SYSTEMS THINKING FOR SYSTEM DEVELOPMENT

Dr Richard Owens, Educational Consultant and Director of the Cognita Centre for Leadership and Learning, Singapore

Mr Andrew Mowat, Program Facilitator, Cognita Centre for Leadership and Learning, and Director of ICT, Australian International School, Singapore

Kaye Mathwin-Cox, Director of Research and Development, Lutheran Education Australia

ABSTRACT

Internationally, over the past twenty years, there has been a growing, frustrated recognition that our outdated education systems are ill equipped to address large-scale, systemic issues related to improvement and innovation in schools (Senge 1996, Hargreaves 2003, Giles and Hargreaves 2006, Fullan 2011, Wagner 2012, Lucas, Claxton et al. 2013, Hallgarten, Hannon et al. 2015). This paper examines two approaches to the challenge of creating effective school networks through an explicit focus on building capacity for system leadership. The presentation will examine the impact of a leadership development program currently running in three countries in SE Asia upon leadership development, teacher collaboration, student learning and network development. It will also explore the outcomes of an executive leadership project exploring the redesign of the systems and structures for driving school innovation and improvement at a national level, beginning with a focus on their leadership learning. New knowledge and understanding will also be shared regarding how systems thinking approaches can influence learning, innovation and performance in schools and networks.

INTRODUCTION

The development of effective approaches for the sustainable improvement of school systems is one of the great challenges for educational leaders in many countries. While issues related to access and equity remain fundamental drivers for reform in this area, it’s critical importance as an educational imperative has been amplified by our shifting understanding of what constitutes a quality education (United Nations 2016). This emergent vision for education retains aspects of a traditional focus on discipline-based outcomes, while broadening its scope to include the personal, emotional and social learning of students, as well as the development of skills, knowledge and understanding in areas such as digital literacy and global citizenship (International Baccalaureate Organisation 2000, Partnership for 21st Century Skills 2011, ACARA 2012, Lucas, Claxton et al. 2013, Goleman and Senge 2014). As a result of this movement, there is a growing recognition that our existing education systems are ill equipped to address the challenges being presented by these new definitions for quality education, and that it is time to develop a more supportive, sophisticated and flexible approach, if large scale reform is to be effective in realizing this vision (Senge 1996, Fullan 2011, Wagner 2012, Lucas, Claxton et al. 2013, Hallgarten, Hannon et al. 2015).
System Leadership

In reviewing the research literature on system improvement, it is evident that a focus on the development of effective system leaders is frequently presented as one of the most promising approaches for driving large-scale reform. The strong themes that can be observed in this field include an interest in enabling high performing principals to support other leaders and their schools in the pursuit of improved student learning outcomes (Caldwell 2006, Higham, Hopkins et al. 2009). We can also see a move beyond traditional conceptions of school-based leadership to a consideration of system-level foci that support analytical investigation, entrepreneurship, alliance building and disciplined innovation (Hargreaves 2011). Hallgarten, Hannon and Beresford (2015) takes this thinking further, advocating for new approaches to public leadership that prioritise the nurturing of innovation at all levels of an education system through a sustained focus on collaboration, adaptation, centralised support for radical disruption and localised approaches to curriculum design.

Over the past twenty years, a number of studies have emerged that explore the impact of different approaches to system leadership and how best to support the development of system leaders. This research includes the study of district level leadership and the influence it has on the instructional practices prioritised and supported across a given region, as well as research on the professional development of principals and the impact they have on implementing reform across a state (Spillane 1996, Leithwood, Seashore Louis et al. 2004, Hopkins, Elmore et al. 2008, Stoll, Moorman et al. 2008). However, relatively little research examines the specific experiences of leaders as they learn about system leadership and begin to apply this learning in their practice. In particular, there is a need to more closely examine the interactions and dynamics that support the development of a leader’s knowledge, skills and understandings about how systems work and the different ways in which they can be improved.

This paper helps to explore two important questions for system leadership:

1. What seem to be promising approaches for helping educational leaders to be more effective in improving system outcomes?
2. How can effective system leadership be developed and supported?

