for leadership practice, however, requires an informal component, self-directed learning, learning from others, shadowing, and mentoring; it requires thinking about how people join an organization, how they learn from experience, how they inquire into identity formation, and how they make sense of the workplace (Orr, 2006).

The skills needed by learner-centered leaders come from appreciating human systems (Vickers, 1995) and these skills are learned through dialogue and deliberations within and outside of the formal organization to which one belongs. The performances of learner-centered leaders are judged on how they participate and foster participation of others in a community of learners, how they model and are molded as learners, and how they participate in an environment in which all are learners, regardless of title, position, authority, or pay rate (Vickers, 1995; Danzig, Borman, Jones, & Wright, 2007). Evaluating performances on the job on the basis of outcome measures alone ignores the human context of learners. Learner-centered leaders are guided by the principles which ask questions, look for meaning in human connections, foster empowerment, and value independence. The outcomes which include being an independent thinker, taking responsibility for one's actions, contributing to the common good, and caring and promoting community betterment require more complex judgments for evaluating leadership.

In schools, these qualities are implicitly raised by the national standards under which school administrators are licensed, (National Policy Board for Educational Administration, 2002; CCSSO, 2008), the press to raise student achievement on high stakes tests has become the metric by which school leaders are being held accountable. The research on leadership effects (and leadership effects on student achievement), however, suggests that school leaders have an indirect and interdependent relationship with the efforts of teachers and others (Elmore, 2008; Pont, Nusche, & Moorman, 2008). Therefore an appreciation of the actions of school leaders needs to be based on a commitment to learners and to the actions that support engaged learners, rather than on the current view, which focuses on student achievement and high stakes testing.

STRUCTURE OF THE CHAPTER

The experiences and reflections of the participants in the program are described in the chapter. Data were collected and analyzed related to the experiences of interns as well as coaches. Benefits are presented in terms of skill development and overall satisfaction with the program by participants, and reflections on the importance of coaching to professional identity of both interns and coaches. The benefits presented explore the reflections of both interns as well as coaches. Short and long-term benefits of participation, for those who delivered and for those who received services, are examined in the chapter.

SUMMARY OF FINDINGS

In the fall of 2009, a new Master's of Educational Administration cohort program, which included a coaching component, was started using grant funding from a local education foundation. Four coaches were hired who were trained through a program sponsored by the state department of education, based on a "blended coaching" model. The Master's cohort consisted of 14 students, most with multiple years of teaching experience, and a few with a significant amount of administrative experience as well. Additionally, seven students enrolled in a doctoral program interested in pursuing administrative certification were also provided coaching, for a total group of twenty-one students.

Coaching Component

Responsibilities for mentor/coaches are briefly described below. Each coach worked with 4-6 interns. Coaches met with university faculty to orient them to university requirements for the internship, review relevant course syllabi, and familiarize the coaches with the reading, knowledge base, and course experiences that can be applied during the internship experience. Coaches worked collaboratively with interns to identify and establish appropriate sites for their internships, and to facilitate the development of an intern plan in order to accomplish required goals and objectives of the internship experience. Coaches participated in or led approximately 3 or 4 meetings each semester (12-15 total) to provide group feedback, facilitate opportunities for networking among cohort members, and provide other professional development opportunities or experiences. The coaches visited interns on-the-job three times per school site (a total of 6 school visits per intern) to meet with the sponsoring principal or administrator, to meet with the intern and set expectations of the internship experience, assess intern skill development, and generally work to improve the quality of the internship experience. One key feature of their role was to maintain a non-evaluative position. The coaches did, however, assist the interns in their documentation of their internship experience, which was then submitted to the internship coordinator for a pass/fail grade; coaches also documented their own participation in the internship program including group meetings and individual conferences.

Table 1. Student interview findings in year one (based on phone interviews)

Student Course Expectations	LCL – What is your understanding of Learner-Centered Leadership	Do you intend to become a principal soon?
1. No specific expectations other than coursework related to the principalship	Leaders never stop learning and consider new things all the time	The student sees this further down the road, after getting more teaching experience
2. To learn about school law and finance, as well as combining scholarship with practical application	Learning=Leadership Does not believe in the master-teacher concept since we are always learning	This student serves in administrative role already and needs certification to fulfill a job requirement
3. Nothing specific other than learning about school administration	Doesn't really know what it means.	It is a fairly immediate goal; thisstudent expects to apply for an assistant principal role next year
4. Courses that would help the student be as prepared as possible as an administrator	Work with other adults as learners too in the schools: not just students as learners	It is an immediate goal for this student
5. A greater understanding of finance and law	Being a responsive, reflected leader who is also learning constantly too – learning from those you are surrounded by, even if at first you don't expect to learn.	In the future but not immediately because the student has 2 small children. Prefers no higher than an assistant principalship at this time, but would like more opportunities to be a decision-maker
6. No specific expectations	How to conduct yourself as a leader: listen to others, not be aggressive.	It is an immediate career goal
7. No course expectations from a leadership perspective – the student looked at the list of courses so was aware of the coursework from that perspective	Not familiar with this concept but per the definition provided, the leader understands that learning is an integral part of what they do	It is a fairly immediate goal: the student would prefer, however, to be either a coach or assistant principal before finishing the M.Ed. program
8. To get a lot of insight into begin a principal, plus also laws, rules and	Leadership is decided upon by the clientele: dictated by the learners themselves	A near-term goal. The student currently takes on a lot of leadership

what is expected in that role		roles in the school
9. A focus on the practical aspects of the principalship.. In particular, learning about ways to support the school staff	Being reflective and more responsible for learning in the courses the student is taking in the M.Ed. program	Not an immediate goal: the student would like to be a coach first
10. To learn the skills of a principal such as the job responsibilities, exposure to some of the research, and how effective schools function	This is a new concept	The student does want to be a principal but wants to see different approaches: in the first class they discussed management approaches
11. Knew that it would be challenging but had no particular course expectations	Little or no idea what this means. From the definition, it appears to be based on the student as a learner	The student wants to be a principal but sees being an assistant principal first

*11 of 14 students participated – 76% participation in phone interviews

First Year Findings

The following discussion describes the participants' satisfaction with and benefits of the coaching component of the Master's program. Interviews were held at the end of each semester of the program, with program participants and coaches. Interviews describe the nature of student and coach learning and perceived benefits of the coaching. Additional prompts concerned the nature of learning from coursework and the application of course materials in on-the-job internship experiences.

Second Year Findings

At the end of the second year of the masters program, face-to -face interviews were conducted with nine of the original 14 participants and included reflections on their learning and preparation for administrative work through the primary program components: coursework, coaching, and internship experiences. Participants were also asked to consider their time in the program given their understanding and application of leaner-centered leadership. Further, at the end of the two year program, coaches were also interviewed and asked to reflect on their time and work in the program. Below is an account of the perspectives of participants and their coaches: these accounts are reflections on the application of learner-centered leadership as participants transition from the perspective of a teacher into an administrator.

To begin, participants overall were satisfied with their coursework in both content and structure. Participants appreciated the applicability of the subject

matter in the classes required for the master's degree, as well as the opportunity to gain new perspectives on administration.

> Participant 3: I think that in general every time that we've been able to take that – take what we're learning and apply it into our actual positions, has definitely been the most significant applications that I've done.

> Participant 7: The only expectations I really had was to be in courses that got me ready for the principalship. I want to be ready for it…we didn't have a ton of conversations through the books that we were reading, but we had guest speakers, which is great to hear it firsthand because people who have already been there, that's what I want to hear about.

There also seemed to be an added benefit to participants in maintaining the cohort structure throughout the course work, which facilitated the time to learn and reflect with a group of individuals in similar situations with different school contexts.

> Participant 3: When you're in the coursework, I think that in every class, everything that we covered, we looked at it from different angles and different approaches. Whether it was in the books or the readings that we're reading, or what people brought, the experiences of my classmates from a private school principal, high school teacher, charter school.

> Participant 6: "The cohort members are all terrific teachers, so they brought a lot of experiences and different (experiences)—when we did class presentations, a lot of different ways of presenting, a lot of different ways of engaging learning."

> Participant 7: "I like that it was mixed. We were all at different levels, different districts. That's really good."

Many participants voiced their appreciation for having professors teaching their coursework that had applicable working experiences in school settings. While the observation largely went left unstated, it seems participants had expected coursework to be conducted by those with less applied experience, and thus having that experience was a pleasant and valuable reality from the perspective of participants.

> Participant 6: I'd say, you know…and people that were really in the field, and then it was how are we all lifelong learners, and how are we gonna continue to do that in the field of education. So that we could then deliver the best education possible? Some of that worked, some of it didn't. Certainly, the best teachers we had were the ones in the field.

> Participant 8: "I appreciated having professors who knew where I was coming from."

Coursework was also related to the coaching experience in that many coaches were able to assist participants in understanding course projects and requirements, but also in helping to make the coursework meaningful.

> Participant 5: She's been bringing me examples of what other principals are doing – new principals – what situations they're facing. She has helped me, looking over resumes, and looking over papers. She's helped me with the coursework. She's helped me just – pretty much whatever I ask her, she's willing to go for it and help.

Coaches seemed to act as a bridge between the specific course assignments and their usefulness to the participant as they engaged in their current work, their internship experiences, and their future work as administrators.

> Participant 2: I do not think I would have learned as much and prospered as much if I didn't have her. She is a previous vice principal. She has the knowledge background. When the professors would assign something and I was confused about exactly what they wanted, she was there to not only lend me great support but also clarification.

> Participant 5: "She worked really hard at tying in whatever the course was to what I was doing with my internship, and kind of bringing those together to reflect on them."

The largest part of the interviews with participants and coaches was spent on the experience of being coached and coaching those in the program. The coaching experience seemed to be the dominant point of reflection in interviews as the coaching component served as the conduit for bringing the elements of the program together in a useful and reflective manner.

