

Managing the Complex Adaptive Learning Organization

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Abstract

The aim of our paper is to highlight the connections between specific leadership roles and learning organization behaviour in the context of educational institutions as complex adaptive systems.

According to Keshavarz et al. (2010) schools can be considered as social complex adaptive systems as they show the characteristics of nested systems, continuous change and adaptation, distributed control, emergent changes and unpredictability. This implies that the organization comprises of diverse, rule-based agents who are located in a multi-level network and their behaviour include interactive learning and knowledge sharing. From these characteristics emerges the concept

of learning organization (Senge, 1990) which is an adaptive, self-organizing entity (Segall, 2003), able to manage knowledge (Garvin, 1993) with the appropriate cultural aspects (vision, values, behaviour) supporting the learning environment, processes supporting learning and development and structural aspects enabling the support of learning activities (Armstrong and Foley, 2003) in order to continuously learn, develop and adapt to the ever changing environment (Ali, 2012).

A key question is how can these organizations perform dancing at the edge of chaos? In earlier researches the concept of distributed leadership showed positive contribution towards improved school performance (Elmore, 2004; Fullan, 2006; Spillane, 2006) and organization-

al learning (Silins, Zarins and Mulford, 2002; Mulford, Silins and Leithwood, 2004). Distributed leadership connects with the notion of distributed control aspect of complex adaptive system and it utilizes the approach of organizational learning theory, distributed cognition and complexity science (Leithwood, Mascall and Strauss, 2009). Distributed leadership can be interpreted as “practice distributed over leaders, followers and their situation and incorporates the activities of multiple groups of individuals” (Spillane et al., 2001, p.20).

Our one year research aim was the examination of organizational behaviour and development of learning organizations in the Hungarian public education selecting 82 high-performing institutions from the South-Great Plain Region. Based on literature review, expert workshops and initial organizational diagnosis we proposed a model for schools as learning organization which was empirically tested and validated. With 62 participants on the questionnaire for leaders and 1192 participants on the questionnaire for teachers we managed to connect institutional, leadership and individual characteristics to identify main aspects of learning organization behaviour and its positive correlation with organizational learning and competitiveness. Based on the competing values framework (Quin & Rohrbaugh, 1983; Quinn et al., 1996; Cameron & Quinn, 2011) we also analysed the connection between learning organizational behaviour and different

leadership roles and we found that mainly the facilitator and coordinator roles supports best all the aspects of learning organization behaviour. This implies an internal focus and an unpredictability between flexibility and control which also supports the complex adaptive system and distributed leadership approach.

Introduction

Our paper examines schools as complex adaptive organizations and explores the possibilities of leadership that can thrive in that environment. First we will discuss the concepts of complex adaptive systems and learning organizations and in the second part of the introduction we will explore school leadership from the distributive leadership paradigm, connecting it with the competing values framework. Applying this theoretical framework we introduce our research which aim was to assess Hungarian schools as learning organizations. We will discover the different relations of learning organizational behaviour to different leadership styles and draw conclusions for the practice.

1. Schools as complex adaptive learning organizations

Kurtz and Snowden (2003) introduced in their framework simple, complex, complicated and chaotic systems based on the predictability of cause and effect relationships, while Axelrod and Cohen (2000) differentiated between adaptive and non-adaptive systems. Organizations can

be considered as social complex adaptive systems (Morel & Ramanujam, 1999; MacLean & MacIntosh, 2003; McMillan, 2004) and according to the broad literature review of Keshavarz et. al. (2010, p.1468) they “comprises a population of diverse rules-based agents, located in multi-level and interconnected systems in a network shape.” Complex adaptive systems have the following key characteristics (Anderson, 1999):

- agents with schemata
- self-organizing networks sustained by importing energy
- coevolution to the edge of chaos
- system evolution based on recombination

Agents, as members of an organizations are not strictly bounded by the rules of the system (rules can be ignored by behavioural change and individuals can change without the change of the system), instead they are symbol-processing actors sharing a common social order which is a knowledge structure, organized from the information of the environment (Boulding, 1956). These actor can utilize recipes for routine tasks, but if there is a complex, uncertain task to solve, they can only resolve to blueprints (Simon, 1996), which in social psychology are called schemata (Rumelhart, 1984). According to Gell-Mann (1994) complex adaptive organizations condenses environmental regularities into many, internally competing schemata. It is clear that the work of a teacher is not easily described, what happens in the black box of the classroom

is complex system on its own. Schemata can be considered mental models (Senge, 1990), which are deeply ingrained assumptions, generalizations that influence how the individuals understand the world around them. In order to work efficiently with the different, internally competing schemata, members of the organizations should engage in common sense-making which is best supported by the shared vision (Senge, 1990) aspect of the learning organization.

Self-organization is an emergent characteristics, it's a natural consequence of interactions between agents (Anderson, 1999). Complex adaptive organizations draw energy from outside, therefore they must be an open system because in a closed system, according to the second law of thermodynamics, systems degenerate to an equilibrium state with maximum disorder (Prigogine & Stengers, 1984). This emphasizes the utilization of social network analysis to understand the pattern of connections among agents (Anderson, 1999). In a learning organization emphasize from the learning of the individual moved to the learning of teams: the interaction of individual members of the organization which creates the processes of learning. Without transparent and interconnected teams, an organization cannot sustain itself (team learning, (Senge, 1990)).

Adaptation emerges from the adaptive efforts of individual improving their own payoffs, but in a changing landscape where every other individual behaves in

such a way making it an interdependent and a co-evolution process (Anderson, 1999). All complex adaptive systems evolve to the edge of chaos because they can out-compete systems that do not (Kauffman, 1995) only if they can manage to balance between flexibility and stability (Weick, 1979). If individual payoffs motivates local behaviour which is interdependent of other individual actions, this system is competitive only if the individual actors themselves have high proficiency (personal mastery (Senge, 1990)). This constructive competition, with the different feedback loops and reflexions should lead to the continuous improvement of actors.

Complex adaptive systems contain other complex adaptive systems and every aspect of them: agents, schemata, connections, functions can change over time. By accepting that these elements can evolve we accept that feedback loops, causal relations in a system can change as well by allowing local behaviour to generate global characteristics. Complex adaptive systems can evolve by introducing new agents or schemata or by generation of novelty by recombination of elements already present in the system (Anderson, 1999). To cope with these dynamic dimensions we must apply systems thinking principals in order to be able to see full patterns clearer (Senge, 1990).

In conclusion learning organization is an adaptive, self-organizing entity (Segall, 2003), able to manage knowledge (Garvin, 1993) with the appropriate cultural aspects (vision, values, behaviour) supporting the learning environment, processes supporting learning and development and structural aspects enabling the support of learning activities (Armstrong & Foley, 2003) in order to continuously learn, develop and adapt to the ever changing environment (Ali, 2012). From this definition it is clear how the learning organization in itself is a complex adaptive system.

In our previous research (Baráth et. al., 2015) we validated a model for schools as learning organizations which we would use in this research as well to explore the relation of different aspects of learning organizational behaviour to leadership styles. In our model (Figure 1.) we identified two interconnected core behaviours of learning schools (continuous professional development (CPD); teaching and learning). One angle of the model (responsibility and trust, leadership that supports learning) supports mainly CPD and the other angle (partnership in learning, differentiated learning) mainly supports teaching and learning. In our paper we will deal with leadership that supports learning in schools.

Figure 1: Validated model of schools as learning organizations



Source: own elaboration

2. Leadership and management of educational institutions

When we would like to define leadership, nowadays we imagine a leadership team, rather than a heroic leader or a charismatic principal. Literature emphasizes that it is better not to describe the leadership as one person or one formal position, because leadership involves an array of individuals with various tools and structures (Spillane, 2005, p.143.).