For the purposes of this paper, system leadership is seen as the contribution of educational leaders to collaborative learning and action that is focused on improving student outcomes at a school and system level (Hopkins, Elmore et al. 2008). Furthermore, the two projects at the heart of this research shared an interest in learning about system leadership as it relates to the theory, methods and tools associated with Senge’s five disciplines for learning organisations and Scharmer’s Theory U (Senge 1990, Senge 1994, Scharmer 2008). While Senge and Scharmer’s theories have their unique aspects, they share a focus on reflective practice, collaborative learning, creative problem solving and generative dialogue as the key drivers for a systems thinking approach to leadership.
Research method

The paper uses a comparative case study approach to examine two projects aimed at supporting the development of skills, knowledge and understanding in relation to systems thinking and system leadership. The case studies were pursued over a twelve-month period for the purpose of gaining insight into how and why the respective approaches worked, or failed to work. Each project was focused on the promotion of learning about system leadership, as well as the application of this learning to system development. A comparison between the respective cases was made to investigate their similarities and differences, while exploring the relative impact of the ‘theory of action’ that informed each project’s design (Argyris and Schon 1978).

Both case studies incorporated a mixed method approach to ensure rigour, depth and complexity in the collection and analysis of data (Denzin 2010). School-based surveys, participant feedback, student assessments, interviews, document analyses and observations were included in these studies, with this paper interested in reporting on specific survey, interview and observation aspects. Sixty-minute observations of the workshops associated with each project occurred on three occasions across the course of twelve months, with an observational focus on dialogue, system analysis and problem solving. Semi-structured interviews and surveys were also conducted with volunteers from each project, with a focus on exploring their learning and practice, as well as their collaboration with colleagues and contributions towards system development. In each case, the results from early analyses were provided to participants for feedback, refinement and validation, with the resulting findings informing additional rounds of inquiry and data collection (Creswell 2003).

The shared interests of each project in relation to creative problem solving, systems thinking, reflective practice, generative dialogue and system development provided natural points of comparison. However, additional areas for investigation also emerged through comparison of the anticipated outcomes for each project with their actual outcomes (Goodrick 2014). While there are limitations to this type of research in its ability to definitively explain the causes of project outcomes or make generalisations, various researchers have described the value of context-specific knowledge in the development of hypotheses, as well as the practical adaptation and application of this learning to use in other settings (Stake 2005, Flyvberg 2006).

CASE STUDY: LUTHERAN EDUCATION AUSTRALIA

Context

**Lutheran Education Australia**

The Lutheran Church of Australia has operated Lutheran schools since 1839, with a clear educational focus on the holistic development of students, Christian spiritual growth, and quality academic learning. Up until the 1960s, each of these schools was owner controlled by its local Lutheran congregation and/or parish. With the federal government providing recurrent funding to
non-government schools, the 1970s and 1980s saw the emergence of regional offices to support Lutheran schools and, in 1982, the Lutheran Church of Australia appointed a National Schools Director. There are currently 84 Lutheran schools and 56 Early Childhood Centres in Australia, with a representation in every state and territory. The schools and centres are served by a staff of over 3,000 staff, and cater to the spiritual and learning needs of more than 40,000 students.

The Learning Hub

The executive learning hub for Lutheran Education Australia (LEA) operated over a period of twelve months and drew upon theory, methods and tools from the field of organisational development (Senge 1994, Schein 1995, Scharmer 2008). It involved regional and national level leaders in an extended series of workshops, for the purpose of collaboratively addressing challenges related to strategic planning, leadership development, school effectiveness and improvement. From an early focus on exploring data related to the current performance of regions and schools, the sessions moved to consider the preferred future for the national system of schools and the action steps that might be taken to bring this vision into being. While centred on practical issues related to organisational development and system-level leadership, the workshops included learning engagements focused on the disciplines of personal mastery, dialogue, systems thinking and team learning, with the aim of building the group’s capacity to lead effective change.