> Participant 4: Well, I think the first thing that sort of came to my mind, it's sort of summarizing this whole experience, has been the quality of the coaching … She's just phenomenal. I mean, just her knowledge and her experience and her insight. I mean, it's just like working with the cream of the crop. It's the best advice and mentorship that I've had in my entire educational experience.

> Participant 5: We've had this reflection at the end through our capstone, but I think having the coach consistently throughout the program, going back and helping someone reflect on the program, has really solidified a lot of the really key things within the program.

> Participant 7: She is amazing [coach] … I mean she tells me to pull up articles and you know, we talk about the articles, which correlate to either the coursework or what I'm seeing at the schools, or what's happening in my district, especially.

> Participant 8: "Just having somebody who knew, who was in the know who could share that, give a different perspective because they've been on that other side of the desk, it was so enlightening. It was safe. That was amazing; so safe."

The coaching component provided participants with individuals who were experienced in the field of education as administrators, had the resources and wherewithal to support participants in all different circumstances (teacher, coach, administrator), and supported the pre-service reflection process deemed to be of greatest value to future school administrators.

> Participant 2: She again (was) just listening and saying okay this is what you can do, this is how you can try to make it better; take the initiative to do this. Again, she was a principal so she could see it from both sides so that really helped.

> Participant 4: She just had a way to connect that and bring things together that sometimes I wouldn't make the connection about. I think that was always really helpful when I was reflecting on how is this class gonna help me become a better leader, how is it gonna help me become a principal some day, what am I learning in this class which sometimes in the class might have seemed like, okay I already know this or I don't really see relevance for this right now in my life. Then she would help me sort of make that connection. I think that was really helpful for me. Further, and as is the case with much of the experience of those in the field of education, coaching was seen as a highly relational tool with which to use as one learns in the program and becomes a leader in an educational setting.

Being relational with a coach allowed for a risk-free environment to reflect on decision-making, actual decisions, and possible applications to coursework as well as future applied work. It was also frequently noted that the coaching component allowed for timely reflection of real issues that came up in participants' everyday work and/or internship experiences.

> Participant 3: I felt like my coach was very affirming of what I was doing and that it was encouraging—a lot of her feedback was very encouraging as I think about what my future steps are, and am I on the right track.

> Participant 4: I think a lot of that had to do with relationships. She's just constantly asking me those types of questions. When I'm thinking through, okay, here's a situation we're dealing with right now and not really sure what to do. Or here's something I messed up on and can you help me backtrack and figure out how to fix this. I think a lot of her guiding questions have been focused on relationships.

> Participant 6: Part of what was really awesome about this program, and by far, for me, one of the greatest gifts was my coach. The relationship that I had

> with her was just a really important role… She's retired, she has other things she's doing, but took to heart so much of—when she was with me, you know, came in every single time with an agenda that we had formulated from the last time, and just kept me moving forward; outstanding listener, a good—you know, way beyond coach. I mean really a mentor, a friend, a spiritual advisor.

> Participant 8: "I think that the coaches provide kind of a head start for people. People without though coaches are two years behind you, two years experienced behind you, if it's good experience."

Benefits to Coaches

LCL argues that the workplace must have opportunities for learners at all levels, including interns as subordinates as well as for coaches. Coaches themselves benefited from their time with the participants. Coaches were able to apply what they already knew about administration and leadership in schools, as well as learn from others through the process of revisiting some of the situations in which they themselves were engaged in.

> Coach 1: If you talk about new learning, for me it's, one, being able to relate to other coaches and hear their experiences and learn from them, but the other piece of that is because you have ASU classes connected with these interns, you kind of learn with them. You relearning what's new in education and revisiting what you've learned previously.

In addition, the internship experience was meant to provide participants with the opportunity to apply their leadership resources and knowledge to actual school leadership positions, while being mentored within the context of the work by those administrators already in place, and reflecting on their work as learner-centered leaders.

> Participant 3: I wouldn't be at the place that I'm at in leadership had it not been for my coursework, my job experiences … having the mentor there to be able to just almost debrief experiences and with the questioning strategies that they use to dig deeper.

> Participant 4: "But I think at least I've gotten a more rich experience from learning it in the classroom and then applying it and then going back and reflecting on it."

Unlike most of the participants, Participant 6 was currently serving in an administrative role at the school where she was employed. As a result, her reflection on the internships also revealed the changes she saw in others in the cohort as they developed new perspectives on leadership.

> Participant 6: Now we're at a point where I think because of those internships, people are sliding into formal roles. Certainly, I hear them

> talking very differently with much broader sense of awareness and a much deeper desire to lead. I think the internship was really critical.

This development in leadership of participants was also seen from the perspectives of the coaches. They also saw the transition amongst the participants, both in their time with them and in the time spent reflecting with other coaches.

> Coach 1: For my meetings with the interns, the longer period of time you spend with them the more open and honest they are. As I mentioned before, they have a more depth of understanding because they have certain classes under their belt. They have more knowledge about administration and the principalship in general.

> Coach 2: The interns have grown tremendously because they have a risk-free environment when they have a coach, when they know – and we talk about this early on in the program – that we would not be evaluative. We would be a listening. We would truly be a coach in the purest sense through a cognitive coaching model. We are there to help build capacity in them.

At the same time, the participants were not the only ones who developed administrative capacity through the program. Coach 2 reflected in her experiences as well stating:

> I have grown so much, and I will not stop growing. That's why I love doing this. I have grown more through this program, I think, than any other experience I've had because I have been in different districts, I've dealt with different people, I've had the opportunity (to) meet one-on-one, I've had the opportunity to take those tidbits of material and meet with my colleagues, the other coaches. That is a huge growth experience.

This new sense of perspective and direction in leadership seemed to be facilitated by participants' engagement in two different internship experiences throughout their coursework; often allowing for a comparison and contrast of leadership characteristics and types in relation to one's own role as a current and future leader.

> Participant 2: Looking back at my internship from last year and this year I had two totally different leaders. The leadership I have now at this school is someone I'd like to be modeled after. The one I had previous I learned what I don't want to be like. That also was a good experience because I learned now what I don't want to do and how I don't want to treat my teachers and now how I think I would want to.

> Participant 5: I think it forced me to stretch out of the school with the second internship. I think I would've still continued with leadership activities within my school, but because the plan was for the second internship to be out of the school, it definitely gave me a broader perspective than if I had just—if there hadn't been a second one.

Finally, while instances where the program was seen as being less beneficial were limited, there was a participant who did not share the same degree of appreciation and value in the coordination of the program components. The participant's reflection revealed that the coaching experience lacked a relational component detailed by other participants and as a result was more difficult to make the most of the time spent together.

> Participant 1: I didn't really know what was our objective together. Were we trying to develop me as a leader? Are we trying to – you know in each of our classes, you set our objectives for us. What are we supposed to get out of each class? I didn't know what our objective was, and so I didn't know we were meeting our objective. I didn't know – so in that way, it felt like we're just kind of BSing for two and a half hours.

In this case, the relationship between the coach and participant never fully materialized, as a result, the coordination of other program components that was found in other coach/participant relationships was also missing. Given these experiences, the participant was able to provide feedback on the lack of structure that she needed in her coaching experience.

CONCLUSIONS

A learner-centered approach to leadership reflects a method of embedding new knowledge into the existing roles, processes, and structures of schools. The approach described in this study fosters individual and collective learning through a collaborative coaching process that included multiple components, courses, internships, and coaching. The research explores how coaching promotes changed leadership practices, and by extension, how it ultimately impacts practices in schools and classrooms associated with student learning.

One goal of the LCL Program was to provide opportunities for urban school administrators to share experience, information, and innovative strategies which address complex school leadership themes such as accountability, assessment, and student achievement. Sharing knowledge and information and understanding its complexity has been an important part of the interactive and community building processes. In the feedback collected from participants in the Learner-Centered Leadership program, one theme that emerged is the importance of having the time to engage in conversation with other administrators about the intricacies of administration in urban settings. As part of this dialogue, case studies and personal narratives are an important way to illustrate the complexities and complications related to school administration and leadership. Through dialogue, administrators work through challenges and make decisions regarding complicated issues. Social Science knowledge of research and best practices, legal and ethical reasoning, and personal knowledge are brought into play as program participants consider themselves as learners.

The collaborative model explored through this research also promotes better understanding of how school leaders develop a collective wisdom about leadership

practice, shown in both the M.Ed. program and the coaching experiences The importance of being a learner to leadership practice, the significance of language and culture, and the availability of community resources are part of the wisdom to be tapped to ensure that all students, especially children attending schools in urban settings, have opportunities to be engaged by their experiences in school. Collaborative learning encourages participants to reflect upon their own knowledge and preconceptions and make more explicit the assumptions they bring to concrete situations; it allows people to learn how to manage complex problems and appreciate the diversity present in the educational environments they inhabit.

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KENNETH ELLIOTT AND ANILA ASGHAR

7. TRANSFORMATIONAL LEADERSHIP IN SCIENCE EDUCATION

A Quebec Perspective

INTRODUCTION

This chapter describes how transformational leaders have guided and inspired teachers to make significant changes in science education curriculum content and methodology in the English public school system in Quebec. We will begin with a brief overview of current understandings of Transformational Leadership and the place of principals, teachers and science consultants in this process. The work of science consultants will be the focus of this paper. They are hired by local school board to make sure science teachers have the wherewithal to teach their science programs. Prior to becoming consultants, they were accomplished science teachers whose expertise in the classroom and thorough understanding of the science programs enable them to lead, advise, and mentor science teachers in the schools.

Next we will provide an overview of the Quebec Education Program (QEP), showing how different it is from what teachers had been accustomed to in the past. With this new curriculum and pedagogy in mind, we will outline the challenges that the transformational leaders are facing as they guide the science teaching community in the process of curriculum change to meet the needs of the QEP. We will describe where the science consultants fit in the leadership structure – how the consultants interact with schools and teachers to bring about the change. The core of this chapter will be a description of how these leaders meet the challenges, individually as leaders in their own school boards and collectively as a provincial community of leaders.