As Timperley (2005) cited instead of „the model of a single ‘heroic’ leader standing atop a hierarchy, bending the school community to his or her purposes” (Camburn et al. 2003, p.348), recent researches emphasise leadership as a key function and key role, which does not appear at the top of the organization, but can be delegated

to coordinate and motivate the participants where it is needed. According to the OECD study, the distributed leadership is the new way of thinking about leadership (Halász, 2010. p. 19-20).

Robinson, Hohepa and Lloyd (2015) highlighted that the school staff’s contribution to the development and evaluation of the core business of the institution was insignificant if the principal was considered a single, heroic leader. However, Spillane (2005) argues this view is problematic, because school principals do not lead the school on their own, a leader can be anyone based on tasks, not position and the focus is on “what” is being done instead of “how”, thus the understanding becomes difficult in different contexts.

The school leadership role is more and

more complex and stronger, thus the principals' responsibility is getting wider from the financial planning through the curriculum development to the cooperation with stakeholders. In addition the environment in which the school operates is also becoming more and more complex. Even though these global changings, the decision making authority of head-teachers is decreasing in Hungary because of the centralizing aspiration of education policy. From the budget to the curriculum is centrally determined thus principals' management role becomes limited. The effect of these differences requires to change leadership roles and to confirm pedagogical leadership because the quality of schooling shows strong relation with the capacity of school leadership being able to improve the learning environment, other ways to increase the learning possibilities and make it more intensive. Adapting to these changes, the view of leadership needs to be altered but in different ways. School leadership always depends on particular contexts, i.e. the interplay of systemic, organizational and personal factors (Bush & Glover, 2003; Louis et al., 2010). School leaders influence their environment, and the context determines the best way for doing this (Leithwood et al. 2004; Louis et al. 2010). However, „traditional leadership and management approaches are well able to resolve technical problems” but nowadays when there is no immediate solution to the problems, requiring a different kind of leadership appears (Pont, Nusche, Hopkins, 2008, p.26). That is the reason why we can consider schools, according to Keshavarz et al. (2010), as social complex adaptive systems.

Leadership influence

The role of leadership is more focused on the teaching-learning development and increasing school efficiency (Mulford, 2003, 2008; Leithwood et al. 2004; Radinger, 2014) although these researches about the leaders' practices and routines are limited (Radinger, 2014). The role of the principal in schools is challenging and complex (Holmes, 2013). Leadership might have a transformational impact on student learning outcomes (Nettles and Herrington, 2007; Fullan, 2010), even if mainly indirectly through the influence of teachers (Radinger, 2014, p. 378). However, understanding the complexity of the principals' role is still challenging (Robinson, 2010).

The indirect affect of leaderships to the students' learning outcomes is determined for more complex organizational factors, such as:

- Organizational culture, which supports the learning by setting adequate targets;
- Organizational learning, which is the sum of the learning of the whole organizations and the knowledge of the staff
- Pursuit of the better organizational operation and the quality of the learning and continuous developing (Armstrong & Foley, 2003; Halász, 2007).

Another important aspect is that the influence of leadership is not just indirect but reciprocal (multidirectional) i.e. circumstances and organizational factors that positively influence learning can reinforce leadership that influences learning in a positive way (Halász, 2007).

Basically there are two types of approaches: one of them writes about the individual leader level of the school leadership (e.g. Korthagen, 2005; Williams, 2008;

Polizzi & Frick, 2012), and the other describes the collective level (f.e. Spillane, Halverson & Diamond, 2001; Mulford & Silins, 2002; Spillane, 2005). According to both approaches school leaders have a key role in the core business of the school (Mulford & Silins, 2002; Leithwood et al., 2004; Mulford, 2006; Polizzi & Frick, 2012). There is a fundamental difference between these approaches: the individual level approach tries to define the effective leaders' skills, knowledge and attitudes, the collective level rather concentrates on the process and practice.

We must not forget that, the aforementioned individual leader approach does not ignore the context of the leadership or the leaders connecting to the wider community, they just focus on the personal level of effectiveness and "viewing leadership practise as a produce of a leader's knowledge and skills" (Spillane, 2005, p.144). As Spillane (2005, p.143) notes they "dwell mostly on what leaders do, rather than how and why they do it".

Distributed leadership model

In earlier researches the concept of distributed leadership showed positive contribution towards improved school performance (Elmore, 2004; Fullan, 2006; Spillane, 2006) and organizational learning (Silins, Zarins & Mulford, 2002; Mulford, Silins & Leithwood, 2004). The distributed leadership (DL) model is a continuously changing theory based on the dialogue between the theoretical ideas and the evidence of the researches (Spillane, 2005). The starting point of DL is understanding the leadership practice in context of a complex organization in a continuously changing environment.

The model is based on Distributed Cognition and Activity Theory, though also influenced by Wenger's Communities of Practice model. Besides that distributed leadership connects with the notion of distributed control aspect of complex adaptive systems and it utilizes the approach of organizational learning theory and complexity science (Leithwood, Mascall & Strauss, 2009).

The concept of DL bears many similarities to notions such as 'shared', 'collective', 'collaborative', 'emergent', 'co-' and 'participative' leadership and has some common theoretical and practical origins (Bolden, 2011), but this does not mean that all forms are equal and/or equivalent (Leithwood et al. 2006).

So what does taking a distributed perspective on school leadership exactly mean? In taking a distributed perspective, attention turns to social approach and 'situated leadership practice' from the individual leaders' actions and characteristic (Spillane, 2006). Leadership practice is not defined as a product of a leaders' knowledge or skills, it is defined as the interactions of school leaders, followers, and their situation (Spillane, 2005). It is important to note that the relation between leader and follower is dynamic: a person might be a follower in one situation and a leader in another, and as the leader effects the followers, the followers have an effect on the leader. This aspect is the leader-plus, which means any member of the school can take on leadership responsibilities (Spillane, 2006; Spillane & Diamond, 2007).

Distributed perspective on the leadership does not mean the responsibility is shared just between the formal leadership team

(i.e. three to seven formally designated persons as Camburn, Rowan and Taylor [2003] note), but it means leadership can be distributed amongst all organizational members. Thus the decisions are enacted by the entire professional community, and governed by the interaction of individuals (Gronn, 2000; Spillane, 2006), rather than by a limited number of people at the top of the hierarchy (Copland, 2003; Elmore, 2000; Lashway, 2003). The essence of this distributed perspective on decision making process is the community approach. As mentioned above, the distributed model is linked to Wenger's (1998) Community of Practice theory, which emphasizes the fundamental processes of learning within communities as "involving forms of mutual engagement; understanding and tuning [their] enterprise; and developing [their] repertoire, styles and discourses" (Wenger, 1998, p.95). The key links between them are the power of the community, the collective commitment and the sharing of responsibilities and knowledge.

Studies have shown that distributed leadership has a positive effect on the climate, morale, workload, creativity, quality, and values of those within the organization (Camburn, 2003; Hobby, Arrowsmith, 2004; Harris, 2005; Mayrowetz, 2008), thus the teachers' organizational commitment is growing (Harris, 2005). Leadership becomes more doable (Harris & Spillane, 2008) and the responsibilities become more manageable (Harris & Spillane, 2008), because more and more members are involved in the school leading (Oswald, 1997; Smith & Piele, 1997). But as Harris (2004) notes, leaders must share at least one part of the responsibility

in a knowledge-intense organization, like schools, because they are not able to control whole complex tasks.

Different models of DL

DL can be defined by shared responsibilities, collective leadership, pooled expertise, development of different 'power' relationships, and tasks that are 'stretched-over' leadership, organizational structures, and positions (Spillane, Halverson & Diamond, 2001; Spillane, 2003; Harris, 2003, 2004; Arrowsmith, 2004). Bennett et al. (2003, p. 7) assembled 3 common aspects from the different descriptions of DL:

1. 'Leadership is an emergent property of a group or network of interacting individuals'
2. 'There is openness to the boundaries of leadership'
3. 'Varieties of expertise are distributed across the many, not the few.'