Analysis and findings

Leadership learning

The findings from the study demonstrated that the workshops helped leaders to develop their ability to critically reflect upon their mental models, as a way of exploring and extending their professional practice. Furthermore, many of the participants stated that they had come to see engagement in this type of reflective practice as important for improving their efficacy in driving change. The study also showed that the workshops helped to shift the participants’ focus from a preoccupation with reactive problem solving in their immediate area of responsibility to the proactive leadership of a high performing national system. The creation of a safe space for reflection, dialogue and deep listening was commonly seen as vital in supporting this shift. In particular, the workshop space was seen as providing an important forum to surface and articulate concerns, access the views and expertise of others, and consider alternate responses and solutions to the challenges being presented.

Peer collaboration

The study has shown that the workshops deepened leaders’ appreciation for team learning and the importance of a collaborative approach to leading large-scale reform. In particular, many of the leaders came to see team learning in relation to the use of dialogue and empathic listening as being central to the development of a more synergistic approach to system
development. The study also showed that the workshops broadened many of the leaders’ understanding of engagement with collaboration; as evidenced with a change in the emphasis of their practice from the sharing of individual experiences and collegial support towards the development of common goals, initiatives and work products. Significantly, as part of this movement, there was widespread recognition that an important area of responsibility for their collective leadership was the cultivation of the organisational and social conditions that supported this higher-level collaboration.

**Identifying areas for system-wide improvement**

The case study demonstrated that participating in the learning hub helped leaders to develop their ability to deal with complexity, consider different perspectives and work with each other to develop more systemic approaches to improvement at an organizational level. In particular, many participants commented that the team learning engagements during workshops helped them to develop a shared understanding of the common challenges being faced at a regional and national level. Important areas for development identified through the process included the need for greater consistency in the quality of teaching and learning across the system, along with improvements in relation to leadership performance and professional learning. While the scale of the data collection and analysis undertaken as part of this work proved to be time-consuming, it was interesting to note that many leaders also commented on the importance of the time commitment in helping to build trust among the leadership group. In turn, high levels of trust were commonly seen as important in developing the supportive relationships that would be required to help LEA transition through significant systemic change.

**The development of a national school system**

The findings from the research showed that the learning hub helped leaders to consider new possibilities and approaches for collaboration across roles and between regions. This growth was evident in the group’s identification of a series of high priority projects that could maximise the impact of their collaboration on student outcomes in schools nationally. These initiatives included the restructuring of the national leadership team, the creation of a systemic approach to school effectiveness and improvement, and the design of a common framework for the evaluation and development of school leaders. It is important to note some leaders shared their anxiety about what might be lost as part of the move towards a national approach, while others voiced concern at the slow pace of concrete organisational change in this area. While acknowledging these fears and frustrations, the study found that most participants felt there was more to lose by maintaining the status quo than by engaging in a redesign of the system’s infrastructure. In turn, an important focus for the later workshops in the hub became the design and development of new organisational structures and systems that could better meet the contemporary needs of LEA’s teachers, administrators and schools.

**Conclusions**
This case study reveals the potential for the development of executive-level learning hubs focused on the collaborative investigation of organisational challenges to support leadership development, team learning and system development. In particular, new skills, knowledge and understanding in relation to reflective practice, generative dialogue and systems thinking were promoted through sustained, facilitated engagement in structured collaboration. Although the leadership group moved into a focus on system design towards the end of the first year of the hub, one of the limitations of the study to date is a lack of insight regarding the impact of their learning on system improvement. In this regard, the extension of the project beyond its initial twelve month period can be seen as a practical recognition of the timeline required to complete the design phase and transition into the implementation of system-wide approaches to improvement.

**CASE STUDY: COGNITA**

**Context**

*Cognita Schools*

Cognita is a large international schools group that was first formed in 2004. From an initial focus on the development of a UK-based network of schools, it spread its operation to Spain and Singapore in 2007, before further expansion into Thailand in 2009, Vietnam in 2011, Brazil in 2012 and Chile in 2013. In 2017, the group will expand into China with the opening of a new international school in Hong Kong. Cognita currently operates 67 schools, with over 4500 staff catering to the learning needs of more than 30,000 students worldwide.

