World-class school leadership development

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Introduction

In recent years, school improvement has been the focus of attention among policymakers in the world. From countries as diverse as UAE, Brazil, Hong Kong, Singapore, Vietnam, Australia, and USA, a common concept is that of "world-class education". This has become widely associated with comparative results from international tests, such as the Trends in International Mathematics and Science Study (TIMSS) and the Programme for International Student Assessment (PISA), which purport to measure certain aspects of educational quality.

Countries have taken it that attaining high scores in these tests is a strong indicator of being world-class.

But what exactly is world-class education? Cheng (2005) defined world-class curriculum content as "materials and designs for the learning and teaching processes and maximising the global relevance and exposure to the future developments of individuals and the society" (p. 35). He further highlighted that the school leader is fundamental to having world-class schools by "enhanc[ing] human initiative in education including the motivation, effort, and creativity of students and teachers in teaching and learning" (p. 254).

Beyond the rhetoric, conceptual definitions, and proposed new ways to define world-class education, this article advocates going back to basic principles. The purposes of education are interrelated and intertwined. Education is first and foremost an endeavour to learn knowledge. Second, it is to produce citizens who share common norms and values, and thus contribute to societal cohesion. Third, education is the preparation of the individual
for a vocation and one who will economically contribute to his/her well-being and the nation.

Integrating these three principles from the perspective of knowledge utility according to a country's current position will provide the legitimacy to define what a world-class education system looks like. Therefore, the framing of education's purposes in Singapore's current and future context should become the point for discussion on school leadership development. In this paper, however, only school leadership development from the economic purpose of education will be discussed.

The Rise of Services Sector
The new millennium in the Asia Pacific is witnessing the rise of large new economic players, such as China and India, and both bring challenges and opportunities to Singapore. With no natural resources, geographical constraints and with a continuing need to distinguish the country economically, Singapore has been moving in the direction of a knowledge and innovation economy since 2000 (see Figure 1). This move is both to compete with existing Asian powers for direct foreign investment and also to cement economic ties for trade.

![Figure 1. Singapore's economy (Agency for Science, Technology and Research [A*STAR], 2011).](image-url)
One characteristic of all developed nations is the large component of the services sector against the manufacturing sector which contributes to economic growth. Singapore follows a similar trend and has seen a steady rise in the services sector over the last one and a half decades. It has consistently contributed to a greater share of total economic output and employment. In 2011, the services sector accounted for about 69 per cent (Ministry of Trade and Industry, 2012) of value-added growth and employed approximately 70 per cent of the total workforce. This implies that if one were to step into any classroom today, 7 out of 10 students will be employed in the services sector after graduation.

Inferring from the trend of developed nations and considering Singapore's geographical constraints, it is expected that Singapore will continue to have a large component of the services sector contributing to economic growth and employment 10 years down the road.

What are the implications of the rise of Singapore's services sector vis-à-vis the purposes of education, and, in particular, education's economic function? The nature of the services sector in the knowledge and innovation economy is characterised by higher skilled and higher value-added knowledge. Services produce "intangible" goods, which include the know-how in governance, health, education, communication, information, and businesses. This tends to require relatively less natural capital and more human capital, and is well suited to Singapore's situation.

Fierce competition, however, among countries that are producing the same type of services drives a need for employees to be innovative. In other words, Singapore can only effectively compete with other nations if our services are perceived by customers as new and value-added solutions. This, then, is the biggest challenge of our times when considering education's purposes. How do school leaders create a teaching and learning environment that will foster a mindset of innovation and value-creation among students who will be the future human capital? Rote and shallow learning will surely no longer be sufficient.
Pivotal to the quest to fulfil this economic imperative is the role of the school leader in leading and managing schools, and how the system develops school leaders for this purpose. This paper will therefore draw from this imperative to propose an alternative school leadership development programme in order to meet Singapore’s knowledge and innovation needs.

**School Leadership Development for the Future**

From about 1945 to 1985, scientific research provided evidence-based decisions on learning and development. Learning was seen as supported by evidence of changes in the three classical behavioural science domains: cognitive, affective, and psychomotor. They typically have the following features: a set of learning objectives, a specific body of knowledge (content) to be taught in order to achieve the objectives, and adoption of the right pedagogical approach to deliver the body of knowledge. These characteristics meant that learning could now be efficiently and effectively taught.

While the behavioural science era is still relevant to a certain extent in training and development, there are inherent weaknesses that give rise to serious discontent with current school leadership programmes. One is that learning is the acquisition of predetermined and known knowledge. In other words, the current training and development paradigm does not encourage or enable school leaders to create new knowledge. In addition, known knowledge is insufficient to solve increasingly complex problems faced by schools because of the influence of factors such as globalisation and information technology.

In the current stage of ferment in the behavioural science design of learning, there is no lack of alternative theories in teaching and learning design, such as strategic choice, learning organisation, open systems, chaos, and complexity. This progression suggests a move to take into account the complexity of interactions, uncertainty, unpredictability, and their relationship with diversity and creativity within an organisation. This paper examines the adaptation of complexity theory in the design of the school leadership development programme.