The authors recognize that the school principal is the leader in the school. He/she sets the tone, drives the vision and masterminds the transformations that need to occur. It is the science consultants, however, who help the teachers change their instructional practices and content required by the new curriculum in science. The premise of this study is that, although much of the work science consultants do may, on the surface, seem ordinary and administrative, their leadership is transformational. We will specify what we mean by transformational leadership as it applies to curriculum change in science education and describe the leadership activities these consultants perform.

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LEADERSHIP IN CONTEXT

Transformational Leadership in Education – Model I and Model II Learning

The concept of transformational leadership came from discussions on how to lead organizations to move away from the maintenance of status quo towards the 21st century imperative of adapting to a rapidly changing world. In education, schools are increasingly asked to reform both their structures and their curriculum. Changes in leadership styles and practices are seen as fundamental to reforming schools. Argyris (1974) describes the changing leadership paradigms as progressing from what he describes as Model I to Model II leadership behavior models. In Model I, leaders focus on the task. They employ a rational approach which emphasizes hierarchical control, conformity, competitiveness and individuality. This results in antagonism, mistrust and an emphasis on winning at all costs. For an organization wanting to reform itself, this model is counterproductive. It represses creativity, cooperation and intrinsic motivation to change and therefore inhibits creativity and reform. In a typical Model I school, for example, the principal runs a tight ship. Teachers are given their teaching assignments and duty schedules and are expected to prepare their students for the rigorous final exams. School discipline is based on a tight code of behavior and controlled by a defined set of rewards and punishments. Those who do well are recognized and those who don't are often shamed and humiliated. Teachers are on their own to deliver their curriculum and control their students. There is little room for innovation or creativity as they are judged by the success rate of their students on external evaluations.

Model II by contrast advocates a much more open, democratic approach to leadership for change. It advocates free informed choice based on information. Employees define their own objectives and activities and take personal responsibility for their actions. Decision making is shared resulting in a more comprehensive examination of variables and viewpoints (Argyris, 1976; Bass & Avolio, 1994). Real change in today's schools requires Model II leadership behavior (Argyris & Schön, 1974; Drago-Severson, 2004, 2007, 2009; Drago-Severson, Asghar, Blum-Stefano, & Roloff Welch, 2010). In a Model II school the principal and other school leaders encourage teachers to participate in the setting of a vision and direction for school success. There are formal structures for consultation on all matters of school organization, discipline, teaching practices and scheduling. Teachers are encouraged to work in teams to collaborate on teaching topics, lab activities and other pedagogical matters. A Model II school is open and friendly, yet rigorous and focused on student success.

TRANSACTIONAL TO TRANSFORMATIONAL LEADERSHIP

The term "transformational leadership" became popular in the 1990s as the movement to reform schools gained strength. Increasingly principals were charged with the task of fundamentally changing the nature of their school organizations

and curricula to answer the perceived criticism that schools were falling behind in their preparation of their students for the modern world. Leithwood and Poplin (1992) see this movement as the change from transactional to transformational leadership. Bass (1990) describes transactional leadership, similar to Model I, as follows: "The leader gets things done by making, and fulfilling, promises of recognition, pay increases, and advancement for employees who perform well. By contrast, employees who do not do good work are penalized. This transaction or exchange – this promise and reward for good performance, or threat and discipline for poor performance – characterizes effective leadership" He further maintains that "In many instances, however, such transactional leadership is a prescription for mediocrity" (Bass, 1990, pp. 20-21) By contrast, Bass extols the power of transformational leadership for organizations by stating that:

> Superior leadership performance – transformational leadership – occurs when leaders broaden and elevate the interests of their employees, when they generate awareness and acceptance of the purposes and mission of the group, and when they stir their employees to look beyond their own self-interest for the good of the group. (p. 21)

This vision resonates with Model II leadership, described above. In the 1990s schools undergoing reform moved away from transactional towards transformational leadership – a more consensual decision making process where "teachers are helped to find greater meaning in their work, to meet higher-level needs through their work, and to develop enhanced instructional capacities." (Leithwood & Poplin, 1992, p. 9). Leithwood (1999) identifies 3 areas of concentration for transformational school principals:

a) Developing teacher leadership: While administrators have positional power, teachers have technical expertise. As leaders, teachers share their expertise, bring new ideas into the classroom and have great influence.
b) Building teachers' commitment to change: School leaders understand that teacher motivation is personal: it depends on their perception of the need for change, how achievable it is, how clear it is and if it can be accomplished in a short term.
c) Creating conditions for teacher growth in professional knowledge and skill: It is important to have a professional development plan which takes into account the needs of individual teachers and involves them in the process. (Leithwood et al., 1999)

Science consultants have an important role in the 3 areas of the change process explained above. Though they are not the leaders in a hierarchical or administrative sense, they are essential players in Model II transformational change in our view. They help develop teacher leadership by working closely with them to develop pedagogical and curricular expertise. They have a great influence with teachers in fostering the motivation to adopt the new methodology and programs. Consultants are usually responsible for the board-wide professional development plan – a plan

which not only looks at the needs of the curriculum on a broad basis, but also takes into account the individual needs at the school level..

CURRICULUM REFORM IN SCIENCE EDUCATION IN QUEBEC

In this section we describe the educational setting for this chapter. We will describe the new science curriculum and the leadership challenges that have surfaced as a result of this curriculum change. Science education in Quebec has recently undergone a fundamental change as part of a general educational reform which began in 2000 and was completed in 2010. It is part of a world-wide trend to overhaul educational systems. Science and Technology is one of 6 subject domains in the Quebec Education Program (Québec Ministère de l'éducation, 2007). It is constructed around 3 competencies which must be developed by the students through Elementary and Secondary school.

Competency 1: Seeks answers or solutions to scientific or technological problems.
'The focus is on hands-on methods used in science. Students experiment, design and construct in the lab, workshop or elsewhere to solve problems. Examples include performing scientific experiments, designing, building and repairing technological objects.'

Competency 2: Makes the most of his/her knowledge of science and technology.
'Students focus on scientific knowledge related to issues in real life and analyze phenomena from a scientific and technological point of view. Examples include learning conventional topics related to the 4 Worlds, understanding how technological objects work, identifying the effects of science and technology.'

Competency 3: Communicates in the languages used in science and technology.

'Students exchange information and communicate their scientific and technological findings. Examples include oral and written reports of lab and workshop activities, exchanges of information on analyses of impacts of scientific discoveries and other natural phenomena, research into current scientific and technological issues' (Québec Ministère de l'éducation, 2007).

PHILOSOPHY OF THE QUEBEC EDUCATION PROGRAM

This change to a competency-based curriculum has required a profound shift in the teaching and learning practices in the Science and Technology program (Brassard, 2005; Lafortune & Deaudelin, 2001). In order to cover the content prescribed in the program teachers are expected to adapt their own teaching practices to include the following (Elliott, 2011a):

1) a student-centered approach to learning,
2) project-based learning,
3) differentiated instruction to meet the needs of all learners

4) the introduction of information and communication technologies
5) a socio-constructivist approach to teaching (Lafortune & Deaudelin, 2001)
6) collegiality and cooperation among teachers
7) continuous professional development (Brassard, 2005).

Joining Science with Technology – Theoretical Directions

One of the major changes to the curriculum of the science program – and therefore a challenge for pedagogical leadership – was the introduction of technology education to prepare students for modern society (Charland, 2009). Using technology to teach science is well-researched, showing that technology-centered classrooms, can lead to effective science learning (Council of Ministers of Education, 1997; Roth, 2001; Tala, 2009). Engineering design is a key theme of QEP technology content. Many science teachers are unfamiliar with the integration of technology into the science curriculum (Capobianco, 2010). The successful implementation of the Science and Technology programs requires training and support for teachers so that they have the ability to use technology in the lab activities and present the content of the Technological World.

This has required a whole new set of initiatives in teacher professional development and ongoing teacher support – two key roles of science consultants. A ground-breaking initiative was undertaken by the science consultant attached to the English arm of the Ministry of Education, Leisure and Sport (MELS) to change the traditional professional development (PD) model used in Quebec. In this system, school board consultants had been traditionally trained centrally by MELS, and then they trained the teachers in their own boards. In interviews with the MELS representative and other science consultants, a picture emerged of a new model of professional development for science teachers. MELS formed the Science and Technology Implementation Committee (STIC), a team consisting of 4 retired, experienced science teachers. Their mandate was to create activities and deliver them directly to teachers of high school science and technology across the province. In an interview with the first author, a MELS representative explained that under the supervision of the MELS representative, they tour the province meeting teachers and giving workshops specifically to equip the teachers to implement the technology aspects of their science and technology programs. According to the MELS representative, their key to success rests with 3 main operating principles: (1) Train every teacher directly. (2) Provide them with activities which can be used immediately in the classroom. (3) Involve the teachers in the planning of the use and delivery of the activities.

LEADERSHIP CHALLENGES IN QUEBEC

There were many obstacles to the implementation of the Quebec Education Program due to a number of factors. According to Pelletier (2005), changes in curriculum in Quebec have come in waves and have often contradicted the reforms which preceded them. Ministers of Education have historically changed frequently

(approx every 16-18 months) and each one has wanted to leave his or her mark on the history of education. The many changes have included school board restructuring, school success plans and school governing boards. They have also conducted large defining events, for example, the Estates General in 1996 resulting in the INSCHAUSPE Report "Reaffirming the Mission of Our Schools" (Quebec, 1997). Throughout my career, the impression among teachers and school board administrators is that the reforms and structural changes are imposed but rarely completed resulting in confusion and anger among the people and organizations most directly affected. It then falls on the school boards and the schools themselves to translate the reforms into action. Resistance often comes from the competent, conscientious teachers and administrators who find it hard to abandon their own tried and true methods in order to embark on the unknown. The change process is complex and fraught with potential conflicts and obstacles (Fullan, 1993; Pelletier, 2005). It can be tough and exhausting. The changes in the philosophy of science teaching from the CMEC, Project 2061 and the QEP present major challenges to the leaders of change in our schools as well (Elliott, 2011b).