From this point on, however, the characterization of DL shows more divergence than similarity.

While some of the researches portray DL as an extension of the leadership function, others describe it as a process, which has multiple people responsible, rather than having only one principal or other person with formal functions (Arrowsmith, 2004).

Leithwood and Jantzi's (2004) define DL as one of the components of the transformational leadership. Spillane et al. (2004), on the other hand, hardly considers leadership in schools as distributed.

As Harris (2003) notes DL is a collective leadership form to develop teachers' expertise by working together, thus the skills and talents of all members of the school staff are combined so that the expertise of

the school community can be pooled in specific areas. This definition shows a lot of similarities with the Communities of Practice and Continuing Professional Development models, which focus on improving the students' learning outcomes by the members' expertise or passion for a topic (Wenger, 2002) and by the culture of co-operation, results-oriented approach, setting measurable goals, and facilitative leadership (DuFour, 2004; DuFour et al. 2010).

The "Teacher as Trainer" model is based on this approach and it can train the staff through professional development activities to improve the collective knowledge of the community and to improve the teachers' continuing professional development. This model is based on the view that everybody is an expert of a specific area and knowledge-sharing is a key function as in a learning organization. Linked to this, the mentoring model is another way to support the personal development within the organization. However, Kennedy (2005, p.243) indicates that „this model can support either a transmission view of professional development, where teachers are initiated into the status quo by their more experienced colleagues, or a transformative view where the relationship provides a supportive but challenging forum for both intellectual and affective interrogation of practice". Because of this, one of the most critical aspects is whether or not there is training, supporting and assessment system of mentors in the organization.

Others describe DL as being a "practice that is stretched over the school's social and situational contexts" (Spillane, Halverson and Diamond, 2001). Fur-

thermore, distributed leadership should be defined as the interaction of multiple leaders (Camburn et al. 2003, Harris, 2004; Spillane et al. 2004).

Summarizing of these definitions, DL widens the role, task and responsibility of leadership by building leadership capacity with the followings: trust in the expertise of individuals, ensuring autonomy, collaboration, acceptance of change, provision of professional development, facilitation, mentoring, collective decision making, communities of practice, networking and encouraging reflective practise.

This description has many components in many levels because the model of DL has complex leadership definition. For the better understanding of effective organizations we link this leadership approach with Competing Values Framework to understand connecting leadership style and organizational culture.

Competing Values Framework

The CVF theory describes the core indicators of effective organizations and it is useful for recognising the organizational quality, approaches of organizational design, stages of life cycle development, leadership roles, human resources management and management skills (Cameron & Quinn, 2011). The framework was developed initially from research, and integrated many of the dimensions proposed by various authors by Quinn and Rorhbaugh (1983). The organizational culture includes several coherent components, therefore it is impossible to diagnose and assess all of the relevant factors. Quinn and Rorhbaugh determined the main criteria to judge whether an organ-

ization is being effective or not; the key factors of organizational effectiveness and those indicators which help people to award organization to be effective (Cameron & Quinn, 2011).

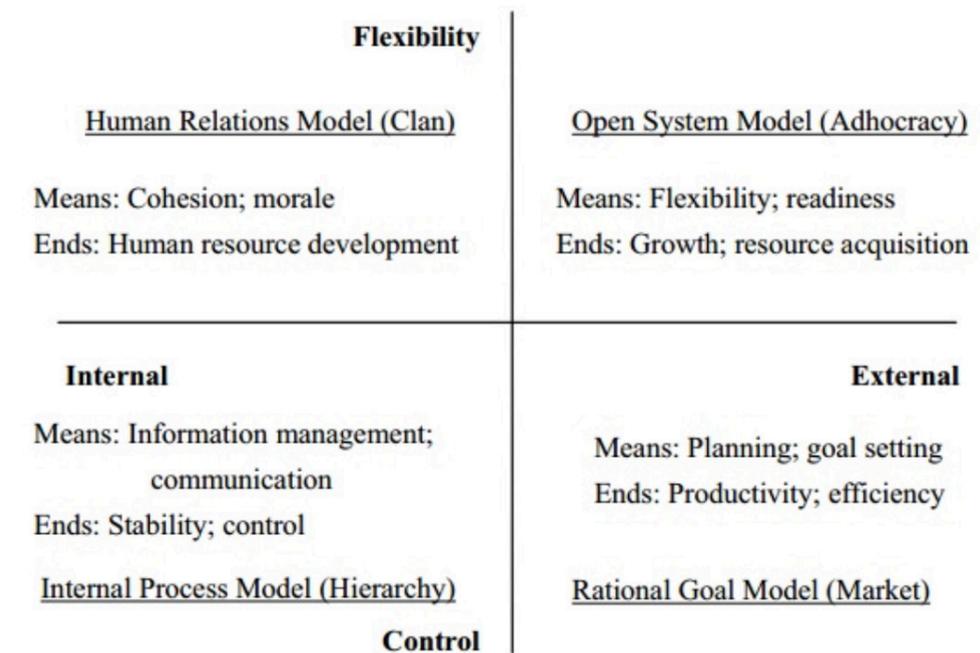
The organizational effectiveness – depending on goals, intentions and resources – might be focused on different values. The theory derives three value dimensions. The first dimension is related to organizational focus from an internal, micro emphasis on well-being and development of people in the organization towards an external, macro emphasis on the well-being and development of the organization itself (internal-external). The second dimension describes organizations by how it is related to changing, and organizational structures which have two termini from stability based on con-

trol to flexibility. The third dimension is those processes and tools which help to reach goals and to validate basic values of the organization (means-ends).

The theory integrated the third dimension into the first and second one and established the CVF which classified four models to describe the different set of effectiveness criteria. The four models are also called four organizational culture types, such as human relations model - Clan, open system model - Adhocracy, rational goal model - Market, and internal process model - Hierarchy (Quinn & Rohrbaugh, 1983, p. 371).

What is notable about these four core values is that they represent opposite or competing assumptions. Each continuum highlights a core value that is opposite of the value on the other end of the contin-

Figure 2: Competing values framework – organizational culture



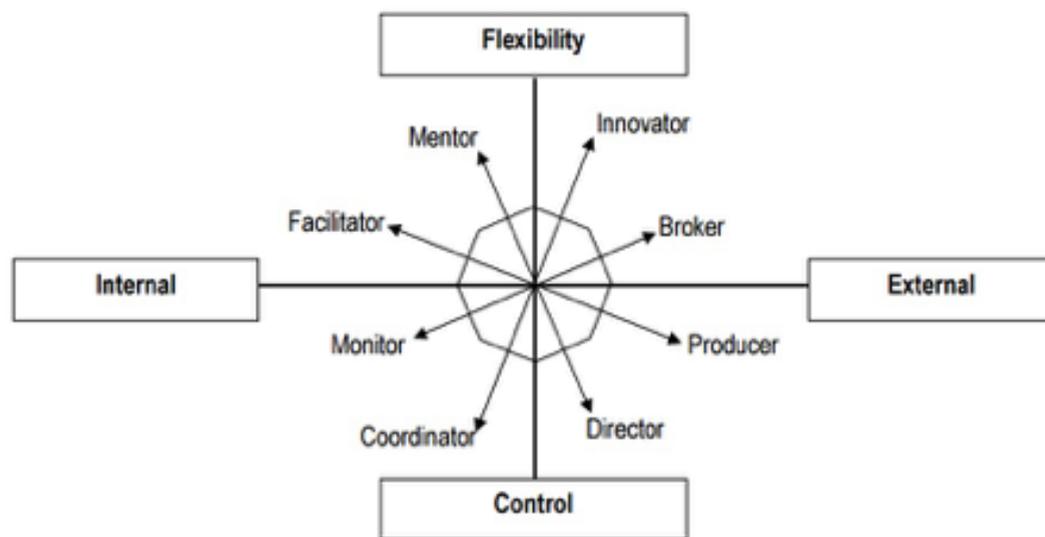
Source: Adapted by Yu (2009, p. 42.) from Quinn and Rohrbaugh (1983, p. 369)

uum—flexibility versus stability, internal versus external (Cameron & Quinn, 2011, p. 369).