**Complexity Science**

Complexity science offers an alternative to the conventional linear causality of the scientific method. Complexity theory suggests that we need to focus on the interplay of elements within systems, including the interdependencies of individuals, groups, and organisations. This approach helps us to understand how systems can adapt to change.

From the mid-20th century to the 21st century, complexity theory has evolved into an interdisciplinary field that explores the dynamics of complex systems. A complex system is defined as one that cannot be viewed as a whole and composed of individuals. The complexity theory domain includes: emergent systems, self-organisation, complexity, resilience, and dynamic systems.

This paper examines the adaptation of complexity theory in the design of the school leadership development programme.

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the school leadership development programme in Singapore.

**Complexity theory – briefly**

Complexity theory appeared in the 20th century in response to criticism of the inadequacy of the reductionist analytical thinking model in helping us to understand learning, and suggested an alternative approach for knowledge in general, the knower, the object of knowledge, method, and truth.

From their observation of leadership studies across eight different countries, Day and Leithwood (2007) concluded, “Schools are dynamic organisations, and change in ways that cannot be predicted” (p. 184). A consequence of acknowledging complexity is that leadership should be viewed in a different light. A complex system is a functional whole, consisting of interdependent and variable parts. In other words, the parts need not have fixed relationships, fixed behaviours, or fixed quantities; thus, their individual functions may also be undefined in traditional terms.

Indeed, when we are able to incorporate elements of complexity theory into the design of school leadership development programmes, the process of learning will be very different from the behavioural design approach. The following section briefly highlights three key constructs of complexity theory.

**a. Emergence**

Emergence is a key concept in understanding how different levels in a system are linked. In the case of leadership learning, it is about how the individual, structure, and system are linked. These different levels co-exist and one is not necessarily more important than the other. Each level has different patterns and can be subjected to different kinds of theorisation. Patterns at “higher” levels can emerge in ways that are hard to predict at the “lower” levels. The challenge long-addressed in learning is how such levels are to be linked.

**b. Non-linearity**

Non-linearity refers to leadership learning as an outcome from causal links of something more complicated than a single source of information or single chain of events. Learning outcome is considered linear if one can add any two sources of learning or solutions derived from the teaching. This would mean that the output of the learning is not proportional to the input and that the learning does not conform to
the principle of additivity (i.e., it may involve synergistic reactions in which the whole is not equal to the sum of its parts).

One way to understand non-linearity is how small events lead to large-scale changes in systems. Within the natural sciences, the Butterfly Effect is often cited (or imagined), where a small disturbance to the atmosphere in one location tips the balance of other systems, and leads to a storm on the other side of the globe (Capra, 2002).

c. Self-organisation
Self-organisation happens naturally as a result of non-linear interaction among members of an organisation (Fontana & Ballati, 1999). There is no central authority guiding and imposing any interactions, and members adapt to changing goals and situations by adopting communication patterns that are not centrally controlled by an authority. In the process of working towards a goal (e.g., solving a leadership problem), self-organising members tend to exhibit creativity and novelty as they have to quickly find ways and means to solve the problem and achieve the goal. As a result of interactions among members, new conversation patterns emerge – an important aspect of self-organisation since only with new patterns can there be new and novel ideas to solve problems. It must be noted that new patterns of conversation depend upon the responsiveness of each member and their awareness of each other’s ideas and response.

It is a challenge, however, to incorporate these constructs in the design and implementation of school leadership programmes. In Singapore, the National Institute of Education’s Leaders in Education Programme (LEP) is a case example of adapting complexity theory both in design and operation.

Case Example: Complexity-based Learning in the LEP
The LEP is a 6-month, full-time principalship development programme designed to build capacity for Singapore’s educational reforms and to develop current and future “principalship capability” in an increasingly complex world. Such principalship capability will be values-driven, purposeful, innovative, and able to succeed in ill-defined conditions. This is the kind of landscape in Singapore’s knowledge and innovative economy. The section provides an example of complexity-based learning in the LEP (Ng, 2013).
Knowledge creation through innovation project

Participants are attached to a school throughout the programme where they spend time carrying out a major innovation project. They receive support and guidance from the school principal, the superintendent, and a university faculty member. The project is expected to help the school improve on leadership and management practices that lead to better student learning and a higher level of achievement, and is meant to be a profound learning experience for the participant.

The school attachment provides the platform for participants to create new knowledge as they challenge current practices by looking at a school from the standpoint of its strengths, and then identify a range of innovation opportunities. Participants must lead others (teachers, students, parents) to do new things and must find different ways of doing existing practices. From these opportunities for innovation, participants select an idea for a comparatively significant innovation.

The key element in this learning project is the emergence of a workable innovative idea. This parallels complexity theory's element of emergence where participants self-create knowledge (learning) during interaction with the stakeholders and components in the school system. The implementation of the innovation project is a powerful test of their leadership capability. To date, participants have successfully completed a wide array of innovative projects and many are being sustained by the schools.

