

Augmenting Sustainable Leadership Practices with Complexity Theory

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Abstract

In the United States, change in public schools continues exponentially, a product of governmental accountability, accelerated communication, greater stakeholder involvement, and a need to develop students capable of thriving in the global economy. Public school leaders often feel that sustaining any kind of educational reform is impossible. This article discusses the need to augment sustainable leadership practices with principles derived from complexity theory to promote greater flexibility and capacity in decision-making at the school level. While sustainable leadership practices have helped school leaders to think holistically and beyond their institutions, greater emphasis on accountability has led legislators and leaders outside of schools to exert considerable control to ensure stable and predictable results. Often overshadowed is the importance of promoting capacity building and allowing educators and their communities at the school level to set priorities so that schools can rapidly adapt to changing circumstances by devising solutions tailored to specific needs.

1. Introduction

School leaders throughout the United States in the twenty-first century are forced to think beyond the local schoolhouse. This is because American public schools are impacted by multi-tiered accountability and funding from federal, state, county, and local governments. Culture wars based on competing religious, political, and philosophical values in conjunction with polarized political parties affect the daily operation of public schools. Real-time reporting and communication via social and multimedia generate intense scrutiny and promote instantaneous reactions by the public to the daily actions of teachers and school leaders. The speed and amount of information circulated daily allows little time for deep reflective thought. In addition, the worship and zealous application of quantitative data promotes an ever ending quest for more by the public and political leaders who want to measure the worth and effectiveness of public schools.

The interconnectedness of public schools with political, social, and cultural institutions combined with the rapidity of change in a global economy has

prompted the search for better ways of leading and managing change. Sustainable leadership theory and practices are designed to help the school leader overcome such challenges. Sustainable leadership theory promotes long and short term planning, an examination of the connectivity of external processes and institutions with the local school, as well as strategic thinking. Unfortunately, the current proclivity for school accountability based upon test scores and other quantifiable data has fostered an extraordinary number of accountability measures and over regulation of schools at the expense of the flexibility needed to properly educate students [1]. The traditional mechanistic view of schools, grounded in linear thought and cause/effect thinking, in combination with a desire for predictability and stability based upon quantifiable measurements, has overshadowed some elements of sustainable leadership theory. Specifically, the importance of decision-making grounded in the context of the day to day realities experienced by principals and teachers in schools is often ignored.

Some aspects of sustainability theory, and much of complexity theory—which views schools as an organism to be understood rather than a mechanism to be controlled, recommend employing less control over people and the promotion of social intelligence within organizations rather than relying primarily upon external rule [2]. Complexity theory emphasizes the complex and unique nature of human beings and human organizations. Employing principles advocated by complexity theory in conjunction with sustainable leadership practices can produce schools more capable of tailoring educational programs to their unique needs and promote decision-making that can adapt to changing circumstances. This is in contrast to the all too often practice of imposing rigid reforms from outside of the school that bear little relation to what schools need to be doing each day to advance student learning.

2. The Early Sustainability Revolution

Early advocates of sustainability practices were driven by an awareness of the interconnectedness of people and processes across the globe and the limitation of natural resources [3]. Meadows, et al. warned that “the behavior of all complicated social

systems is primarily determined by the web of physical, biological, psychological, and economic relationships that binds together any human population, its natural environment, and its economic activities. Until the underlying structures of our socioeconomic systems are thoroughly analyzed, they cannot be managed effectively" [4]. The early focus was on sustaining the delicate balance of the environment by limiting exponential growth using rational, planned measures to promote a global equilibrium. Sustainable leadership practices, however, in higher education were initially limited to an integrated model of academic leadership confined to the university with little regard for the need to interact with stakeholders and institutions outside of academia [5]. Until the last decade, discussion of sustainable leadership practices and their application were conspicuously absent in American public schools. Sustainable leadership practices are now, however, an integral part of the discussion of how best to organize and lead public schools.

3. Three Views on Sustainable Leadership Practices—Fullan, Hargreaves and Fink, and Davies

Michael Fullan, Andy Hargreaves and Dean Fink, and Brent Davies have produced three paradigms for sustainable school practices that are

remarkably similar in their definition and principles [6]. Davies describes sustainable leadership as a means to address "the key factors that underpin the longer-term development of the school. It builds a leadership culture based on moral purpose which provides success that is accessible to all". Fullan advocates "Eight Elements of Sustainability", Hargreaves and Fink promote "Seven Principles of Sustainability", while Davies' paradigm includes "Nine Key Factors".