The challenges that teachers face can be grouped into 3 categories – content, pedagogy and confidence. What follows is a closer look at these 3 challenges.

Content: Leadership is needed to ensure that the teachers who deliver the programs are familiar and comfortable with the content of the science and technology programs. Though most teachers have content expertise in the traditional science programs, the new programs present new areas of content which must be taught. These include the following:

- Knowledge of the 4 Worlds – the scientific content of the program
- Understanding of the 3 competencies the students must develop and the level to which they must be attained at the level they are teaching.
- Knowledge of technology as it relates to the programs – engineering design, technical drawing, and real-world applications.
- Skill in evaluating the attainment of competencies.

Pedagogy: Many teachers must change their teaching methodology to conform to the requirements of the QEP science and technology programs. They need grounding in constructivist, inquiry-based teaching and learning. In the inquiry model, students are given the opportunity to conduct real science inquiries in an age-appropriate and pedagogically sound way to mimic the work of practicing scientists. As advocated by constructivists, students solve meaningful problems in the lab by exploring relationships between variables, creating models for scientific phenomena, and building technological objects for example. As in constructivist classrooms, students access prior knowledge, face cognitive dilemmas, cooperate with one another to wrestle with real problems and construct their knowledge and understanding of the scientific world. A great deal of research has being done in recent years showing the benefits and drawbacks of the inquiry-based science classroom (Anderson, 2002; Martin-Hansen, 2010; Rogers & Abell, 2008; Wilson, Taylor, Kowalski, & Carlson, 2010). The literature emphasizes the key role played by professional development in successfully implementing inquiry-based learning

and obtaining positive outcomes for science learning (Akkus, Gunel, & Hand, 2007; Buczynski & Hansen, 2010; Crawford, 2007; Wallace & Kang, 2004).

In particular teachers need to be skilful in the following:

- Teaching in such a way that guides students to develop the competencies.
- Incorporating technology into the content and classroom activities.
- Developing classroom and lab activities using a constructivist, inquiry-based methodology including:
- building on students' prior knowledge
- designing activities which have real-world meaning to the students
- building real scientific inquiry into the process
- including cooperative learning opportunities
- giving the students a real say in their own learning

Comfort Level and Confidence: The teachers are central to the success of curriculum change. The leadership challenge is twofold:

- To convince them that the change in pedagogy will bring about better learning of and interest in science among their students
- To convince them to undertake the process of reflective practice – i.e. examining their own pedagogy and changing it as needed to meet the demands of an inquiry-based/constructivist curriculum.

How school board and MELS consultants meet the challenges outlined above is the subject of this chapter.

STUDY OF LEADERSHIP IN SCIENCE EDUCATION IN QUEBEC

Methodology for This Study

The data for this study come from a number of sources. The first author spent 7 ½ years as a science consultant in the 1990s. He worked closely with the teachers of one school board and collaboratively with the science consultants across the province. Much of the hands-on insight into the leadership role of the consultant was learned from this personal experience. A second viewpoint on the leadership role of the consultant was gained from his more recent experience as Assistant Director, and then Director, of Educational Services for one of the school boards. During this period of another 7 ½ years, he supervised consultants and directed the implementation of the science programs of the Quebec Education Program. To complete the picture of the leadership activities of science consultants, interviews with science consultants of 4 different school boards as well as with the MELS representative, were conducted. The insights from these interviews helped to complete the picture.

The participants have been working as science consultants for 3 and 5 years. Individual interviews lasting from 60-75 minutes were conducted with four science consultants (three women and one man) by the first author. These semi-structured qualitative interviews focused on exploring participants' philosophy, views, and experiences. They talked about their role in program implementation, professional development, and motivation and mentoring of teachers. They discussed their

feelings about the program philosophy and content. They described their leadership role and how they overcame the many challenges and obstacles they have faced along the way. A representative of the Ministry of Education Leisure and Sport (MELS) was also interviewed to gain a deeper insight into the MELS' perspective on science education reform and the role of science leaders in making this reform a success. Among her many responsibilities, she helps the school board science consultants to understand the curriculum and its continuing modifications and coordinates exam production and province-wide professional development activities in science. She has occupied this demanding position since 2007. Qualitative analyses of the interview data allowed an in-depth exploration of participants' understandings and experiences of leadership. Coding and thematic analysis (Miles & Huberman, 1994; Strauss & Corbin, 1990) helped to organize to compare patterns within and across cases. The constant comparative method (Glaser & Strauss, 1967; Lincoln & Guba, 1985) was employed to refine and compare categories across cases.

The School Board Science Consultant

Transformational change in science education requires three levels of leadership – the school principal, the science teacher and the science consultant. The principal is responsible for the broad school-level changes as described above in the transformational leadership model. This involves creating the conditions for collaborative decision making, setting the vision and mission of the school and creating an atmosphere for teacher leadership, commitment to change, and professional growth. The teacher is the front-line change agent, responsible for implementing the reformed curriculum using a constructivist, inquiry-based pedagogy. It is the science consultant, however, who has the critical operational role in the transformational change process. This includes being content expert, professional development planner and deliverer, and teacher supporter and mentor.

Each of the nine English school boards has an educational consultant responsible for Science and Technology. While in the smaller boards, one consultant may have a number of different portfolios, in the larger boards, one consultant has this as his or her only portfolio. A common combination is math and science where the same consultant has the responsibilities of both subject areas. Consultants are usually hired from the teaching ranks and tend to be known as strong, innovative teachers among their colleagues and school administrators. They are often selected not only for their skills and dedication as a teacher, but also for their demonstrated, or perceived, leadership skills. Generally they are respected by their colleagues and have a positive influence on them. Though their salary is only slightly above that which they earned as a teacher, they take on wide-ranging responsibilities which usually require extensive time commitment and a great deal of travel to schools and meetings.

Science consultants lead curriculum change and pedagogical innovation in the schools. Those interviewed for this paper reported using a number of strategies: animating workshops, visiting classes, meeting with science teachers in schools,

giving presentations to school administrators, administering online portal communities, giving model lessons in science classes, running projects with teachers on specific topics, acting as mentor and encourager to teachers. They also lead change by many behind-the-scenes organizational activities: meeting with their counterparts in other boards, conferring with the ministry representative, participating in the preparation of evaluation instruments, advising the school lab technicians, organizing professional development opportunities for teachers, and participating in personal self-improvement opportunities. What follows is a description of some of these activities. The description and analysis of these activities is drawn partly from the interviews with consultants and from personal experience of first author, as described above.

A common feature of these activities is that, as in Model II transformational change, they foster "ground up" change and teacher buy-in. As one consultant puts it, "We have to acknowledge the reality and start where the teachers are. I have to get close to them, allow them to vent and provide them with the opportunity to see the benefits of the changes for student learning for themselves." Another pointed out that she has to let teachers know that they are valued, "Let them see that what they are already doing makes sense." In the author's experience, real change is very dependent on strong relationships with teachers. In general the Model I approach of telling teachers what to do is counterproductive. Though the teachers are constrained by the curriculum and evaluation requirements, the Model II democratic approach builds the teacher buy-in, essential for true transformational change.

SCIENCE CONSULTANTS' LEADERSHIP ACTIVITIES

Animation of Workshops

Since the beginning of the implementation of the QEP Science and Technology program in 2005, consultants have worked hard to prepare teachers for the many changes in both curriculum content and pedagogy. The consultants reported that the "one off" mass 1-day workshop is not a very effective tool to instill profound change in practice. However, if done right, workshops can be expedient venues for the rapid dissemination of curriculum details, and can be used to initiate deeper conversations in schools. One consultant reported that they are particularly useful in enabling her to inform teachers of the broad parameters of the programs – the expectations for student evaluation, the nature of the approach to hands-on activities, and the use of textbooks and other resources.

These workshops are not generally the teachers' favorite ways to spend their valuable time. Consultants have heard them complain that they could learn the curriculum details on their own – reading the course outlines, on the Web and from the textbooks. Some resent the time it takes out of their day to travel to the workshop venue and spend the time away from school – time they would prefer to use in their own personal preparations for their classes. Some veteran teachers feel

that they already know the content and methodology – that they have the experience and expertise necessary without attending the workshop.

According to two of the science consultants interviewed, despite these obstacles and objections, these large workshops have a valuable function. They bring together the science teaching community and cause teachers from different schools to communicate with one another both during the activities and over coffee and food at the breaks. One of the consultants, for example, builds communication activities into the day so that teachers can compare notes, share ideas and establish networks for future communication. She groups the teachers together and conducts introductory activities designed to facilitate cooperative learning.

Though they may begin with a PowerPoint slide show to outline the broad points they are going to cover, most consultants introduce group activities designed to have the teachers explore the key aspects of the programs. By varying their activities between large common presentations and cooperative group activities they encourage maximum participation, lots of exchanges among teachers and can inject fun into the process.

One example of one such workshop day occurred on a professional day in February in the school year just preceding the compulsory implementation of the Quebec Education Program (QEP) in senior high school – Secondary 3. All teachers in all subjects were required to spend the day at a large high school to learn about the QEP in general and their subject areas in particular. The director of the Educational Services Department at the school board (and co-author of this paper) began the day with a welcoming presentation in the school Auditorium. This consisted of a PowerPoint presentation of the QEP – the structural and pedagogical changes – and the implications for teaching and evaluation practices. This was deliberately kept short and informative. The aim was not only to inform, but also to have the teachers understand that the implementation was doable and in the best interests of student learning. Following the presentation (and after a coffee and muffin break) teachers joined the consultants in their subject areas. The science consultant, building on relationships she had forged with the teachers over the few years she had been in this position, gave a brief presentation of the science curriculum and had the teachers study different aspects of the program to look for areas of familiarity and areas of concern to be shared with their group and finally with the large group of teachers.