Competing values in leadership roles

The competing values framework (CVF) offers a method to analyse the master managers’ skills (Quinn & Cameron, 1983; Quinn, 1984, 1988; Quinn, Sendelbach & Spreitzer, 1991; Quinn, Spreitzer

& Hart, 1992) and to explain the various managerial roles essential for personal effectiveness in complex environment (Quinn et al. 1990; Quinn, 1988; Denison et al. 1995; Cameron and Quinn, 2006, 2011). CVF examines leadership in the same framework like the organizational effectiveness by eight categories.



Source: Kinghorn (2007, p. 527)

“In each quadrant, two defined roles describe the behaviours that a leader in those roles might exhibit. Each role has an opposite or competing role from the exact opposite quadrant. Effective use of these behaviours suggests individual leader competencies and perception of the effectiveness of the leader” (Hart and Quinn, 1993; Hooijberg, 1996 cited Kinghorn, Black and Oliver, 2007, p.528).

The complementary roles of CVF are Mentor, Facilitator (human relations model; clan); Producer and Director

(Competitor) (rational goal model; market); Monitor and Coordinator (internal process model; hierarchy) and Innovator and Broker (Visionary) (open systems model; adhocracy).

We can’t distinguish between these competing roles because one or the other is not clearly better or worse than the other. Effective leaders are balanced in all skills. As Kinghorn quoted “The Master Manager role is the leader that utilizes all behaviours within the correct context” (Quinn, 1988; Hooijberg & Quinn, 1992; Hooijberg, 1996 cited Kinghorn, 2007,

p.528).

The question arises: which culture type can support distributed leadership and learning organizations? Distributed leadership model might be consistent with clan culture, because both of them is based on participative leadership and sharing information. Agreement, inhesion, teamwork and cooperation might be consequences of the DL in clan culture. We might say Clan culture does not exist without distributed leadership. But DL might appear in Adhocracy culture type too, because teamwork and less control describe this culture. The most important task of leaders is to motivate and inspire teachers in this culture. DL might not characterize by Hierarchy and Market types, because of the importance of control of these cultures. As we see, the point is flexibility and control dimensions, internal and external dimensions are less emphasized. DL will most likely appear in the flexibility and internal quadrant and less in the control and external quadrant.

Methods

Our study builds upon the database gathered by the Hungarian-Netherlands School of Educational Management. From June 2015 to September 2015 we distributed electronic surveys to principals, deputy-principals and teachers. The three different kind of questionnaires were linked together through the individual schools educational ID. The questionnaire for principals included the following question groups:

- General questions
- Questions regarding the operation of the institution
- Leadership styles and be-

haviour

- Competitiveness indicators and ideal school questions

The questionnaire for individual teachers revolved around the following question groups:

- General questions
- Individual operation
- Institutional operation and

behaviour of the leader

- Competitiveness indicators and ideal school questions

The deputy-principal questionnaire was a mixture of the elements from the principal and teacher questionnaire.

In the questionnaire we had the opportunity to test the validity of a learning organizational model (164 items) and we included the leadership style questionnaire from the Competing Values Framework along with several contextual questions regarding organizational learning, innovativeness and pedagogical practice of teachers.

The sample from the teacher questionnaire consists of 1406 responses from which due to the length of our questionnaire only 400-500 responses could be utilized after excluding cases with missing values. The sample mainly consists of the South Greater Plain Region schools which is the main jurisdiction of the Hungarian Netherlands School for Educational Management.

In our previous research we explored the different dimensions of the learning organizational behaviour scale and explored its validity and reliability (Baráth et. al., 2015). In the following section we would concentrate on the leadership dimension and its influence on learning organizational behaviour.

We will discover which leadership style and culture fits with the complex adaptive learning organization and how do the different leadership styles influence the different dimensions of the learning organizational behaviour. We will explore the connection between learning organizational behaviour and the necessity of distributive leadership which

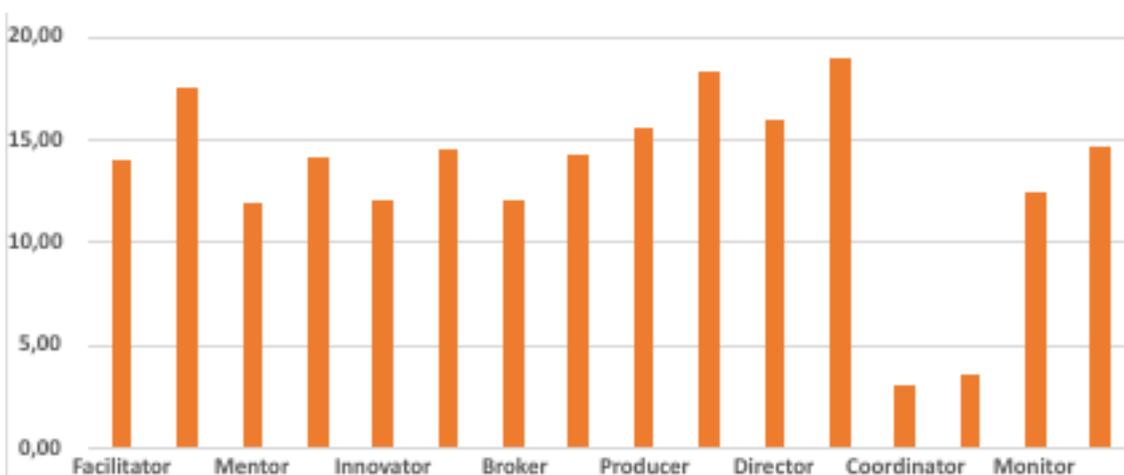
can be interpreted from our data.

Results

1. Leadership styles and culture in the complex adaptive learning organization
 In order to answer the question what leadership style characterizes the Hungarian public education institution which is operating as a learning organization, we could divide the sample along the Learn-

ing Organizational Behaviour scale to a high profile organization and a low profile organization. If we compare the different leadership roles among these categories then we have the following figure (Figure 4).

Figure 4: Different management roles in schools that exhibits low and high values of learning organizational behaviour



Source: own elaboration

Both type of organizations are high on the Director and the Producer roles which belongs to the External-Control quadrant of the framework, also we can identify a high value in the Facilitator role as well, which is in the Internal-Flexibility quadrant. The Director role behaviours consist of designing and organizing work including delegation and envisioning the future, and keeping the tasks and goals consistent and clear. The Producer role behaviours consist of managing time and stress, and concerning with the productivity and focusing on results. These leaders are task-oriented and work-focused, their

influence are based on intensity and rationality. These leaders are energized by competitive situations, winning is an important goal (Quinn et al., 1996; Cameron and Quinn, 2011; Quinn 2006). The Facilitator role behaviours consist of building effective teams, facilitating participative decision-making, problem-solving and managing conflict, seeking consensus (Quinn et al., 1996; Cameron and Quinn, 2011; Quinn 2006).