The three paradigms have five principles in common that drive sustainable school leadership practices. First, educational leadership has to be grounded in moral purpose and practice. Second, decisions have to be made strategically. Leaders must consider long-term planning and the impact of their decision-making on the school as well as stakeholders outside of the school. Third, professionals within the schools must understand the symbiotic relationship between administrators and teachers with students, parents, and community members, as well as state, federal, and local governments. Fourth, educational leaders must conserve human and material resources based upon their limitations. And fifth, in conjunction with students, teachers, and the community, school leaders must create schools that promote lifelong learners as the seminal product of public education.

**Sustaining School Reform—
IV. Three Definitions of Sustainable School Leadership**

Definition	Hargreaves & Fink, <i>Sustainable Leadership</i> , (2006)	Davies, <i>Developing Sustainable Leadership</i> (2007).
Michael Fullan, <i>Leadership and Sustainability: Systems Thinkers in Action</i> , (2005)	<ul style="list-style-type: none"> • Definition: "Sustainability is the capacity of a system to engage in the complexities of continuous improvement consistent with deep values of human purpose." (p. ix). • Sustainability is rooted in complex processes. • Sustainability must have a moral dimension. 	<ul style="list-style-type: none"> • Definition: "Sustainable educational leadership and improvement preserves and develops <i>deep learning</i> for all that spreads and lasts, in ways that do no harm to and indeed create positive benefits for others around us, <i>now and in the future</i>." (p. 17). <ul style="list-style-type: none"> • "... Sustainability in its very substance addresses the value and <i>interdependence</i> of all life as both its means and an end. • It is by definition, a <i>moral concept and moral practice</i>." (p. 18).