Had this been the only workshop before the implementation, it would have been a very inadequate preparation for the teachers. Why it was effective was that it was the first in a series of professional development opportunities for teachers to prepare them for the curriculum change to come. The consultants organized more workshops as the implementation date came closer. They also organized meetings with teacher teams in their own schools, set up online resources to support teachers, initiated projects to develop teaching resources, and had continuous conversations with teachers on a less formal basis in schools, by email, over the phone, etc.

Meetings with Teachers

Science consultants recognize the importance of forming relationships with their teachers. It is clear to them that positive personal relationships enhance their ability to influence what goes on in the science classroom. They recognize that every teacher goes through ups and downs and they need encouragement to see that their efforts are helping their students learn better. By working with teachers to solve classroom problems, to provide classroom resources, to support with teaching ideas, consultants build trust. This trust allows them into the teacher's confidence and permits them to become part of the teachers' school lives. As one consultant points out, "You can't lead from the office. You have to be present in the schools." Consultants often meet with science teachers in their schools. Typically this occurs in the teachers' science workroom or lab during free time – a lunch hour, before school or on a professional development day for example. Usually the topic for discussion is a problem or situation which the science team faces and for which they need input from the trusted expert.

One consultant illustrated the transformative potential of direct discussions with teachers with the following story. The science staff from one school needed some help organizing evaluation situations – end-of-term exams – for report card marks. The school had been receiving complaints from many parents that different teachers were giving different exams and they felt that this wasn't fair to the students. The teachers and the principal invited the consultant to sit in on a meeting to discuss possible solutions. She recognized that the real problem stemmed from the fact that the teachers did not plan their courses together, resulting in the fact that they were all at different places in the curriculum at any given time. Therefore, it was impractical to give common assessments because they couldn't test the same material. Armed with examples of evaluation instruments (tests) from different schools and other ideas from her own experience, she showed them what quality assessments could look like, all the while valuing the good work that they were all doing, albeit at their own pace. She didn't tell them to work together, but it became obvious to them, after one or two meetings, that they had to. This was a transformative discovery. Through her hands-on work with the teachers on a subject which they felt was important to them, their practice changed. They continued to meet on a regular basis, at first with her, to create a common curriculum map. This led to common activities in the classroom and lab, and finally to common evaluations. They also realized that they had to continue to meet and discuss the common curriculum map on a regular basis. As the consultant involved explained, "This project changed the culture of the science department of the school and teachers realized how much fun it is to work together."

Not all meetings with teachers are to solve fundamental problems which need long-term solutions. Some are just to touch base and get to know one another. Others are to discuss with one grade level how to tackle a particular curriculum topic. Still others might be to create a Learning and Evaluation Situation (LES) for a particular topic area. One consultant described her visiting process. "I focus on 3 schools only and I visit them a lot. In the first session we usually work on

curriculum mapping. The next times we meet we discuss what worked well and share suggestions." In describing her main message when she visits science teachers, she explains, "My job is not to be a salesperson for the Quebec Education Program. My job is to be a salesperson for student success."

Providing Online Teaching Resources to Teachers

Management of Online Portal Communities: In today's digital world it is very important for consultants to have an active presence online – a Portal – to keep teachers up to date with the latest information regarding curriculum and evaluation, to provide up-to-the-minute teaching resources and to have an active venue for them to share ideas with each other. One portal, which is typical of many others, has teachers begin on a welcome page with announcements of interest to them. It has clickable links on the top of the page to lead them to the following:

> QEP-MELS: Curriculum documents of the official ministry Science and Technology Programs; Progression of Learning; Scales of Competency levels for evaluation.
>
> Evaluation and Exams Info: Frameworks for the evaluation of learning; Sample Rubrics; Exam Information; Formula Sheets for Exams; Updates from your Consultant
>
> SciTech Info: General vs Applied info; Textbook Information; Science Fair Information
>
> Resources: Downloadable exams, Learning and Evaluation Situations, Evaluation Situations, Learning Activities, Workshops – all organized by grade and cycle level.
>
> Web Links: Websites for organizations with learning materials of interest to teachers – organized by applicability to each of the 4 Worlds in the curriculum – Technological World, Living World, Earth and Space, Material World
>
> Lab Techs: A site designed for lab technicians. Chemicals; Safety in the Lab and Workshops; List of Lab Techs
>
> Professional Development: Local and International professional development opportunities. McGill CEL Seminars; Major Conferences; Professional Associations; On the Web
>
> Members: A list, with email addresses, of all members of the community of Science and Technology teachers, technicians and others

Participation in MaST – The Committee of Math and Science and Technology Consultants

Transformational change in science education requires consultants to be well versed in the process of Model II change. They can't do it alone. They have a difficult, complex and time-consuming job. Though they interact with many people on a regular basis, they are isolated in their consulting role at their respective school boards. For the most part, they have to define their own job, establish their own priorities, set their own schedules, and manage their own time. They realize, however, that networking with other consultants is very important to their success. Not only do they provide each other with moral support – encouragement, validation and friendship – they also need each other for other reasons:

- To keep on top of the latest information from the ministry (MELS)
- To plan and produce evaluation instruments (exams – lab and theory) for all boards to use
- To share teaching resources for use in classrooms across the province
- To share understandings on curriculum and evaluation issues
- To plan and carry out professional development activities for teachers
- To share ideas on laboratory activities and safety issues

All of the science consultants belong to MaST, a subcommittee of the Directors of English Education Network (DEEN). MaST is an acronym for the committee of math and science and technology consultants of the English school boards of Quebec. Though the school board consultants are the only official members of MaST, other people play a very important role as well. A DEEN representative who is a director of the Education Services Department of one of the boards attends all meetings in a quasi-supervisory capacity, ensuring that MaST activities and initiatives fit in with the policies and decisions of the school boards.

A MELS representative provides MaST with the important liaison with the ministry and is the source of information regarding MELS initiatives and the all-too-frequent changes in curriculum and evaluation policies emanating from Quebec. She has a particularly close relationship with the MaST consultants. With a background in science teaching leadership in both the public and privates sectors, she came to the ministry with a great deal of knowledge and enthusiasm for the QEP science and technology programs. She helps them navigate through the complex series of requirements and changes. She describes her leadership mission as twofold:

a) "To take the decisions of the ministry's political people and make them work for kids."
b) "to aid MaST in their job to provide resources for teachers so that classrooms can be interesting challenging places for students to learn."

MaST provides the consultants with the support group that they need for professional discussions and personal support. They meet once a month at one of the Montreal-area boards and spend the day working intensively on their issues of

concern. The math consultants and science consultants meet separately at different times of the day since a number of them have responsibilities in both areas. The consultants also maintain an email listserv whereby they exchange emails on MaST-related science issues for all members to see. What follows is a list of the issues which take up most of the time and energy of the MaST members (in order of time spent). It comes from the first author's experience as director responsible for MaST and from discussions and the interviews with the science consultants:

- Exam planning and production
- Professional development
- Teacher resources
- Curriculum and evaluation
- Role of MaST
- Student activities (eg fairs and competitions)

Exam planning and production: This is the activity which receives by far the most attention by science consultants in their role as MaST members. MaST is given the mandate to produce science and technology exams for English high schools at various grade levels. This is a very time-consuming operation for the consultants, not only for the time it takes up at MaST meetings and email conversations, but, more importantly, for the enormous effort it takes each one to organize and produce his or her assigned exams. The exam production process does however have important benefits. Consultants are well aware of the fact that evaluation drives pedagogy. By controlling the evaluation instruments, consultants gain a measure of control over what goes on in the classroom. Teachers are strongly motivated to deliver the curriculum as prescribed in the program when they see that student success on the evaluation instruments depends on it. A second benefit of this involvement in exam production arises from the process of using teachers to write the questions. This has an important professional development side effect of enabling the teachers to gain a deeper understanding of the curriculum and course content by writing and editing the exam.

Professional development: Professional development (PD) of both teachers and consultants is the second-most discussed topic. This is an area where consultants feel very comfortable and fulfilled as this is where they feel there time is very well spent. Since the science and technology programs of the QEP are still quite new to most teachers, PD is given a high priority among science consultants. MaST is very involved with STIC (described above) workshop guidance and the preparation of the now-annual STEM symposium in June.

Teacher resources: Sharing of resources for teachers is another popular activity of MaST members. The science consultants are considered experts in the development of resources, their links to curriculum and how they are best used in the classroom. They are involved with the dissemination of activities, LESs and projects prepared by teachers and consultants using their portals. Consultants manage the dissemination of teacher-prepared science activities using communities on their portals as described above.

MaST is also involved with LEARN Quebec – an organization which produces a great deal of teacher materials. LEARN Quebec is an organization funded by the

federal government specifically to provide teaching resources to the minority language English education sector in Quebec. A representative from LEARN comes to all the MaST meetings and reports on the activities of LEARN as they relate to the production of teacher materials in math and science.

The LEARN website has a vast array of resources for teachers, students, parents and administrators. Clicking on the "Course Materials" tab and selecting "Science Programs, for example, gives teachers access to materials for every QEP science and technology program. If a teacher chooses Cycle 2, Year 2 AST, for example, she will find all topics in the 4 Worlds ready for presentation to students. This includes the information required to cover all topics, PowerPoints to show in class, links to videos and other Internet resources and suggested activities to do in class.
Curriculum and evaluation: Leading pedagogical change is one of the principal goals of MaST. Consultants complain that the overwhelming need of exam production often distracts them from working on pedagogy with their teachers. However curriculum and evaluation discussions do occur at MaST and help consultants keep up to date in their understandings of pedagogy-related issues.

Role of MaST: For an organization to remain vibrant and relevant, it must spend time reflecting on its mission and goals. MaST is annually prompted by DEEN to define its "SMART goals." (SMART is an acronym for Strategic, Measurable, Attainable, Realistic and Timely.) MaST members also spend time on deciding how best to use organize their meetings so as to make the most of their precious time.