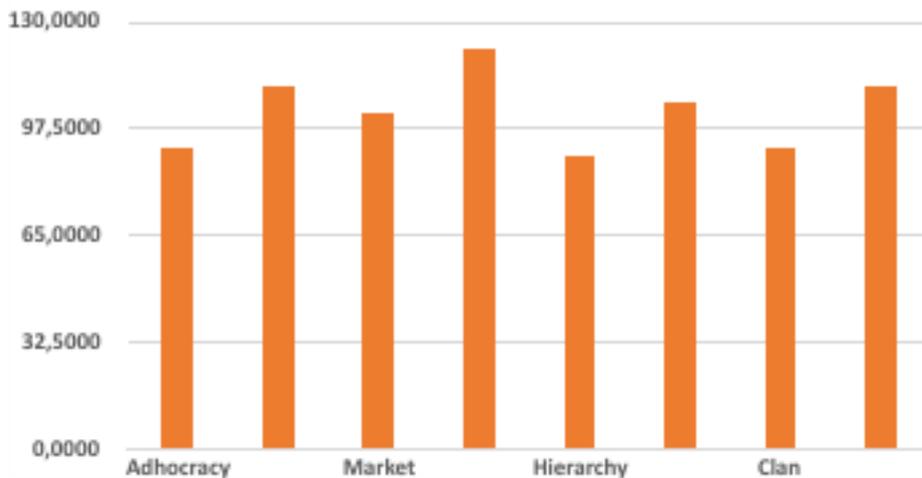
The Coordinator role is insignificant, which is in the Internal-Control quadrant. The Coordinator role behaviours consist of organizing of the work structure,

schedules, giving assignments, managing projects and designing work processes across functional areas and their influence are based on these. These leaders are dependable and reliable (Quinn et al., 1996; Cameron and Quinn, 2011; Quinn 2006). The organizations which have a high value in the Learning Organizational Behaviour scale are prone to higher values in the leadership style scales. If we examine the difference between the two

groups along the means of the leadership style scales we find that all difference are significant[1].

Calculating the different culture scales (adhocracy, market, hierarchy, clan) we found out that the market culture is the more dominant and the difference between low and high profile institutions are significant as we mentioned before. This can be seen in Figure 5.

Figure 5: Organizational culture of schools that exhibits low and high values of learning organizational behaviour

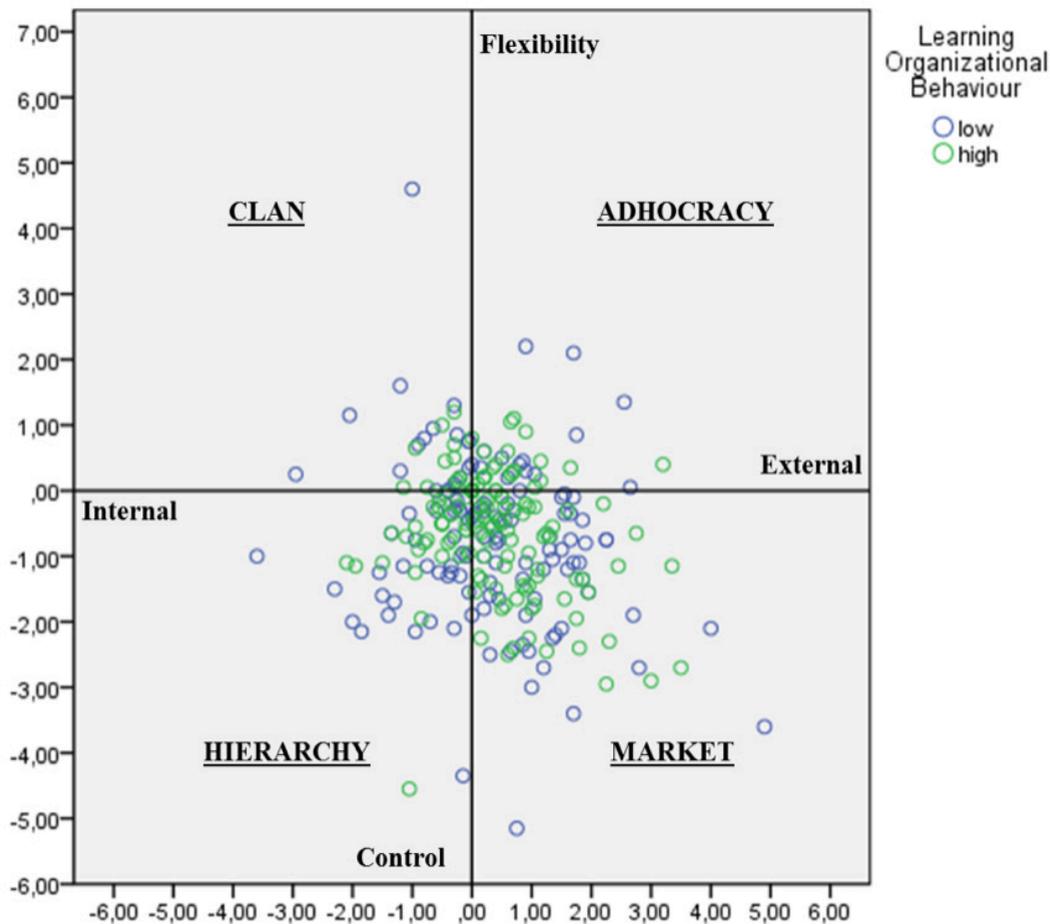


Source: own elaboration

The market culture is a results-oriented workplace which focuses on the transactions with the environment outside the organization instead of the internal management. The organizational goal is to earn profits through market competition. As Yu (2009, p. 38) cited this concept originates from Ouchi’s (1979, 1984) study on the market control system. The key aspect of this culture type is an emphasis on winning, competition and market leader-

ship which are important because the success is defined in terms of market share and penetration (Cameron and Quinn, 2011 p. 39-41). Figure 6. illustrates further that organizations that can be characterized as learning organizations are on the middle of the coordinate-system meaning that they are promoting more or less a balanced approach to all leadership styles, while organizations which are low on learning organizational behaviour are

Figure 6: Dispersion of schools in the CVF



Source: own elaboration

more scattered around the extremes.

2. Leadership styles influencing learning organizational behaviour

To understand the deeper relations between the different leadership roles and the different dimensions of learning or-

ganizational behaviour we can look at Table 1 which summarizes the correlations between these variables.

Table 1: Correlations of learning organizational behaviour dimensions and leadership roles

Correlations								
		LOB	RT	PL	CPD	TL	DT	LSL
FA	r	0,708**	0,604**	0,519**	0,598**	0,554**	0,483**	0,822**
	p	0,00	0,00	0,00	0,00	0,00	0,00	0,00
	N	414	439	425	438	430	435	436
ME	r	0,519**	0,413**	0,319**	0,439**	0,412**	0,338**	0,709**
	p	0,00	0,00	0,00	0,00	0,00	0,00	0,00
	N	414	439	425	438	430	435	436
IN	r	0,669**	0,619**	0,490**	0,551**	0,548**	0,476**	0,721**
	p	0,00	0,00	0,00	0,00	0,00	0,00	0,00
	N	415	440	426	439	430	435	437
BR	r	0,623**	0,571**	0,475**	0,482**	0,515**	0,467**	0,629**
	p	0,00	0,00	0,00	0,00	0,00	0,00	0,00
	N	376	396	385	395	390	394	393
PR	r	0,684**	0,628**	0,489**	0,584**	0,579**	0,490**	0,687**
	p	0,00	0,00	0,00	0,00	0,00	0,00	0,00
	N	407	429	418	428	423	425	426
DI	r	0,651**	0,592**	0,443**	0,557**	0,564**	0,500**	0,646**
	p	0,00	0,00	0,00	0,00	0,00	0,00	0,00
	N	408	430	419	429	423	427	427
CO	r	0,661**	0,557**	0,474**	0,550**	0,585**	0,490**	0,696**
	p	0,00	0,00	0,00	0,00	0,00	0,00	0,00
	N	394	414	403	413	407	411	411
MO	r	0,635**	0,562**	0,453**	0,521**	0,589**	0,490**	0,631**
	p	0,00	0,00	0,00	0,00	0,00	0,00	0,00
	N	396	418	406	417	410	414	415

** . Correlation is significant at the 0.01 level (2-tailed). r: pearson correlation; p: Sig. (2-tailed); N: number of cases FA: facilitator; ME: mentor; IN: innovator; BR: broker; PR: producer; DI: director; CO: coordinator; MO: monitor; LOB: learning organizational behaviour; RT: responsibility and trust; PL: partnership in learning; CPD: continuous professional development; TL: teaching and learning; DT: differentiated teaching; LSL: leadership supporting learning

Source: own study.