Figure 1. Three definitions of sustainable school leadership

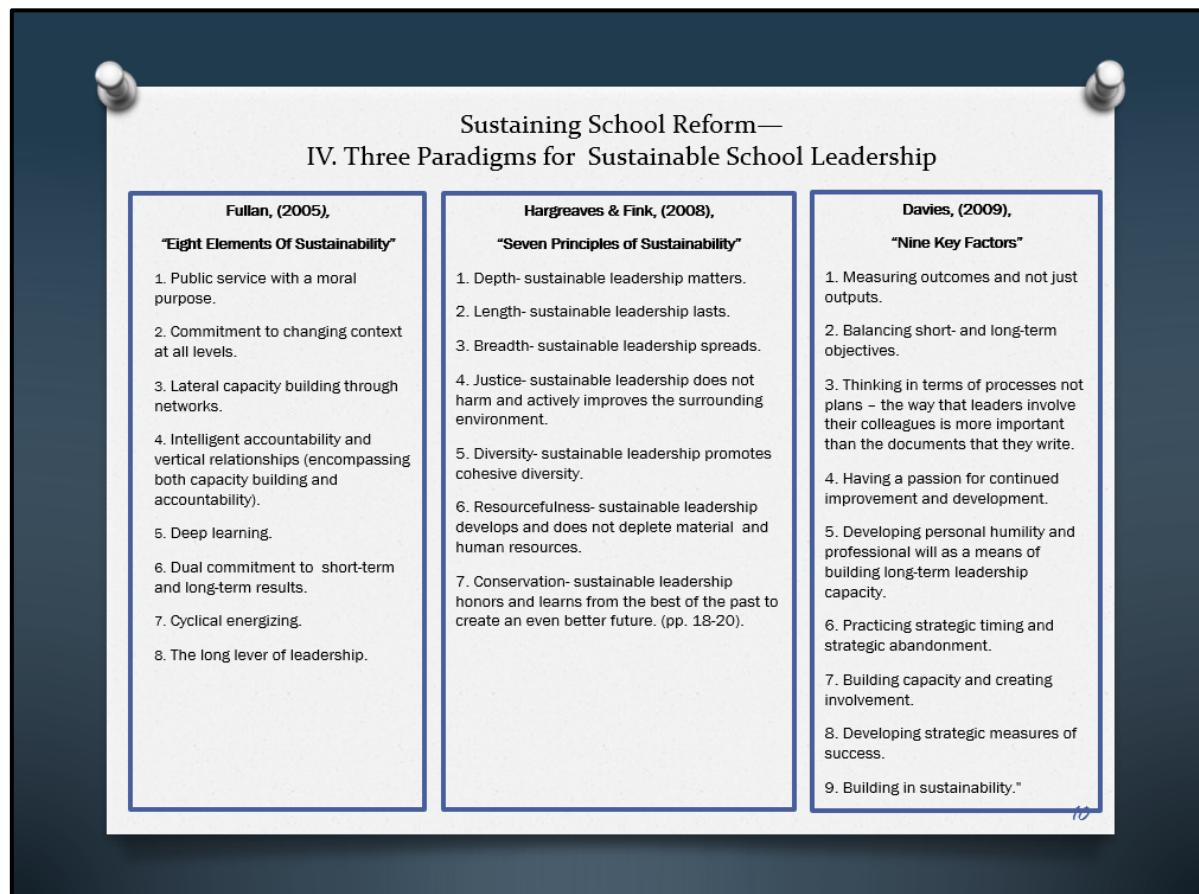


Figure 2. Three paradigms of sustainable school leadership practices

4. Sustainable Leadership Practices and the Weakness of Partial Implementation

Sustainable leadership theory provides several principles that can help the school leader sustain school reforms. Leaders are taught to look beyond and across institutions to the outside forces that impact schools. They learn to examine problems holistically and to recognize the interdependence of schools with other institutions and their impact upon one another. Like a camera lens, sustainable leaders often change their focus so that they can look at problems over the short-term and the long-term. Rooted in ecological sustainability, the limits of human and material resources are considered. Leaders practicing sustainable leadership practices also understand the importance of grounding their decisions in a common moral purpose—"a value that, when articulated, appeals to the innate sense held by some individuals of what is right and what is worthwhile" [7].

Despite using many sustainable leadership practices to survive the onslaught of school reform and change, legislators and school leaders have too often overemphasized the similarities of schools at the expense of their unique circumstances and needs.

Fear of not meeting accountability standards generated by political and educational leaders outside of local schools, in combination with duties unrelated to pedagogy which are a by-product of these reforms, have led to an ever increasing number of top down mandates so prescriptive that it is impossible for schools to properly implement them [8]. This is not the fault of sustainable leadership theory but rather a result of political and school leaders outside of local schools creating layer upon layer of regulations intended to promote accountability standards while protecting themselves. To such leaders, building capacity and cyclically energizing schools according to the tenants of sustainable leadership theory seems counterintuitive. To their way of thinking, more freedom equals less control. Unfortunately, layers of prescriptive regulations, intended to ensure schools meet accountability standards, frequently prevent principals and teachers from having the time to focus on effective teaching that promotes student learning because they are tied up with meaningless paperwork and bureaucratic practices that do not enhance the pedagogy of public schools.

If permitted, schools can engage in self-organizing interaction that transforms learning in

spite of the outside forces that all too often impede the operation of the school. When either legislators or school leaders ignore the unique differences of local schools and their organic operational nature, the creation of solutions to unique problems is deterred because individuals at the school level who know best how to devise effective solutions to their problems are marginalized. The quest for greater predictability and stability through more prescriptive regulation ignores the fact that instability often forces compromises and solutions among competing entities because it is to their mutual advantage to do so. Ironically, by hoisting regulation upon regulation, political and educational leaders outside of the local school are not fixing the problem, they are actually exacerbating the problem. Fortunately, complexity theory provides solutions, emphasizing that “the fundamental dynamic in [human and institutional] evolution, is interactive cooperation, having the intrinsic capacity for producing novelty and coherence, rendering their emergence inevitable, although what emerges is radically unpredictable” [9]. Most complexity theorists agree that the dynamic nature of organizations leads to cooperative solutions but some disagree over the degree of predictability that can ever be achieved.

5. Complexity Theory

Margaret Mitchell defines a complex system as one “in which larger networks of components with no central control and simple rules of operation give rise to complex collective behavior, sophisticated information processing, and adaptation via learning or evolution” [10]. Roger Lewin similarly believes that “Complex adaptive systems are composed of a diversity of agents that interact with each other, mutually affect each other, and in doing so generate novel, emergent, behavior for the system as a whole. The system is constantly adapting to the conditions around it, and over time it evolves” [11]. Consequently, school leaders who understand the complex nature of biological and human systems, frequently opt for the use of influence over prescriptive control.