Syndicates

The syndicate is a key component of the programme. Participants meet in a small group setting (five or six members), and the syndicate leader who is a university faculty staff acts as a facilitator. The syndicate leader monitors participants' learning throughout the programme, including the school attachment, the innovation project, the learning from the international visit, and the broader classroom-based learning. The weekly syndicate meetings help form an intensive learning relationship between members.

The basis for these meetings is to encourage divergent and explorative thinking through conversations. Conversations are complex responsive processes of themes triggering themes through self-organising associations (the element of self-organising in
complexity theory) and of turn-taking. Both result in a continual emergence of thought by each individual, and reflect and create power differentials in individual and group relationships as members participate in the deep conversations. In essence, syndicate meetings provide the opportunity for individual and group change when the pattern of conversation changes.

If one takes this perspective that an organisation is a pattern of talk (relational constraints), then an organisation changes only insofar as its conversational life (power relations) evolves. Organisational change along with the emerging creativity, novelty, and innovation are the same thing as change in the pattern of talk and therefore the pattern of power relations.

**Partnerships in learning**

Much of the learning is through strong partnerships with schools, business organisations, and educational institutions both in Singapore and overseas, and is supported by learning in lectures and tutorials.

These LEP participants are also exposed to leadership in business organisations and to ideas from various sources, including government organisations. To further enhance such influences, key officers are invited from the education and other ministries to engage in dialogue with participants and to observe some of the work undertaken in the programme.

There is also a global approach to learning with an international component in the programme. This is a 2-week, all expenses paid, international visit (thus far, to Switzerland, USA, UK, Canada, Scandinavian countries, Europe, China, Australia, and Hong Kong) by the participants led by the syndicate leader and a senior school principal. The team investigates successful innovative practices overseas, undertakes critical analyses, and gains significant insights into how educational innovation in Singapore might be managed. The inclusion of this component, while not unique, provides an extended platform of learning on the international stage.

The exposure to larger local and international systems is intended to trigger thought and expand perspectives in participants. For example, what happens in the social and economic aspects of USA and Europe may influence how leaders re-shape and re-focus student learning. Singapore's power differentials theory influences how leaders re-shape and re-focus student learning, and beliefs.

**Action research as ealing**

While the participants are invited to engage in program "delivery" (learning), their role is to engage in conversation with their counterparts. While they are taught how to engage in dialogue with their counterparts, they are also learning. The exposure to larger local and international systems is intended to trigger thought and expand perspectives in participants. For example, what happens in the social and economic aspects of USA and Europe may influence how leaders re-shape and re-focus student learning.

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student learning and development in Singapore. This parallels complexity theory's emergence where the influence of the larger system may cause a reformulation of perspectives and behaviour of individuals.

**Action-learning delivery: Content as earning support**

While most leadership programmes are interested in the "content" of a programme, the LEP emphasises "delivery". Action learning is a central concept in the delivery of learning. While participants know what they are taught, they do not know what they will learn as they have to create their own knowledge through team learning in the syndicates. They will only know what knowledge they have created when they come to the end of the programme.

In the LEP, action learning is understood as group learning among people who are committed to action by using acquired learning for obtaining systems-wide outcomes. Its original formulation by Revans (Marquardt & Revans, 1999, p. 19) is \( L = P + Q \), where \( L \) = learning, \( P \) = programmed knowledge, and \( Q \) = questioning insight. In the LEP, programmed knowledge (\( P \)) refers to what is taught in the seven modules (relegated to a support role), what is read, and what is shared in presentations by guest speakers, all other opinions, theories, and know-how. Learning (\( L \)) is different from the traditional formulation, which equates to learning and programmed knowledge. Questioning (\( Q \)) encourages divergent and exploration thinking through conversations in a small group setting.

**Conclusion**

In leadership development programmes, many hope that participants will learn new and effective ways to bring about school improvement and reform to fulfil the purposes of education according to the needs of the country. This hope cannot be realised if the conventional behaviourist-designed learning and faculty-driven approach continue to be perpetuated. The need to rethink programme delivery has gathered momentum over the years and the call for changes in programme content has been discussed earlier in the literature (Dimmock & Walker, 2005; Hallinger & Leithwood, 1998).
Universities have to shoulder an extremely difficult task because conventional practices of course-driven programmes have been remarkably resilient in the face of efforts to effect change in programme delivery and a new understanding of complexity in the world of education. School leaders have to navigate non-linear change-paths, and learning how to navigate this kind of change is a critical competence for 21st-century change-leaders in school systems.

The complexity theoretical framework provides us the advantage of an alternative design for leadership development programmes that is able to meet current and future challenges that are mentioned by Cheng and Tam (2007). Annually, billions of dollars are spent on training and development. It is important to ensure that the outcome of training, learning, and development must yield practical outcomes that will meet the country's needs.

References