Altogether the Facilitator role has the highest correlation ($r=0,708$; $p<0,001$) with the learning organizational behaviour. The Facilitator role belongs to the human relations model and the clan culture and it mainly means that the leader is strong in building teams, using participative decision making and managing conflict. The clan culture has similarity to a family-type organization, because it is full of shared values and common goals, cohesion, participation and an emphasis on empowerment and employee involvement. Quinn and Rorhbaugh contend that (cited Yu, 2009, p. 38) the clan culture is just the organizational culture defined by Wilkins and Ouchi (1983, p.472-474), which can be developed under certain conditions such as a relatively long history and stable membership, absence of institutional alternatives, thick interactions among members, etc. Cameron and Quinn argue that clan-type firms are more like extended families than economic entities, instead of hierarchical structure they work as semi-autonomous work teams, they ensure empowering work environment and facilitate employee participation, commitment, and loyalty (Cameron and Quinn, 2011, p-41-43).

3. Distributive leadership for complex adaptive learning organizations

In connection with the description of DL and CASs we can assume that all the dimensions of the CVF must be necessary to be present in order to develop a fully functional learning organization. Our data so far highlights that in our sample, organizations with higher scores on the learning organizational behaviour scale are somewhat balanced but initially focusing on the external-control domain which can be interpreted as a natural adaptation process to the special Hungarian socio-economic and legal environment.

In order to consider our measurement scale valid through the lens of CVF and complexity theory we should look at how much

of the learning organizational behaviour scale variance can be described by the variance of the leadership style scales. A linear regression analysis on the learning organizational behaviour as dependent variable, the variance of leadership style scales interpret 55,4% of the variance of the learning organizational behaviour scale, out of which only two styles were significant ($p<0,001$): the Facilitator and the Producer. They are on the opposite side of the framework representing the flexibility-internal and the control-external domains as well. As we can see learning organizational behaviour is best interpreted by the combining of the dimensions of the CVF which strengthens our view that a distributed leadership model for learning organizations is necessary.

Discussion

In our paper we searched for the connection of DL and CVF in a LO. The facilitator leadership role is one of the most important aspect of leading a learning organization according to our research which supports the relevancy of the DL approach as facilitating participative decision making and problem solving is a core element of the concept. We can make clear connections with complexity theory as well. Considering organizations a population of diverse rules-based agents, located in multi-level and interconnected systems in a network shape, we can argue that this definition is congruent with the assumptions of DL.

The DL approach requires leaders to fulfil multiple roles in an organization which stems from the dynamic relations of leaders and followers. According to theory, those leaders can be successful who can balance between several leadership roles and able to adapt to the given situation or task. Our data can underpin this theoretical assumption as competing (facilitator and director) leadership roles had the highest impact on learning organizational behaviour. In order to thrive in a complex

adaptive system, leaders have to take into consideration that their followers are diverse, symbol-processing agents, loosely bounded by the rules of the system who might not respond well to direct control, therefore a more human-centered approach and facilitation is needed. On the other hand, leaders must regulate and exert a certain level of control on the system (or at least the framework of the system), especially in the Hungarian context to be able to regulate the coevolution process to the edge of chaos. Hungarian school leaders are expected a great deal of administrative tasks and have to obey a set of strict rules which naturally results in the emergence of the director role.

The Hungarian public education system is in transition currently to an overly centralized model with a very unstable financial and legal background. The relatively new (2012) centralized institutional maintenance centre (Klebelberg Institutional Maintenance Centre) often struggles with financing the basic operation of schools. This process leads to the deprecation of leader autonomy. In this unstable environment it is natural that the role of leaders shifted to the management of every-day tasks and brought on the necessity of controlling functions. This could be a logical explanation of the emergence of the director role which means the designing and organizing of work and to the producer role as well (task oriented, work-focused). What we can experience in this situation is the constant flux of the system and the interrelationship of the external and internal environment: how the internal environment reacts to the external changes in an evolution process.

The decreased autonomy of school leaders are hand in hand with the decrease of autonomy of teachers. DL approach would assume a high level of autonomy and expect leaders to empower their followers, but the current legislative background in Hungary offers very little opportunities as there are centralized regulations from budget to the curriculum,

including a state monopoly of the textbook industry. From this perspective it is logical that the system employs a market-culture, where the external-control quadrant could thrive, which means a results-oriented organization where the main concern is getting the job done. This focus can lead to different results. If the leadership focuses on the quality of learning and teaching than the market model (increasing the competitiveness of the school reaching higher performance, etc.) serves to provide better learning possibilities for the students. If the leadership focuses on adapting the organization to the external expectations ensuring to be always in line with the centrally defined issues, than the school becomes more and more bureaucratic, politically influenced organization

For leadership to be effective in this context, we should take into consideration the suggestions of Snowden and Boone (2007), who identifies the temptation to fall back into command-and-control mode is typical in a complex environment and as we saw in the Hungarian context, the external environment is strengthening this process. Leaders who are trying to build on previous examples are prone to looking for facts rather than allowing patterns to emerge. Also, the Hungarian environment forces leaders to produce fast results, which is also a typical danger signal of complex systems. In order to avoid these pitfalls, leaders should be patient and allow time for reflection and should encourage interactions in the organization. This would help the process of self-organization where the leader role is facilitating the common sense-making process. To do so, leaders must accept disequilibrium and favour discussion, conflict and controversy in order to increase flexibility in a rather strict environment for the sake of allowing experiments and novelty to rise. Leaders must focus on the manipulation of language and symbols which are rather soft aspects of management (Olmedo, 2012).

These implications and context gives rise to the notion of a more profession-oriented (pedagogical) leadership which „invests in capacity building by developing social and academic capital for students and intellectual and professional capital for teachers” (Sergiovanni, 1998, p.38). Jäppinen (2012) combines this approach with DL, creating distributed pedagogical leadership (DPL) which is a fluid, mutable and synergetic practice. The three background elements of DPL are distributed leadership, leaderful practices and managing without leadership. DPL creates an environment where shared cognition and understanding, synergy creation and jointly agreed actions are in place, which means that teachers collaboratively lead teaching and learning activities by jointly agreed goals and means. This approach would support the complexity background of our investigation as well, as it accepts and deals with agents' schemata (shared cognition) and allows for self-organization and by focusing on pedagogical/professional aspects it could elude the pitfalls of complex systems and the negative environment.