Student Activities (eg fairs and competitions): This final category of MaST activities refers to the science consultants' support and encouragement for the science fair and robotics competitions offered to Quebec students. MaST members often take active roles in these activities.

CONCLUSION

We have described four of the major roles of science consultants. It is clear in these many and varied functions that there is one main goal – to work with teachers to improve student success in Science and Technology. What is transformative about their leadership is that to improve student success requires change in teacher practice. The QEP Science and Technology curriculum reform necessities that teachers must teach a new curriculum; they must adapt their teaching methodology to a more constructivist pedagogy; they must introduce technology and engineering design into their activities; and they must do all this in an atmosphere of changing parameters for evaluation and reporting. Consultants who participated in this study lead this change, maintain teacher enthusiasm, and build teacher ability and confidence.

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MARIO M. MARTINEZ-GARZA AND DOUGLAS B. CLARK

8. TEACHERS AND TEACHING IN GAME-BASED LEARNING THEORY AND PRACTICE

INTRODUCTION

Digital games are an influential and ubiquitous presence in the lives of young learners. A 2008 study by the Pew Internet and American Life Project found that 97% of teens ages 12-17 play video games, and 50% of them report daily or nearly daily play (Lenhart, Jones, Macgill, & Pew Internet & American Life Project, 2008). With increasing access to computers, consoles, and cell phones, young people are finding that opportunities for gaming are everywhere. The emergence of video gaming as an important leisure activity among young people was accompanied by a concerted effort by psychologists and sociologists to discover whether or not video gaming is a harmful activity for children. Not all research, however, has cast video games in a negative light. In particular, educational researchers are increasingly interested in the positive effects of gaming. In fact, a growing body of evidence indicates that video games can be powerful vehicles for learning. Numerous studies have linked classroom use of learning games with increased learning outcomes and improvement in students' conceptual understanding, engagement, and self-efficacy.

Educators who want to include video games in their classroom activities, however, may find themselves facing significant obstacles. On one hand, game-based learning contains at its core several assumptions about teaching and learning that differ, or even run counter, to the everyday business of classrooms. Educators may feel unsupported in using games for learning, unsure about which games to use and how to use them, or they may feel they lack the knowledge or gaming experience to guide their students effectively in this activity.

Our goal in writing this chapter is to help educators create effective strategies for implementing game-based learning activities into their classroom practice. While educational gaming presents some elements of practice that are shared with other classroom uses of technology, educational gaming also presents some unique circumstances and opportunities that research has only recently begun to address. We will present some examples from the literature that illustrate the type of personal, technological, and structural resources that teachers need to use games effectively in their classrooms, and outline some of the potential advantages to building partnerships between teachers and researchers and creators of educational games.

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RESEARCH ON GAMES AND LEARNING

Investigation into the use of games for learning has grown from a small niche area to a major focus of research over the past decade (e.g., Clark, Nelson, Sengupta, & D'Angelo, 2009; Dieterle, 2010; Honey et al., 2011). In 2006, the Federation of American Scientists issued a widely publicized report stating their belief that games offer a powerful new tool to support education and encouraging governmental and private organizational support to increase funded research into the application of complex gaming environments for learning (FAS, 2006). In 2009, a special issue of *Science* (Hines, Jasny, & Mervis, 2009) echoed and expanded this call. Mayo (2009) characterized video games in that issue of Science as "capable of delivering [science, technology, engineering and mathematics] instruction to millions" (p. 79).

A complete overview of the development and progress of game-based learning is outside the scope of this review. By way of a historical summary, we can say that research into games for learning grows out of earlier work on simulations, and thus inherits the theoretical focus on Piagetian notions of knowledge construction and experiential learning that has pervaded much research on simulations, (e.g. Papert & Harel, 1991). As computer games became nearly ubiquitous in the 1980s, gaming became a major cultural activity among young people in the United States, Europe, and Japan. While sociologists and behavioral psychologists began to conduct research on gamers as early as the late '70s, it was not until the early '90s that gaming attracted significant attention from educational researchers.

Both learning and games, according to Shaffer, Squire, Halverson and Gee (2005), "are transformative activities that are most powerful when they are personally meaningful, experiential, social, and epistemological all at the same time" (pp. 105). Shaffer, Squire, Halverson and Gee describe an effective and empowering mode of learning that, while highly sought-after in formal educational settings, is ubiquitous in video games. Squire (2003, 2007) and Gee (2007) have continued to argue persuasively in favor of the unique affordances of video games as learning tools: capable of erasing barriers to learning, making knowledge accessible and personally relevant to the learner, fostering communities of learning and, in short, framing video games as "the future of learning" (Shaffer et al., 2007, p. 108).

In two widely-cited works, James Paul Gee (2004, 2007) developed these ideas further, and in so doing, thoroughly grounded the discussion around games within the major theories of learning. On the subject of situated and embodied understanding, for example, Gee connects game-based learning to the work of George Lakoff, Jean Lave and Etienne Wenger, Michael Tomasello and William Clancey. These works by Gee and Shaffer et al. have drawn a theoretical frame for games for learning that later research has largely agreed upon. This frame is supported around four core beliefs:

c) Games engage students in ways that normal school activities do not.
d) Games privilege experiential learning, i.e. students learn by doing.
e) Games promote identity-construction and self-efficacy

f) Games provide opportunities for collaboration and participation in semiotic domains (Gee, 2004).

This theoretical frame has been expanded by later scholarship and connected to other works. It is now largely accepted that games make it possible for learners to develop situated understanding, that is, a form of learning that is a product of activity and the context in which the learning is used (Lave & Wenger, 1991). In this regard, games afford a broad range of contexts and variants of activity that would be otherwise inaccessible to learners, such as city planning in the game *SimCity*. Games also promote content-grounded discussion among learners (Steinkuehler & Chmiel, 2006), in which the game acts as a touchstone for inquiry and rich discussion. Learners also benefit from the creative and generative control that games allow, fostering development of their identities and self-efficacy (Ketelhut, 2007; Pelletier, 2008). These benefits work together to help students engage with complex concepts and systems, and this engagement has an epistemic character, i.e., it enables learners to observe and preserve the links between knowing and doing (Shaffer, 2006).

Compared to more established areas of educational research, inquiry into game-based learning is a new endeavor, one that has only come into its own in the last decade. For the most part, researchers in the field are focusing their efforts on characterizing, producing, and assessing student learning and connecting these effects to decisions about game design as a means to bring validity and attention to the research agenda as a whole. Because of the urgency in establishing this validity, and also due to theoretical commitments outlined later, research in game-based learning currently has much to say about learners and the process of learning but not as much about teachers and the process of teaching. Since it is assumed that the efficacy of game-based learning is largely determined by the design principles that govern the way in which a particular game is built, and not by teacher action or the context of the classroom, research questions about game-based learning lend themselves to a process-product research paradigm (cf. Shulman, 1986) in which the focus is on the variables of change (i.e., the game and the player).

With that in mind, we will briefly review the literature on technology use in the classroom with a focus on the resources and constraints that may affect teachers' attitudes and beliefs towards game-based learning. We will also identify some tensions and limitations that operate specifically on educational gaming in the classroom in which the teacher has influence. We will then review some of the game-based learning literature that has, directly or indirectly, articulated a role for teachers or achieved an empirical description of teacher action within a game-based learning context. Finally, we will draw from these agreements and from theoretical work (that is based both on game-based learning and on new scholarship on the psychology of games) an expanded role for teachers within the practice of game-based learning. Our goal is not only to address the tensions, both theoretical and practical, of teaching with games, but also to propose forms of collaboration between creators of educational games and teachers. We see these collaborations as a key element in increasing the presence of games for learning in

classrooms, and making games a more effective, fruitful and productive part of teaching practice.

Teachers' Beliefs and Attitudes towards Technology

In some sense, the issues regarding game-based learning in the classroom can be understood in the greater context of teachers' use of technology, which has been studied extensively. It is likely that teachers' attitudes and beliefs about gaming will be informed to some degree by their relationship with information technology and computer-based learning activities.

Current thinking on teacher preparation stresses the importance of developing knowledge, skills, and dispositions to incorporate technology effectively into their students' lives (National Council for Accreditation of Teacher Education, 1997). However, teachers themselves can be a nucleus of sustained resistance to the use of technology. Mumtaz (2000) found that teachers' use of computer technology can be limited by a variety of causes, including personal and psychological factors attributable to teachers themselves. That said, teacher education programs generally do not train their students in the latest developments in educational technology (Sprague, 2004). According to Moursund and Bielefeldt's 1999 report for the Milken Exchange on Education Technology, "teacher-training programs do not provide future teachers with the kinds of experiences necessary to use technology effectively in the classroom." (p. 4) So while teachers' individual styles, preferences, and experience is doubtless influential in the amount or kinds of technology used in classrooms, there is also a significant gap in the preparation that teachers receive to help them use technology to support their practice.

However, it may be that teachers' use of technology responds not only to attitudes or lack of training, but rather to the absence of a robust, convincing classroom application of technology (i.e., a "killer app"). For example, Russell, Bebell, O'Dwyer, & O'Connor (2003) provide a comprehensive view of the use of technology by teachers. In a large-scale survey, they observed that teachers generally use technology more for preparation and communication than for delivering instruction or assigning learning activities. This finding suggests that teachers largely do not have a readily-accessible "toolbox" of computer-based tools to support their classroom practice. Conversely, teachers who do have technological tools at their disposal tend to be more convinced of their value in supporting learning. Russell et al. (2003) found that by far the strongest predictor was belief in the importance of technology. Among teachers who used technology for delivery (the form of use that is most resonant to game-based learning), Russell and colleagues found that confidence in one's own skill with technology was an important factor in determining the quantity and quality of technology use among teachers, and that correlations exist between positive perceptions of access to technology, higher personal confidence in their ability to use technology, and beliefs of the importance of teacher-directed computer use in the classroom, along with the previously mentioned belief in the importance of technology for teaching. Russell and colleagues also note that there is a trend among newer-minted teachers

(those with one to five years in service) to exhibit greater confidence in technology use, more positive beliefs about student-centered teaching practices, and more openness to the value of technological tools for teaching, regardless of whether or not they have access to them in their everyday practice.