Lewin’s theory of complexity theory is driven by five assumptions. First, humans are more like organisms than machines. Humans have the ability to interact and make decisions that involve change in multiple ways. Machines, however, are severely limited by their design and intended purpose. Second, the source of emergence in an organization is a product of the interaction between the agents who mutually affect one another. Third, small changes lead to large effects. Leaders within local schools must adapt their personnel and institutions accordingly. Those who lead outside of the local school must grasp that from a distance they frequently have little or no control over the effects of

those changes. Fourth, emergence is certain, however, there is no certainty as to what the outcome will be. Among complexity theorists, there is some disagreement about the degree of predictability for outcomes produced by emergence within organizations. Leaders inside and outside of the local school must consider the impact of emergence when making decisions. Finally, Lewin believes that a greater diversity of agents within a system leads to richer emergent patterns [12].

For advocates of complexity theory, the interactive and symbiotic dynamics of people within institutions and their interdependency must be taken into account when leading people and their institutions. Marion and Uhl-Bien believe that “the adaptive function in the organization happens in the informal dynamics of a system as much, or more, than in boardrooms” [13].

In many ways, complexity theory bolsters sustainable leadership theory by recognizing the dynamic non-linear nature of the structure and control in the administrative operation of human institutions, hence the need for greater institutional self-monitoring and self-regulation [14]. Complexity theorists assume that institutions like businesses and schools are complex adaptive systems (CAS). Both innately possess the capacity to evolve and to solve problems more efficiently than decisions or practices developed some distance from the very people tasked with carrying out the day to day operations. Another assumption of complexity theory is that human organizations, when buffeted by disequilibrium and close to the edge of chaos, tend to emerge, self-organize, and adapt in order to solve problems [15]. Espinoza Salazar and Walker, however, warn that in order for complex systems to survive, their viability must be reinforced by a balance of autonomy and institutional cohesion. For them, “a proper balance between the autonomy of individual subsystems and cohesion at different levels of organizations is a necessary condition for both viability and sustainability” [16]. Furthermore, meta-systems of management best promote sustainability by balancing the ability of people to work independently at different operational levels while maintaining coherence with other units within a system [17]. In essence, Espinoza Salazar and Walker are advocating for a blend of the best aspects of sustainable leadership theories and complexity theory. They understand the need for a balance between structure and innovation whenever developing reforms or leading change in organizations. Similarly, Marion and Uhl-Bien emphasize the importance of promoting independent thought balanced with structured direction. They argue for the development of “enabling leaders”, ones that understand the importance of controlling people and processes “only to the degree that they build structures for inhibiting or redirecting ideas that are inconsistent with

organizational missions or damaging to organizational functions” [18].

6. Six Simple Rules—How to Manage Complexity

Recently, Morieux and Tollman in *Six Simple Rules to Manage Complexity* (2014) put forth the proposition that contrary to traditional leadership theory, which advocates that people are the problem, people are in fact the solution to solving many of the problems within institutions. Although directed primarily towards leaders of businesses, their assumptions and rules are quite applicable to public schools and their leaders. For the authors, “the human factor isn’t the weak link—something to be minimized and worked around. Rather, it is the key resource for coping with complexity...simply piling up structure upon structure and multiplying procedures and formal rules (including some that contradict each other) with the hard approach only adds new obstacles to dealing with complexity” [19]. To promote better decision making at the lowest levels of businesses, Morieux and Tollman have created “six simple rules” based upon their research. These rules are intended to address the deficiencies of leadership practices that employ either a “hard approach” focusing on the creation of “structures, processes or systems” to control performance, or a “soft approach” regulating human behavior by rules and rewards. Rules 1-3 are intended to promote individual autonomy and cooperation. Rules 3-6 “are designed to impel people to confront complexity and to use their autonomy to cooperate with others, by embedding feedback loops that expose them directly to the consequences of their actions, without the need for extra supervision and structure or for the bureaucracy of compliance metrics and incentives” [20].