References

- Anderson, P., (1999), Complexity Theory and Organization Science, in: *Organization Science*, Vol. 10, No. 3, pp. 216-232
- Armstrong, A., Foley, P., (2003), Foundations for a learning organization: organization learning mechanisms, in: *The Learning Organization*, Vol. 10, No. 2, pp. 74 – 82
- Arrowsmith, T., (2004), Distributed leadership: Three questions, two answers, in: *Management of Education*, Vol. 19, pp. 30-33
- Axelrod, R., Cohen, M. D., (2000), *Harnessing Complexity: Organisational Implications of a Scientific Frontier*, Free Press, New York
- Baráth, T., (eds., 2015), *Dél-Alföld megújuló iskolái*, [Renewing schools of the Southern Greater Plains Region] Szegedi Egyetemi Kiadó, Juhász Gyula Felsőoktatási Kiadó,
- Szeged
- Bennett, N., Harvey, J.A., Wise, C., Woods, P.A., (2003), *Distributed leadership: A desk study*, National College of School Leadership, Nottingham
- Bolden, R., (2011), *Distributed Leadership in Organizations: A Review of Theory and Research*, in: *International Journal of Management Reviews*, Vol. 13, No. 3, pp. 251–269
- Boulding, K., (1956), *General Systems Theory: The skeleton of science*, in: *Management Science*, Vol. 2, pp. 197-208
- Bush, T., Glover, D., (2003), *School Leadership: concepts and evidence*, National College for School Leadership, Nottingham
- Camburn, E., Rowan, B., Taylor, J., (2003), *Distributed leadership in schools: The case of elementary schools adopting comprehensive school reform models*, in: *Educational Evaluation and Policy Analysis*. Vol. 25, pp. 347-373
- Cameron, K.S., Quinn, E.R., (2011), *Diagnosing and Changing Organizational Culture: Based on the Competing Values Framework*, Revised Edition, January 2011, Jossey-Bass, San Francisco
- Cameron, K.S., Quinn, R.E., (2006), *Diagnosing and Changing Organizational Culture: Based on the Competing Values Framework*, Jossey-Bass, San Francisco
- Copland, M.A., (2003), *Leadership of Inquiry: Building and Sustaining Capacity for School Improvement*, in: *Educational Evaluation and Policy Analysis*, Vol. 25, No. 4, pp. 375–395
- Dennison, D., Hooijberg, R., Quinn, R., (1995), *Paradox and performance: toward a theory of behavioural complexity in managerial leadership*, in: *Organization Science*, Vol. 6, pp. 524-540
- DuFour, R., (2004), *What is a “professional learning community”?*, in: *Educational Leadership*, Vol. 61, No. 8, pp. 6–11
- DuFour, R., DuFour, R., Eaker, R., Many, T., (2010), *Learning by Doing. A handbook for Professional Learning Communities at Work*,

- Solution Tree Press, Bloomington
- Elmore, R., (2004), *School reform from the inside out: Policy, Practice, and Performance*, Harvard Education Press, Washington
- Elmore, R.F., (2000), *Building a new structure for leadership*, The Albert Shanker Institute, Washington
- Fullan, M., (2006), *Leading professional learning*, in: *School Administrator*, Vol. 10, No. 10, pp. 63–70
- Fullan, M., (2010), *The Awesome Power of the Principal*, in: *Principal*, Vol. 89, No. 4, pp. 10-12
- Gronn, P., (2000), *Distributed properties: A new architecture for leadership*, in: *Educational Management Administration and Leadership*, Vol. 28, pp. 317-338
- Halász, G., (2007), *Képességfejlesztés, iskolavezetés és pedagógiai paradigmaváltás [Skill development, school leadership and pedagogical paradigm change]*, in: Kiss, É., (eds.), *Pedagógián innen és túl. Zsolnai József 70. születésnapjára*, Pannon egyetem BTK, Pécsi Tudományegyetem BTK, pp. 366-387
- Halász, G., Faragó, L., (2010), *Iskolavezetés és tanulási eredményesség: egy nemzetközi projekt tanulságai*, in: *Mester és Tanítvány*, Vol. 26, pp. 19-20
- Harris, A., (2003), *Teacher leadership as distributed leadership: Heresy, fantasy or possibility?*, *School Leadership and Management*, Vol. 23, pp. 313-324
- Harris, A., (2004), *Distributed leadership and school improvement: Leading or misleading?*, in: *Educational Management Administration & Leadership*. Vol. 32, pp. 11-24
- Harris, A., Spillane, J., (2008), *Distributed leadership through the looking glass*, in: *Management in Education*, Vol. 22, pp. 31
- Harris, A., (2005), *Leading or misleading? Distributed leadership and school improvement*, in: *Journal of Curriculum Studies*, Vol. 37, pp. 255–265
- Holmes, K., Clement, J., Albright, J., (2013), *The complex task of leading educational change in schools*, in: *School Leadership & Management*, Vol. 33, No. 3, pp. 270-283
- Jäppinen, A-K., (2012), *Distributed Pedagogical Leadership in Support of Student Transitions*, in: *Improving Schools*, Vol. 15, No. 1, pp. 23-36
- Kauffman, S. A., (1995), *At Home in the Universe: The Search for Laws of Self-Organization and Complexity*, Oxford University Press, New York
- Kennedy, A., (2005), *Models of Continuing Professional Development: a framework for analysis*, in: *Journal of In-service Education*, Vol. 31, No. 2, pp. 235-250
- Keshavarz, N., Nutbeam, D., Rowling, L., Khavarpour, F., (2010), *Schools as Social Complex Adaptive Systems: a New Way to Understand the Challenges of Introducing the Health Promoting Schools Concept*, in: *Social Science and Medicine*, Vol. 70, pp. 1467-1474
- Kinghorn, B., Black, J., Oliver, R., (2007), *Leadership roles and organizational environment: relationship between competing values framework leader roles and the context for learning*, Southwest University of Mississippi, Decision Sciences Institute, Inc., pp. 526-534
- Korthagen, F., (2005), *The organization in balance: Reflection and intuition as complementary processes*. in: *Management Learning*, Vol. 36, No. 3, pp. 371-387
- Kurtz, C. F., Snowden, D. J., (2003), *The New Dynamics of Strategy: Sense-making in a Complex-Complicated World*, in: *IBM System Journal*, Vol. 42, No. 3, pp. 462-483
- Lashway, L., (2003), *Role of the School Leader. Trends and Issues*, EROC Clearinghouse of Educational Management, University of Oregon
- Leithwood, K., Day, C., Sammons, P., Harris, A., Hopkins, D., (2006), *Successful School Leadership: what it is and how it influences pupil learning*, DfES Publications, Nottingham
- Leithwood, K., Jantzi, D., (1999), *Transforming*