This last finding, suggesting a uniform acceptance in principle of the value of technology for teaching, coupled with an almost generational divide between teachers who are more receptive and assertive in using technology and those who are not, resonates with the distinction made in Prensky (2001) between what he terms "digital natives" and "digital immigrants." The former are defined as "native speakers" of the digital language of computers, video games, and the Internet. The latter are those who adopted and accepted these elements of technology but have largely been educated and socialized in a pre-computerized way. Prensky's argument was made at a time when adoption of technology, while prevalent in other settings, was far from universal in schools. The distinction made may be more relevant now than in 2001. Not only are most students "digital natives," but that their more newly-tenured teachers may be as well. Because of this, teachers and students share not only beliefs about the value and use of technology, but also the cognitive skills (e.g., rapid information processing, multi-tasking, and collaboration), modes of communication and media-participation habits of "digital natives." Whether or not this common ground may support game-based learning implementations is a question we will address in the following section.

These findings, taken together, support a view that if teacher preparation programs are not doing enough to encourage technology use by teachers, then such use is likely to be a result of teacher beliefs and experiences acquired from their personal experiences. Teachers who make productive use of technology in the classroom may not see technology as a teaching tool specifically (i.e., a tool that is defined and circumscribed by their professional activities as teachers), but rather as a kind of "life tool," whose affordances and benefits cross contexts and find applications whatever the nature of the activity may be.

Teacher-Centered and Organizational Tensions with Games

Moving beyond general research on teachers and technology, theoretical work on games generally agrees that the theories of learning embedded in games often run counter to the social organization of schooling (e.g., Gee, 2003/2007). This section reviews some of these tensions between school organization and game-based learning. Schools have thus far moved slowly to embrace game-based learning. Compared with established computerized learning environments such as *WISE* and *NetLogo*, games for learning hold a small share of classroom technology time. Some research has explored the sources of resistance to increasing game-based learning in schools. This research generally focuses on (a) teachers and the teaching activity and specific relationships to game-based learning or (b) tensions between gaming and the organizational contexts of schools.

Teachers, Teaching, and Games

Simpson & Stansberry (2009) identified several barriers to efforts by teachers to bring games into their classrooms. Chief among these barriers are (a) the underdeveloped state of theory on facilitating learning through video games and (b) the lack of familiarity most teachers have with digital games. In this regard, researchers need to do more to articulate theories of game-based learning that resonate with teachers and are amenable to classroom implementation. Along these lines, Kirriemuir and McFarlane's (2004) survey of teachers, curriculum, and technology experts found that teachers:

- face challenges in determining which games are suitable for learning purposes
- feel that they lack the time and skill to familiarize themselves with the games
- feel that games largely do not provide adequate support and assessment materials
- feel unsupported in using games in classrooms in terms of available technological infrastructure.

Ertzberger (2009) reached similar conclusions after surveying 390 in-service and pre-service teachers. Ertzberger wrote that teachers are deterred from using games as learning tools, citing the lack of relevance to the curriculum and lack of available technological resources.

ORGANIZATIONAL CONTEXTS AND GAMES

A second source of tension appears in the literature regarding game-based learning and the tensions and conflicts it can cause within schools. Gaming is, by its open-ended and dynamic nature, an activity that runs counter to some established views of schooling, which stress orderly progress towards pedagogically significant goals (Gee, 2007). Several authors have defined this tension in terms of (a) teachers' sense of academic accountability, (b) issues of organization of time, and (c) availability of technology resources and support.

With regards to teachers' sense of academic accountability, Kirriemuir and McFarlane explain that "it is difficult for teachers to identify quickly how a particular game was relevant to some component of the statutory curriculum, as well as the accuracy and appropriateness of the content within the game" (Kirriemuir & McFarlane, 2004, p. 18). Simpson and Stansberry (2009) build on this idea, explaining that "if teachers have not prepared the students to be able to respond to very specific knowledge based content driven assessments, the school and their jobs could be in jeopardy. Video games are viewed by teachers as being an 'unknown'" (p. 169). In these senses, teachers often perceive conflict between gaming as an activity that is productive for learning and the standards to which they and their students are accountable.

In terms of issues of organization of time, "the most frequently encountered perceived or actual obstacles were […] the lack of time available to teachers to familiarize themselves with the game" (Kirriemuir & McFarlane, 2004, p. 3). As Sanford and colleagues explain:

> Many teachers found the fixed length of lessons to be constraining in both the planning and implementation of games-based learning in schools. In part, this seemed to be a result of the novelty of the activity: teachers were unsure how much time an activity might take, and several expressed confidence that if they were to try similar activities again they would be able to manage classroom time more effectively. The fact that the available time was fixed meant that the impact of any technical issues (loading times, crashes, etc.) was more keenly felt than might have been the case had there been more flexibility in the timetable. (Sanford, Ulicsak, Facer, & Rudd, 2006, p. 23)

Thus time constraints, costs, and unknowns also represent significant barriers for teachers in integrating game-based learning into their teaching.

In terms of availability of technology resources and support, "59% of all teachers would be willing to consider using such games in the future [but] 49% believed that there would be a lack of access to equipment capable of running the games" (Sanford, Ulicsak, Facer, & Rudd, 2006, p. 16). Similarly, the 390 teachers surveyed by Ertzberger "indicated the biggest deterrents to the use of video games were […] lack of the needed technology" (Ertzberger, 2009, p. xx)

SUMMARY: TEACHER-CENTERED AND ORGANIZATIONAL TENSIONS WITH GAMES

Game-based learning initiatives have yet to achieve any level of wide-scale implementation, partly due to underlying tensions between the activity framework of game-based learning and the organizational constraints perceived by teachers, as well as the practical realities of everyday school activity. The literature is more articulate on limitations expressed by teachers, indicating that there may be an element or assumption of game-based learning that teachers do not fully accept. At least part of these limitations may originate with the nature of educational gaming as a computer-centered activity, and so it may be understood in the more general terms of how teachers prepare, plan for, and evaluate the use of technological tools for learning. However, another possible explanation, which we will explore in the next section, is that researchers and designers of games for learning have generally not articulated or communicated a role for teachers in educational gaming. Without a guiding narrative of how they "fit in" to the activity, teachers may feel particularly unneeded or unprepared to play a role in their students' learning.

Underspecified Role for Teachers in Game-Based Learning Practices

The effect of these barriers to integrating teaching and games for learning is thus exacerbated by the fact that the literature and research on game-based learning does not clearly articulate a position for the teacher in the classroom. Without a clear narrative of what they can do to improve the design and facilitate the implementation of educational games, teachers may understandably feel

unsupported in providing guidance, feedback, and scaffolding to their students in order to maximize the learning benefit of games.

Generally speaking, literature on games for learning features two theoretical positions that may imply, either directly or indirectly, that there is no need to articulate a role for teachers in their frameworks. First, games engage learners in a way that is directly experiential. The designer and the developers of the game have created the experience and encoded the curriculum, and the students' actions, attitudes and motivation are what drive learning. This limited perspective by designers and developers does not recognize the critical intermediation of the teacher in facilitating learning in the classroom.

Second, as alluded to earlier, games reify forms and ways of learning that are largely incompatible with schooling as it is currently conceived. Teaching, in the model proposed by the prevailing paradigm of schooling, is characterized as an activity likewise incompatible with games for learning (Shaffer et al., 2005; Squire, 2005). Proponents note that students learning with educational games are placed in a central, active role in the learning activity to such a degree that the activity, in fact, cannot proceed without the full participation of the learner. This complete engagement hinges on the fact that players of video games enjoy a large degree of freedom and agency to play the game on their own terms. Gamers set their own goals and standards of performance, advance at their own pace, and add a highly individualized interpretation and meaning to the experience of play. The contrast between this description and the pervasive vision of the state of affairs in the typical classroom is constructed by some games and digital media researchers as a critique of established modes of school (Prensky, 2005; Shaffer, Squire, Halverson, & Gee, 2004)

In our view, the assumption that underpins both of these positions is that games and schools are largely inflexible cultural forms that supposedly exist in natural opposition to each other on the subject of teaching and learning. It is not uncommon for teachers, administrators, and policy-makers to hold the view that video games are an oppositional force to learning, and some proponents of educational gaming are very critical of formal schooling. For example, the highly-influential game designer Chris Crawford wrote,

> Games are … the most ancient and time-honored vehicle for education. They are the original educational technology, the natural one, having received the seal of approval of natural selection. We don't see mother lions lecturing cubs at the chalkboard; we don't see senior lions writing their memoirs for posterity. In light of this, the question, 'Can games have educational value?' becomes absurd. It is not games but schools that are the newfangled notion, the untested fad, the violator of tradition. Game-playing is a vital educational function for any creature capable of learning. (Crawford, 1984, p. 16)

Crawford's position, while phrased in strong terms, is generally echoed by the literature. Researchers such as Squire (1995), for example, have emphasized the limiting nature of school as a cultural form that would seek to include games. "As challenging as it is to design a good educational game," Squire writes, "it may be

more challenging to design a good educational system for educational games to flourish in. […] Our contemporary educational systems do not know how to sustain a curricular innovation built on the properties that make games compelling" (Squire, 1995, p. 6). Thus, if teachers' roles are defined as the embodied presence and spokesperson for the traditional cultural form of school, they are positioned as a natural nucleus of resistance to game-based learning initiatives.

However, it is clear that these perspectives, whether based on received cultural forms or arguments based on theories of learning, are neither necessarily accurate nor constructive. We believe that games, like all forms of classroom activity, must articulate the role of teachers and leverage their expertise to maximize learning opportunities for students. The teacher is the ideal flexible interface between the cultures of schooling and games, capable of modulating and aligning the affordances and structures of each. Teachers are invaluable organizational resources. They are the principal proponents of classroom initiatives that feature learning games and a critical resource for guidance and support for other teachers (Kirriemuir & McFarlane, 2004).