The “Six Simple Rules” include: Rule 1. Leaders must understand what people within the organization do at each level. All too often, there is a disconnect between those who create the plan and those who are charged with carrying out the plan. Leaders need to understand the context in which their employees operate and ensure that the structure, processes, and systems enhance their ability to succeed. Rule 2. Integrators within an institution must be reinforced. Integrators are defined as those who promote cooperation benefiting the company rather than the individual. Integrators within an organization must be identified and empowered to make decisions while removing layers of management and rules that impede the achievement of results. Rule 3. Increase the total quantity of power. By distributing power to those who control outcomes, the ability of the institution to adapt is enhanced. Rule 4. Increase

reciprocity. Greater cooperation among those in an organization can be promoted by eliminating internal monopolies, creating networks of interaction, and reducing resources that can allow employees to become too self-reliant or isolated from other employees. Rule 5. Extend the shadow into the future. By helping people understand the relationship between what they do today with what happens in the future, employees are forced to evaluate if they are effective in promoting the organization’s long-term goals. Rule 6. Reward those who cooperate. When things go wrong, the focus should not be on failure, but on those who fail to help others to achieve.

Morieux and Tollman’s six rules for managing complexity emphasize that only when leaders understand the importance of promoting the autonomy and cooperation of people by identifying and removing unnecessary structures, processes, and systems that impede actions, can an organization ever be capable of adapting to rapidly changing and complex environments.

7. Marine Corps Leadership -- Maneuvering in a Dynamic Environment

At first glance, a military organization might be the last place that an educator would ever look for leadership practices promoting greater autonomy and power in the individual within a school to make decisions. Remarkably, however, in the 1990’s the United States Marine Corps initiated a major overhaul of how leadership practices were taught throughout the Corps. From the command staff general to the corporal assigned to a fire team—the basic element of a Marine Division, all Marines are now schooled in “The Thirty Principles of Marine Corps Management” [21].

This change in leadership principles was a product of modern maneuver warfare and technology. The decision was also influenced by having to meet the challenges of three vastly different responsibilities—humanitarian assistance, peacekeeping, and waging war. Over time, Marine Corps leaders came to understand that they could no longer operate under a command structure that prevented operational units from making crucial decisions before gaining permission from commanders located far away from where the action was taking place. The inability of commanders to track, coordinate, and communicate, a product of the dynamic nature of modern warfare, forced Marine Corps leaders to abandon some control in favor of greater empowerment. Having to engage in humanitarian assistance, peacekeeping, and waging war often at the same time in different theatres of operation, required the Marines to constantly switch from one context to another. Consequently, Marine Corps leaders came to understand that “organizations

risk placing themselves at a disadvantage when they allow themselves to become defined by what they do, rather than by how they do it, because the environment in which almost everyone operates today has become extraordinarily dynamic” [22]. As a result, the “Thirty Principles of Marine Corps Management” contain no mention of how to provide humanitarian assistance, initiate peacekeeping missions, or to wage war. Instead, the principles are value and end-result driven. For instance, all Marines are required to accept responsibility and to be able to devise novel solutions to problems that are constantly changing. Failing to attempt to find a

solution is viewed as being acceptable, but failing to try is not.

Surprisingly, today’s principals and teachers in public schools face many challenges similar to the Marine Corps. They too suffer from a lack of adequate information to make decisions, do not have control over many of the forces outside of the local school, are constantly engaged in rapidly changing situations, and have too little time to make informed decisions. There is a real need to develop the capacity of principals and teachers to find solutions to complex solutions by promoting autonomous thinking tempered by cooperation.