The schools are diverse in their curricula, size and structure, reflecting the unique character and culture of each school and its international context. While respectful of each other’s differences, the schools are unified by a shared vision for high quality education, with teaching, learning and leadership in each of the schools guided by a common framework – ‘The Cognita Way’. The framework identifies four themes (academic excellence, developing character, enrichment beyond the class and developing a global community) in six domains (energised leadership, innovation, personalised learning, people growth, community and brilliant administrative basics). The introduction of the framework emerged as part of a renewed, system-wide focus on quality, consistency and innovation after a period of rapid expansion.

*Leadership development at Cognita*

The design of the leadership development programs for Cognita began in the Asia region in 2013. The initiative surfaced from a series of executive network meetings that examined the challenges facing leadership teams in schools. A key learning from these engagements was the realization that a narrow focus on individual schools and a traditional dependence on the use of fixed hierarchical structures and organizational routines were proving ineffective in sustainably driving innovation and improvement. From these meetings, work
began on the development of a suite of leadership programs, with the intent of providing a continuum of professional learning opportunities for leaders as they progressed in their careers. The first program to be developed was titled *Leading Teacher Teams* and focused on mid-level leaders, due to the critical influence they have on sustaining a focus on student learning, aligning pedagogy and assessment practice, and driving innovation and improvement with teachers (Lingard, Hayes et al. 2003).

**The Leading Teacher Teams Program**

The *Leading Teacher Teams* program aims to help mid-level leaders learn how to facilitate powerful inquiry and innovation with their teams, while incorporating evidence-informed strategies for improvement. It has an explicit focus on building leadership capacity in relation to creative problem solving, team learning, change management and systems thinking. While embedded in the practical work of improving school leadership, the wider aspirations for the program are focused on system development. Its online forums and assignments work to transcend geographical boundaries, helping participants build their knowledge and support networks, while promoting the types of technical and global capabilities essential for regional leadership.

The program is conducted over the course of twelve months and uses a blended-delivery model that incorporates onsite workshops and online learning, with an emphasis on the work-based application of research-based strategies and approaches. The program is currently running in Singapore, Thailand, and Vietnam, with planning under way to expand the offering to the UK and Spain in 2017. To date, sixty educators have graduated during its first two years of operation. The program consists of four modules:

1. **Leading Your Own Learning:** The first module focuses on the personal growth of the leader, including the development of strategies for reflective practice and a deep understanding of different leadership theories, models, and tools.

2. **Leading Team Learning:** The second module focuses on developing the leader’s ability to lead others, with a particular interest in building highly collaborative, learning-focused teams.

3. **Leading Innovation and Improvement:** The third module focuses on developing the capacity of the leader to lead change, innovation, and improvement, including the skillful use of systems thinking for planning, action, and reflection.

4. **Professional Project:** The final module supports the integration and application of key learning from the program in professional practice. It is centered on the leadership of a work-based project designed to apply a systematic approach to an issue of practice or an area of innovation.
Analysis and findings

Leadership development

The study has shown that the program has helped participants to develop a clearly articulated knowledge base of theory, methods and tools for leadership. In addition, they commonly demonstrated an improved ability to critically reflect upon their professional practice, including the identification of personal strengths and areas for development. While these outcomes are consistent with the aspirations for many programs, it was also clear that many of the participants developed mental models that can be seen to support systems thinking. For example, many of the participants reflected on how the program helped them to accept uncertainty and deal with tolerable levels of tension and distress, as part of their commitment to ongoing learning. In turn, a key learning for the facilitators of the program was the need to provide multiple channels of support for participants as they experienced the anxieties associated with deep learning (Schein 1995). In this regard, the development of flexible, online forums and increased coaching opportunities worked to create more responsive and individualized support and knowledge networks.

Teacher collaboration

The findings from the study revealed that participants developed their ability to question and investigate underlying assumptions about causes of conflict and tension with members of a team. In turn, they also reported feeling more able to employ a range of strategies for managing their own and others’ reactions and feelings, in order to keep collaboration on track. A number of participants were seen to broaden the scope of their thinking about leadership, particularly in terms of a focus on identifying the contributions of individual staff to team work, the effort they put into team tasks, their manner of interacting with others, and the quality of the contributions they made to team discussions. Significantly, the insights that these participants developed into the efficacy of collaboration in their teams were consistently informed by direct feedback and ongoing consultation with their team members. In this regard, the regular use of feedback loops can be seen as supporting development of the types of organizational routines associated with systems thinking (Senge, Cambron-McCabe et al. 2000).