- mational school leadership effects: a replication, in: *School Effectiveness and School Improvement*, Vol. 10, No. 4, pp. 451–479
- Leithwood, K., Seashore-Louis, K., Anderson, S., Wahlstrom, K., (2004), *How leadership influences student learning: A review of research for the learning from leadership project*, Wallace Foundation, New York
- Leithwood, K., Mascall, B., Strauss, T., (2009), *Distributed Leadership according to the Evidence*, Routledge, Abingdon
- Louis, K. S., Leithwood, K., Wahlstrom, K.L., Anderson, S.E., (2010), *Investigating the Links to Improved Student Learning – Final Report of Research Findings*, University of Minnesota, University of Toronto
- Mayrowetz, D., (2008), *Making sense of distributed leadership: Exploring the multiple usages of the concept in the field*, in: *Educational Administration Quarterly*, Vol. 44, pp. 424-435
- McLean, D., MacIntosh, R., (2003), *Complex Adaptive Social Systems: Towards a Theory for Practice*, in: Mitleton-Kelly, E., (eds.), *Complex Systems and Evolutionary Perspectives on Organisations: The application of complexity theory to organisations*, Elsevier, Oxford
- McMillan, E., (2004), *Complexity, Organizations and Change*. Routledge, London
- Morel, B., Ramanujam, R., (1999), *Through the Looking Glass of Complexity: the Dynamics of Organizations as Adaptive and Evolving Systems*, in: *Organization Science*, Vol. 10, No. 3, pp. 278-293
- Mulford, B., (2003), *Leadership for Organisational Learning in Schools and Improved Student Outcomes*, in: Istance, D., Kobayashi, M., (2003), *Networks of Innovation: Towards New Models for Managing Schools and Systems*. Schooling for Tomorrow, OECD, pp. 74-49
- Mulford, B., (2006), *Leading Change for Student Achievement*, in: *Journal of Educational Change*, Vol. 7, No. 1, pp. 47-58
- Mulford, B., (2008), *The Leadership Challenge: Improving Learning in Schools*, Australian Council for Educational Research, Australia, Victoria
- Mulford, B., Silins, L., (2002), *Leadership and school results*, in: Leithwood, K., Hallinger, P., (eds.), *Second International Handbook of Educational Leadership and Administration*, Kluwer Academic Publishers, Norwell, MA, pp. 561-612
- Mulford, B., Silins, L., Zaris, S., (1999), *Leadership for Organisational Learning and Student Outcomes – The LOLSO Project: The first report of an Australian three year study of international significance*, American Educational Research Association, April, Montreal
- Mulford, W., Silins, H., Leithwood, K., (2004), *Educational leadership for organisational learning and improved student outcomes*, Kluwer Academic, Dordrecht
- Nettles, S. M., Herrington. C., (2007), *Revisiting the Importance of the Direct Effects of School Leadership on Student Achievement: The Implications for School Improvement Policy*, in: *Peabody Journal of Education*, Vol. 82, No. 4, pp. 724-736
- Olmedo, E., (2012), *The Future of Leadership: The New Complex Leaders' Skills*, in: *Global Journal of Accounting and Economic Research*, Vol. 1, No. 1, pp. 79-90
- Ouchi, W. G., (1979), *A Conceptual Framework for the Design of Organizational Control Mechanism*, in: *Management Science*, Vol. 25, No. 9, pp. 833
- Ouchi, W. G., (1984), *The M-Form Society: Lessons from Business Management*, in: *Human Resource Management*, Vol. 23, No. 2, pp. 191-213
- Polizzi, J.A., Frick, W., (2012), *Transformative Preparation and Professional development: Authentic reflective Practise for School Leadership*, in: *Teaching and Learning: The Journal of Natural Inquiry and Reflective Practice*, Vol. 26, No. 1, pp. 20-34
- Pont, B, Nusche, D., Hopkins, D., (2008), *Improving School Leadership*, Vol 1 Policy

- and Practice, OECD
- Prigogine, I., Stengers, I., (1984), *Order Out of Chaos: Man's New Dialog with Nature*, Bantam Books, New York
- Quinn, R. E., Faerman, S.R., Thompson, M.P., (1996), *Becoming a Master Manager: a Competency Framework*, John Wiley & Sons Inc., New York
- Quinn, R. E., (1988), *Beyond Rational Management*, Jossey-Bass, San Francisco
- Quinn, R. E., Faerman, S., Thomson, M., McGrath, M., (1990), *Becoming a Master Manager*, John Wiley & Sons Inc., New York
- Quinn, R.E., (1984), Applying the competing values approach to leadership: Toward an integrative framework, in: Hung, J., Hosking, D., Schriesheim, C., Stewart, R., (eds.), *Leaders and managers: International perspective on managerial behavior and leadership*, Pergamon Press, Elmsford
- Quinn, R.E., Rohrbaugh, J., (1983), A special model of effectiveness criteria: towards a competing values approach to organizational analysis, in: *Management Science*, Vol. 29, pp. 363–377
- Quinn, R.E., Sendelback, N., Spreitzer, G., (1991), Education and empowerment: A transformational model of managerial skills development, in: Bigelow, J. D. (eds.), *Managerial skills: Explorations in practical knowledge*. Newbury Park, Sage Publications
- Quinn, R.E., Spreitzer, G., Hart, S., (1992), Integrating the extremes: Crucial skills for managerial effectiveness, in: Srivastava, S., Fry, R. E. et. al. (eds.), *Executive and organizational continuity: Managing the paradoxes of stability and change*, Jossey-Bass, San Francisco
- Radinger, T., (2014), School Leader Appraisal- A Tool to Strengthen School Leaders' Pedagogical Leadership and Skills for Teacher Management?, in: *European Journal of Education*, Vol. 49, No. 3, pp. 378- 394
- Robinson, V. M. J., (2010), From Instructional Leadership to Leadership Capabilities: Empirical Findings and Methodological Challenges, in: *Leadership and Policy in Schools*, Vol. 9, No. 1, pp. 1-26
- Robinson, V., Hohepa, M., Lloyd, C., (2015), *School Leadership and Student Outcomes: Identifying What Works and Why Best Evidence Synthesis Iteration [BES]*, Ministry of Education, University of Auckland, New Zealand
- Rumelhart, D. E., (1984), Schemata and the Cognitive System, in: Wyer, R. S. Jr., Srull, T. K., (eds.), *Handbook of Social Cognition*. Lawrence Erlbaum, Hillsdale, pp. 161-189
- Senge, P. M., (1990), *The Fifth Discipline: The Art and Practice of the Learning Organization*. Doubleday, New York
- Sergiovanni, T. J., (1998), Leadership as Pedagogy, Capital Development and School Effectiveness, in: *International Journal of Leadership in Education*, Vol. 1, pp. 37–46
- Silins, H., Mulford, B., Zarins, S., (2002), Organisational learning and school change, in: *Educational Administration Quarterly*, Vol. 38, No. 5, pp. 613-642
- Silins, H., Mulford, W., (2002), Leadership and school results in: Leithwood, K., Hallinger, P. (eds), *Second International Handbook of Educational Leadership and Administration*, Kluwer, Dodrecht, pp. 561–612
- Simon, H. A., (1996), *The Sciences of the Artificial*, MIT Press, Cambridge
- Smith, S. C., Piele, P. K., (1997), *School leadership. Handbook for excellence*, ERIC Clearance on Educational Management, Oregon
- Snowden, D. J., Boone, M. E., (2007), A Leader's Framework for Decision Making, in: *Harvard Business Review*, November.
- Spillane, J., Halverson, R., Diamond, J., (2001), Investigating school leadership practice: A distributed perspective, in: *Educational Researcher*, Vol. 30, pp. 23-28
- Spillane, J.P. (2005), Distributed Leadership, in: *The Educational Forum*, Vol. 69, pp. 143-150
- Spillane, J.P., (2003), Educational leadership, in: *Educational Evaluation and Policy Analy-*

- sis, Vol. 25, pp. 343-346
- Spillane, J.P., (2006), *Distributed Leadership*, John Wiley and Sons, San Francisco
- Spillane, J.P., Diamond, J.B., (2007), *Distributed leadership in practice*, Teachers College Press, New York
- Spillane, J.P., Halverson, R., Diamond, J.B., (2004), Towards a theory of leadership practice: a distributed perspective, in: *Journal of Curriculum Studies*, Vol. 36, No. 1, pp. 3–34
- Timperley, H.S., (2005), Distributed leadership: developing theory from practice, in: *Journal of Curriculum Studies*, Vol. 37, No. 4, pp. 395-420
- Weick, K. E., (1979), *The Social Psychology of Organizing*. Addison Wesley, Reading, MA
- Wenger, E., (1998), *Communities of Practice: Learning, Meaning, and Identity*, Cambridge University Press, New York
- Wenger, E., McDermott, R., Snyder, W., (2002), *Cultivating Communities of Practice: a Guide to Managing Knowledge*, Harvard Business School Press, Cambridge
- Wilkins, A. L., Ouchi, W. G., (1983), Efficient Cultures: Exploring the Relationship between Culture and Organizational Performance, in: *Administrative Science Quarterly*, Vol. 28 No. 9, pp. 468-481
- Williams, H. W., (2008), Characteristics that Distinguish Outstanding Urban Principals: Emotional Intelligence, Social Intelligence and Environmental Adaptation. in: *Journal of Management Development*, Vol. 27, No. 1, pp. 36-54
- Yu, T., Wu, N., (2009), A Review of Study on the Competing Values Framework, in: *International Journal of Business and Management*, Vol. 4, No. 7, pp. 37-42