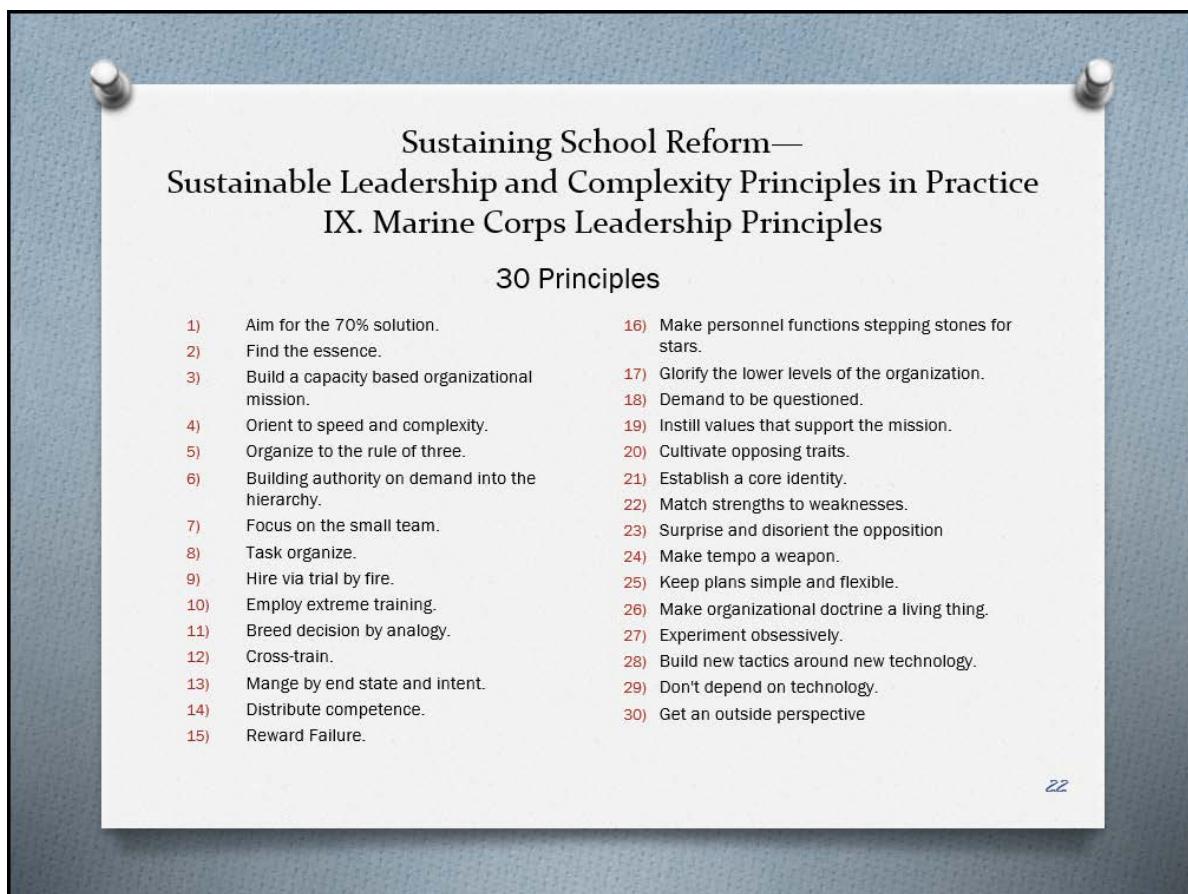


Figure 3. Thirty principles of Marine Corps management

8. Conclusion

The rapidly changing and complex environment in which school leaders operate today requires a different way of thinking. Simple linear, cause-effect thinking with an overemphasis on data and objectives simply does not add significant value to the end product of public schools—lifelong learners. Overly prescriptive regulations, driven by never ending reforms, too often impede academic success instead of enhancing chances for success. Traditional linear, cause-effect thinking also fails to take into

account the complexity, uniqueness, and evolution of individual schools.

A better metaphor that more accurately depicts schools is an organism rather than a machine. Legislators and school leaders must accept that schools are organic, complex, and unique organizations that need to be led by principals and teachers who have the ability to adapt and make site-based decisions rooted in unique contextual factors, rather than directed from a distant but omnipresent hierarchy that relies primarily upon “procedures, vertical layers, interface scorecards, and decision

approvals” to achieve results [23]. The fact that complexity theorists disagree about the level of predictability that can be determined as a consequence of “deterministic chaos”, should not cause legislators or school leaders to reject complexity theory in favor of the more traditional practice of hierarchical decision making. Some standardization imposed from outside of the local school will always be necessary to achieve desired state and federal goals. The solution, however, is for legislators and school leaders to balance institutional structures, reforms, and regulations, with school site decision making that can promote the innovation necessary for devising solutions to unique problems.

The “Six Simple Rules of Complexity” developed by Morieux and Tollman underscore some ways that leaders can promote sustainable reforms to improve student achievement, by reinforcing the integration of people and processes, increasing the total quality of power and reciprocity between educators, promoting a look into the future, and rewarding those who cooperate. School leaders can also learn from “The Thirty Principles of Marine Corps Management” by focusing less on formal goals and objectives, and more on training school leaders and teachers how to make quick decisions in a rapidly changing environment for which they have little control. There is a need to create an educational equivalent to the “Thirty Principles of Marine Corps Management”.