Some proposals in the literature describe such a role for teachers, while maintaining the focus of inquiry squarely on the interactions between the learner and the game. For example, Wilson (2009), writing from the perspective of the software industry and their interest in increasing the use of games and simulations in the classroom, envisions a central role for teachers that strongly emphasizes a "guide on the side" pedagogy. According to Wilson, a teacher can prepare students with the necessary background knowledge, intervene with advice during play, and guide reflective conversation after play about what students learned and how it can be applied elsewhere. Halverson (2005) casts teachers in a dual role: (a) as expert gamers who can facilitate gaming experiences for students and (b) as guides to enable reframing of game-content into forms which align with the curriculum. Becker (2007) envisions teachers as both careful critics of games and capable gamers. In Becker's format, the teacher's selection, discussion, and framing of particular games to reach curriculum goals is a form of instructional design. The effectiveness of each proposed role and how each role affects the teacher-perceived barriers to the inclusion of games in the classroom has not been addressed by the literature.

Reform perspectives on science learning stress the fact that teachers have a central role in student learning even when the tools that support that learning have their own embedded forms of guidance. For example, the influential NRC report *Taking Science to School*, states that software tools (e.g. simulations or games) "offer useful structure to student learning activities, but they cannot dictate learning. The teacher plays a critical role in realizing these designs" (Duschl, Schweingruber, & Shouse, 2007, p. 268). Although games might appear to be rigidly prescribed, with no classroom adaptation necessary or even possible, the teacher's skill and understanding of her students are critical in establishing the success of the activity. The teacher, not the software, can orchestrate discussion, help students form and test hypotheses, guide students in forming explanations and organizing evidence, and integrate multiple strands of activity into coherent

learning outcomes. As with any classroom activity, the ultimate potential of educational gaming is profoundly shaped by teachers and their beliefs, talents, and perspectives.

The "Missing Link": Teachers' Identification as Gamers and Makers of Games

We will now advance our own proposals for how teachers and schools can connect with designers and researchers of educational games in order to gain a more productive understanding of each other's potential to increase student learning. Up to this point, we have based our analysis on arguments and evidence presented in the research literature on educational technology, teaching, and games for learning. We identified the divisions and places of tension; our goal is now to explore ways in which these might be resolved. What roles or constructs might better connect educational gaming with teachers and classroom practice?

One possible answer may be reached by extending the distinction by Prensky of "digital natives" versus "digital immigrants." This distinction touches on dual issues of identity and teaching capacity. "Digital immigrant" teachers may have fewer resources to leverage digital games for learning, whereas "digital native" teachers may have more evolved experiences and vocabularies to connect gaming with their professional practice. Very little published research directly addresses this hypothesis. Schrader, Zheng, and Young's (2006) survey of 203 pre-service teachers found that most of the pre-service teachers had played video games. More than half of the teachers surveyed played video games with some frequency, but most respondents stopped short of identifying themselves as gamers. Shrader and colleagues also found that the pre-service teachers they sampled were generally positive about using video games as learning contexts. Shrader and colleagues do not claim a causal link between the teachers' game playing experience and their generally positive attitudes toward games for learning, but it seems reasonable to assume that the pre-service teachers' own affinity for games may have contributed in some measure to their positive attitudes toward games for learning. However the converse, i.e., that positive attitudes towards educational gaming leads teachers to play more video games in their personal time, may not be true. In his dissertation work, James (2007) found no significant difference between teachers who are gamers and those who are not in measures of overall instructional technology usage, overall participation in innovative teaching strategies, and overall comfort in completing job-related technology tasks. This finding suggests that the "gamer" component of identity is not a necessary component of the "digital native" identity. It follows from these two findings that, while all gamers are "digital natives," not all "digital natives" are gamers.

Having established this separation, we must ask what the gamer-identity affords that the more general "digital native" identity does not? Are there specific practices that can be traced back to teachers who identify as gamers, or particular beliefs that may or may not inform practice? No study that we could locate provides an answer to this question, although some inferences may be made from the reviewed literature. For instance, some synergy exists between Halverson's (2005) vision of

a teacher as a "master gamer" and the view expressed by Kafai, Franke, Ching and Shih (1998) that teachers benefit from the design of games for learning. Kafai et al. studied a group of 16 pre-service teachers as they participated in game-design activities, where the product was a game that would help students to learn fractions. Kafai et al. observed that, as they became more familiar with the processes and constraints of game design, the games that the teachers created became more content-integrated (i.e., fraction content and game material were more closely tied together), and contained more of the teachers' knowledge of the development of children's thinking. Kafai and colleagues' study contains no information as to whether these games were more effective at helping students learn fractions, but the authors point to Loef's (1991) findings that teachers were more successful when their practice integrated both the content and their own knowledge of the development of children's mathematical thinking. Thus, game design can be seen as an activity that can drive sophisticated reasoning by teachers about student learning, and ultimately empower their practice. These findings also serve to link game design with the greater framework of pedagogical content knowledge (PCK) proposed by Shulman (1987), which conceives the teaching process as grounded precisely in these forms of knowledge that integrate both content and understanding of the students' learning processes.

There have been several efforts to place the tools and know-how of educational hands directly in the hands of teachers, and the results are encouraging. For example, Annetta, Mangrum, Holmes, Collazzo and Cheng (2009) observed positive learning out comes for fifth-graders when playing *Dr. Friction*, a game designed to support a unit on simple machines. *Dr. Friction* is notable because it was created entirely by the classroom teacher. This game was created as part of the HI FIVES project, in which teachers were trained in the use of a game creation toolkit that was especially designed for users without any knowledge of programming or computer graphics design (Annetta, 2008). Another HI FIVES game, *The stolen fortune of I.M. Megabucks*, was found to help high school students develop 21st-century skills (i.e., digital literacy, inventive thinking, effective communication, and high productivity), and even helped improve the teacher's design (Annetta, Cheng, & Holmes, 2010). One important thing to note in these examples is that the teacher, as the designer and principal creator of the game, enjoyed a position within the classroom gaming activity that was central, active, and prestigious. The teacher/game designer was intimately familiar with the game, could answer students' questions about its workings and guide them when they encountered difficulty, and could directly guide interaction and discussion about the game's subject material.

Other potential benefits may exist in this hybrid "teacher/game designer" form of participation. Not only could the specific knowledge that teachers possess about students' thinking and learning be built into a learning game, but also the specific knowledge about curriculum focus, assessment needs, and time constraints that influence their particular context. Educational game designers and researchers will find great value in partnering with teachers to help craft game-based learning initiatives. Teachers bring perspective and real-world experience that is difficult for

non-teachers to access. In our own work, we have often relied on teachers not just for access to their classrooms so we can conduct our research, but also for their extensive experience and wisdom in terms of assessment, curriculum priorities, technological needs and limitations, and the current sociopolitical climate surrounding public education. Our experience with these collaborations has been uniformly positive and fruitful, and so we are constantly looking for ways to include our teacher advisors into the design and iteration process. As this form of collaboration becomes more commonplace, we believe it has strong potential to address, and perhaps successfully navigate, the issues of accountability described in Kirriemuir & McFarlane (2004) and of curricular relevance concern expressed by Ertzberger (2009), as the assumptions and priorities that are encoded in game design would be in the hands of teachers in their classrooms.

On another level, it can be said that the capacities of a game designer are, in fact, of great value to the practice of teaching, even in systems of activity that are not computer-based. For example, an approach to instruction that is informed by game design would be more interactive, learner-centered, collaborative and engaging; assessment, classroom management, and participation are all elements of classroom practice that could be inlaid with game elements to improve their efficacy. This process of "gamification" of school processes is advocated by McGonigal (2011) in her recent book *Reality is Broken*. McGonigal suggests that games are a unique way to structure experience and provoke positive emotion, to inspire participation, and to motivate hard work; these elements are not only highly desirable in the everyday business of classrooms, but are also part of the experience that students consistently receive from games, and find nowhere else. A teacher/game designer would be able to infuse instruction with the powerful, compelling narratives of gaming, which according to McGonigal, are:

- Satisfying work: clearly defined activities that allow us to see direct impact from our efforts.
- Experience, or at least hope, of success: to feel power in our own lives and show others what we're good at.
- Social connection: sharing experiences and building bonds with people we care about.
- Meaning: to belong to and contribute to something that has lasting significance beyond our own individual lives. (McGonigal, 2011, p. 49)

In this view, the potential of game-based learning to improve education is dwarfed by the potential of the "gamification" of learning. Students are not only engaged and motivated in the comparatively brief interludes spent playing a learning game in their classrooms, but their entire experience of school is game-like, i.e., more engaging, connected, and meaningful. Yet this transformation cannot occur without a teacher who, along with all his or her other professional capacities, is a game designer: a skillful creator of game structures and game-like experiences, challenges and rewards, what McGonigal terms a "happiness engineer."

FINAL THOUGHTS

Games hold great potential to enhance education, but generally speaking, teachers have not been sufficiently supported in using games for learning in the classroom, nor has teachers' expertise been optimally leveraged in the design of games for learning. While research has suggested that teachers should have more say in the forms and content of learning games, the development of games for learning remains firmly in the hands of educational researchers or commercial game developers. In light of the constraints teachers face when implementing game-based learning activities, this represents a missed opportunity, as teachers bring specific knowledge about the limitations imposed by organizational time, curriculum, and available technology, which could be integrated into the designs of games that would be more viable and useful for classroom use.

Not only do teachers have much to offer to the game design process, but the discipline of game design also has much to offer the practice of teaching. Teachers who understand game design could integrate more and more of the compelling dynamics of gaming into a school environment that desperately needs them. As Prensky (2005) noted, "Today's kids are not ADD, they're EoE (engage or enrage)" (p.1). If research were to validate the capacity of teachers as game designers and teacher preparation programs were to include it, the goal of engaging more students and enraging fewer students may be closer at hand.

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