School improvement

In terms of an impact on student outcomes in schools, the study showed that the program helped participants to systematically work through the identification and analysis of challenges associated with tackling an area for innovation or improvement at their school. In particular, the space created for learning by participation in the program was seen as critically important, creating ‘practice fields’ in which participants felt safe to experiment, make mistakes and share learning (Schein 1995). Notably, many of the leaders participating in the program worked to create similar types of learning environments for their teams, creating the conditions that enabled teachers to routinely experiment with and reflect upon their practice. A strong theme to
emerge from the study was the common adoption of an action learning approach to improvement in the participants’ teams as a new behavioural norm. In this regard, many of the participants become more adept at analyzing organisational activity in their work, including reflection on the efficacy of their leadership approach, the quality of their team’s collaboration, its impact on student outcomes and a consideration of the implications for future practice.

**Student learning**

Critically, research has shown that the program has helped leaders to have a positive impact on student outcomes in areas such as problem-solving, critical thinking, communication, and cultural literacy. Some of this innovation has been driven through discipline-based approaches, with an increased emphasis on creative and critical thinking. For example, one professional project saw two program participants co-lead a cross-level team of primary teachers in exploring the use of digital provocations to improve differentiation in mathematics. Their study combined the integration of new technology, in the form of iPads, with Sullivan’s (2011) challenging task method to improve students’ problem solving and reasoning skills. Other school-based innovation has been focused on targeted interventions to address issues related to student welfare. For example, a number of participants led their teams through the investigation of strategies for improving the wellbeing of secondary students from non-English-speaking backgrounds. Their studies saw the development of inquiry-based units that explored different perspectives regarding migration and cultural collision, with an emphasis on students’ personal experiences helping to promote outcomes related to intercultural understanding. The third main pathway for innovation has focused on the application of specific pedagogical approaches to different teaching contexts. For example, a small group of participants has examined the impact of formative assessment on teacher practice and student learning within their faculty or year-level groups. Their studies drew from the literature on formative assessment (Wiliam, 2011) and personalized learning (West-Burnham & Coates, 2005) to help student take on greater ownership and responsibility for their work.

**Network development**

The study demonstrated that the program worked to support leaders to critically evaluate the application of their skills, knowledge and understanding to leading change initiatives, and share their insights with others. In particular, the professional projects at the heart of the program were found to help to drive innovation in individual schools, while at the same time producing valuable case studies that were examined in terms of how their findings might be transferred and adapted to different contexts and settings. Through the face-to-face and online forums, the participants routinely provided feedback and support for each others’ work, with evidence of some more sophisticated collaboration to address shared challenges in relation to classroom innovation or improving student outcomes. Interestingly, one of the most significant outcomes from the program to date has been the development of a critical
mass of current and emerging leaders with a shared vision, shared language, and theoretical framework for leading innovation across the region.

Conclusions

This case study reveals the potential for targeted programs that incorporate the work-based application of organizational learning theory to support innovation, teacher collaboration, school improvement, and system development. In particular, systems thinking and system leadership were promoted through shared engagement with a common language and theoretical framework for leading innovation, along with the nurturing of local and regional learning environments that supported experimentation, reflection, and collaboration. While there are limitations in the relatively small scale of the study, the findings highlight the power of developing programs that align the learning of students, teachers, and school administrators, with the goal of developing a system-wide culture of inquiry and learning.

CROSS-STUDY COMPARISON

A comparison of the cases examined in this paper was undertaken to further investigate how system leadership can be developed and supported, as well as the influence that a focus on leadership learning can have on system development. Some researchers, such as Stake (2005), warn against such comparisons on the grounds that the comparison itself becomes the focus of the research, rather than the unique aspects of the respective cases. This analysis is, however, intended to augment, rather supplant the case study findings. In particular, the analysis is incorporated within the paper for the purpose of providing further insight for those interested in practically adapting and applying the knowledge that emerged from these studies in new contexts (Greenwood and Levin 2005).