Federal, state, and local reforms will continue to fail miserably in the United States, unless public school leaders change their thinking about how public schools should operate and how school leaders need to lead. Equally important, we MUST educate legislators and the public about the deleterious effects that over-prescriptive legislation tied to funding has on the ability of public schools to properly complete the mission of educating students.

Although there is a need to shift from an over-emphasis on the systematic organization of people and processes that originated in part based upon Frederick Taylor’s *Principles of Scientific Management* (PSM), it is often forgotten that although he promoted systematic management to help companies improve productivity, he understood it to be of even greater importance to develop the individual “so that he may be able to do, generally speaking, the highest grade of work for which his natural abilities fit him” [24]. Using complexity theory, we can take Taylor’s thoughts one step further—individuals within an organization closest to the problems, who understand the context, usually have a great deal to offer about how best to solve those problems. We need to develop their capacity and empower them to make decisions.

Reformers and legislators must construct legislative reforms with this in mind. Rather than prescriptively writing legislation that in effect

micromanages every aspect of a reform throughout institutions involved in the reform, legislators, educational leaders, and the public would be better served by creating less comprehensive and overly prescriptive reforms. Legislative authors must ask themselves, how will a reform play out at each level of the educational process? Effective legislation for individual schools is best written from the bottom up, rather than imposed from the top down, taking into account that schools operate in different contexts based upon the communities and the kinds of students they serve. Reformers must think about what the educator at the school level will have to do, specifically, the amount of time and the kinds of resources they will need to be able to successfully execute each reform. In addition, they must think about how many reforms are in play at any given time. Currently, the average public school in the State of North Carolina is tasked with as many 18-25 reforms when counting federal, state, district, and school initiated reforms. There can be little doubt that it will be impossible for any school to ever successfully implement some or all of these reforms in a given year. Rather than augmenting the mission of developing life-long learners through effective pedagogy, an excessive number of mandated reforms detract from teachers’ ability to teach effectively.

Why are so many educational reforms negatively impacting the operation and performance of public schools in the United States? Many stakeholders outside of public schools drive local, state, and federal legislative agendas. These stakeholders frequently have different purposes in mind when arguing for and obtaining funding for specific reforms. The democratic nature of American public schools lends itself to many masters who have little understanding of the daily operation of public schools and the unintended consequences of their proposed reforms. Also, to obtain money necessary to sustain basic school operations, local schools frequently choose to institute a particular reform despite the fact that it will detract from what teachers should be doing in the classroom. If a school or its school district has the option to implement a particular reform, school leaders should think carefully before accepting the money and weigh the subsequent responsibilities that will be required to implement the reform. They should ask two questions. Will the reform add or diminish value to the educational process for teachers and students in the classroom? Will the reform detract from the quality of teaching because it will add to the burdens of administrators, teachers, and students who are already overburdened?

Ironically, part of the solution to understanding the dilatory effects of too many public school reforms can be found in Frederick Taylor’s *Principles of Scientific Management*—employing time and motion studies. Legislators and schools need to understand

the time it takes for educators at the local school and school district to carry out a reform and only add additional reforms, after discontinuing those that are not working or having successfully completed a reform. There are only so many hours within the school day. The “pack mule effect” of piling one reform on another is not only making it difficult for classroom teachers to teach; it is driving many out of the profession. A 2014 National Education Association (NEA) survey underscores this, revealing that nearly half of all teachers are seriously considering leaving the teaching profession due to the negative impact of reforms driven by an over emphasis on standardized testing [25]. Among the reasons listed are: too much pressure to achieve unrealistic levels of achievement, the erosion of sound classroom pedagogy, test and punish attitudes among the public and legislators, time wasted during the normal school day, and low teacher morale. When nearly half of the public school teachers in the United States are seriously considering leaving the profession, legislative and educational reformers should think carefully about the nature of school reforms in light of the deleterious impact that disparate reforms have had in recent years on public education. To sustain and improve public education in the United States, legislators, educators, and the public must come to recognize the complex nature of the operation of public schools and think carefully about how new reforms will play out when implemented at the school level. Like school leaders who have learned to think beyond their institutions, legislators must learn to think beyond their legislative bodies if school reforms are to be sustainable and effective.

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