Seeing and developing the self

In each of the case studies, a focus on personal mastery was important in developing the participants’ ability to question their assumptions about the current reality of their practice and performance. In particular, the nurturing of this capacity for reflection helped leaders to transcend their habitual ways of seeing and past patterns of behaviour, in order to engage with diverse perspectives and consider new ways of approaching improvement. It was also interesting to note that the use of public forums for the promotion of self-development helped leaders to surface, articulate and test their personal ‘theories of action’ (Argyris and Schon 1978). In this regard, the forums were seen as important in fostering the building or deepening of trust between colleagues, as well as the subsequent development of the support and knowledge networks that helped leaders to overcome subsequent personal professional challenges.
**Seeing and developing the collective**

In both the LEA learning hub and the LTT program, an emphasis on team learning helped to create greater alignment among leaders and enhanced their ability to work collaboratively on common goals. It is important to note that the forums did not work to eliminate disagreements or enforce conformity in the participants’ views and beliefs. Instead, the focus on team learning in each setting was seen to build a sense of belonging to a team and a shared commitment to the success of that group’s collective endeavors. Learning about the use of dialogue, along with the development of skills in relation to listening and questioning, were important contributors to team development in this area.

**Seeing and developing the larger system**

In each of the case studies, a focus on shifting leaders’ attention beyond the normal parameters and concerns of their individual roles helped to develop their ability to see the complexities and dynamics of the larger system in which they worked. This movement was seen as important in enabling leaders to develop a greater appreciation of the ways different parts of the system influenced each other and impacted on their domain. Leaders in each setting reflected on how building their capacity for systems thinking had often helped them to identify the root causes of issues, instead of focusing on their more visible or obvious symptoms. As a result of this learning, many leaders also displayed a greater willingness and commitment to work with others on projects that targeted significant systemic change, with the understanding that their own domain would also benefit from such organisational improvement.

**Seeing and co-creating the future**

In both the LEA learning hub and the LTT program, many leaders broadened their understanding of the process for creating a shared vision beyond a traditional focus on the leader’s ability to ‘sell’ their argument for a given initiative towards the development of a collective capacity to co-create a preferred future. It is important to note that the leaders in each study did not abandon their conviction of the need to sometimes provide formal direction to a team, but rather deepened their belief in the power of effective collaboration to define and achieve mutually valued goals. Many leaders reported that this focus help to re-energize their practice and commitment to working with their teams. In this regard, the leaders often commented that the process helped to place their current challenges in context to the overarching goals for their work, and shift their focus from the experience of individual issues to collaborative approaches for systemic improvement.
CONCLUSIONS AND RECOMMENDATIONS

This paper illustrates the potential of structured approaches to leadership learning to build individual and collective capacity for effective system leadership. The evidence presented indicated that system development was promoted through sustained collaborative engagement with learning experiences that integrated a focus upon self-development, team learning, generative dialogue and systems thinking. In this regard, in each case study, it is important to note that the process for learning was as important as the content for learning in driving outcomes, with learning design a critical focus for those interested in the adaptation and transfer. The paper also highlighted the importance of maintaining a drive to action as part of this learning, in order to ensure its practical impact on system improvement.

In exploring the promise of different approaches for supporting educational leaders to become more effective in improving system outcomes, we should not be searching for a perfect, universal solution. Instead, it is important that we place our attention on gathering a range of effective strategies that can help inform the development and practical repertoire of both system leaders and those interested in supporting their work. With this work, the study of the approaches that effectively promote learning about system leadership and the application of this learning to practice is of paramount importance. In this way, we will not only help develop our understanding of how systems work and the ways in which they can be improved, but also how we can support each other to become more effective leaders of these systems for the benefit of all stakeholders – leaders, teachers, students and families.

REFERENCES


Caldwell, B. (2006). It's time for system leadership Sustainable Leadership in Education. Sydney, Australia, Faculty of Education and Social Work at the University of Sydney.


