Benchmarking Exponential Growth of Educational Reform: The Sustainability Index

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After decades of reform efforts in public school systems in the United States, there is minimal student achievement progress to measure. This article addresses the ongoing challenges and complexities of the sustainability of educational reform through a review of the literature and the proposal of a Sustainability Index as a metric to benchmark the sustainability status of a reform. Highlighting a 2-year study in an urban school system in California, this work analyzes the navigation of an educational reform initiative using a Sustainability Index as a tool for reform planning. The results of the study identify a number of potent implications for reformers, school leaders and university preparation programs.

Introduction

Over the past three decades, educational reform efforts in the U.S. have been peppered with educators' and politicians' rhetoric of their commitment that all children will learn. While in no way an indictment of this commitment, the startling actuality is that there has been little progress to measure. One could argue that this widespread commitment, coupled with considerable financial investments in education over this same period, should have resulted in sustained improvement of public school systems.

Conzemuis and O'Neill (2003) offer this sobering thought:

> Even the most optimistic person would have to admit that there has been little overall improvement in the quality of U.S. public education. State legislatures, the federal government, business and industry, and special interest and community groups have pumped billions of dollars into educational reform. They have spent countless hours in debate and strategy sessions and have added their voices to the groundswell of calls demanding better education (p. 4).

The close of the 20th century saw a push for increased accountability in schools in the cry for longer school days, extended school years, fewer electives, high school exit exams, and competency standards (Keefe and Amenta, 2005). The federal government has added its own take to the educational reform arena. In 2001, the U.S. Congress approved a reauthorization of the Elementary and Secondary Education Act, renaming it as the No Child Left Behind Act (NCLB). This legislation includes a performance-based accountability system built around student test results.

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This increased emphasis on accountability represents an important change from past federal educational initiatives that focused primarily on the provision of services (Stecher and Kirby, 2004).

Despite the accountability thrust, the outlook for the impact of public school reform is bleak. Nichols, Glass, and Berliner (2005) found that in most states, high stakes testing programs associated with accountability systems were ineffective in achieving their intended purposes and caused severe unintended negative consequences. The economic times facing the nation serve to exacerbate the challenge of advancing school reform in an era of declining resources.

If this dilemma is to change, public school systems must be responsive to what it takes to sustain school improvement. For some educators, systematic customization of curriculum and instruction is the solution to sustaining school reform. For others, the need is on addressing the entrenched patterns in daily practice that are all too common in schools (Southworth and DuQuesnay, 2005). These issues are being called into question in the body of research on reform sustainability.

So why have educational reform efforts failed to sustain? After decades of countless reforms and billions of dollars invested into closing the student achievement gap, why have educators been unable to sustain school improvement efforts? This article introduces an approach to measure the sustainability of educational reforms. The Sustainability Index introduced in this work benchmarks the growth of reforms and is designed to help school leaders examine organizational structures for meaningful, lasting school improvement reform.

Highlighting a two-year study in an urban school system in California, this article analyzes the navigation of an educational reform initiative using the Sustainability Index as a tool for reform planning. Supplemented by an examination of the professional literature on sustainability, this paper addresses the following questions:

1. What are the prevalent challenges in sustaining school reform efforts?
2. What role can the Sustainability Index play in the monitoring of educational reform?

Undergirding these research questions is a discussion of the role of university leadership preparation programs in the area of reform sustainability.

To address these research questions, clarification of two concepts is in order. First and foremost, what is meant by school reform? Labeling reform as innovation, Goodson (2001, p. 45) offers the following elaboration on the concept,

> ". . . educational innovation represents a 'coalition' of interests and projects brought together under a common label at a particular point in time. Stated differently, an innovation can be considered an expression of people's values, beliefs, political opinions, and morals—embedded within a particular power context." The term reform,

therefore, is used in this work to denote educators' efforts and/or initiatives to improve student achievement.

The second concept to be clarified is the term sustainability. Research unveils numerous attempts to define the concept of sustainability. Hargeaves and Fink (2000) assert that sustainability does not simply mean whether a reform can endure. The concept expands to how initiatives are developed without compromising the development of other reforms in the surrounding environment. Century and Levy (2002) argue that sustainability is the capacity of a program to withstand shocks over time while maintaining core beliefs and values and using them to guide adaptation to change. In this work, the concept of sustainability is used to capture educators' actions at maintaining a reform in place for the duration required to bring about school improvement efforts.

Sustainability of Educational Reforms: The Chronic Challenge

Pressure for public school reform comes from the political, business and private sectors, as society demands more of schools in an era of diminishing resources. With instant snapshots of a school's performance at the touch of the public's fingertips via the Internet, this access to information has resulted in national, state and local governments' transparent demands for schools to increase student performance. Flett and Wallace (2005) contend that although the calls for reform may be many, successful reforms are far less frequent, and in some cases, failure is almost predictable. The factors contributing to successful reform in one scenario do not necessarily work in another.

The research on the failure of school reform is documented in the literature. Noguera (2004) highlights a study of 10 schools in the Boston Public School System that were undertaking a variety of reform strategies. A closer look, however, revealed an all too common pattern. The researcher discovered that the reform efforts were fragmented and managed ineffectively. Eight of the 10 schools demonstrated no achievement gains.

In another study, Datnow (2005) offers a persuasive profile of reform's inability to sustain. The researcher's 3-year longitudinal study of six reform models in 13 schools in one urban district highlights the challenges of reform sustainability in the context of organizational flux. All of the reforms in the district called for significant changes affecting whole school arrangements. The researcher concluded that after three years, reforms had expired in six of the 13 schools studied; two other schools were still implementing reforms, but at low levels. Only five of the 13 schools were still continuing to implement their reform designs with moderate to high levels of intensity.

Offering a structural perspective on the lack of reform sustainability, Keefe and Amenta (2005) posit that schools have become increasingly obsolete. The organizational structure of the typical American school is antiquated and is becoming more and more outdated. The infrastructure of the public school system was developed when the country was building a blue-collar work force and only a few students were expected to go to college. While some evolution in curricula has occurred, the core belief systems remain relatively unchanged in schools.

What is clear to researchers and practitioners alike is that schools are suffering from the perils of reform stagnation. The institutional muscles in schools—the willingness to change when necessary—have atrophied (Elmore, 2000). The failure to build organizational structures to sustain reform is seen as a culprit behind the chronic nature of the sustainability challenge. More than ever, in this era of declining resources, the inability of school reform to sustain is being called into question. A theoretical model from which to anchor assertions about reform sustainability follows in the next section.

The Sustainability Model

Fullan (2005) suggests that bringing about reform means changing entire organizational school structures. The researcher counsels that setting targets for annual yearly progress, as in the case of No Child Left Behind, will change only a tiny slice of the context, and is neither large enough nor powerful enough to motivate organizations to reform in order to succeed.

Knight and Erlandson (2003) documented the importance of organizational structures in schools and the role those structures play in sustaining reforms. Other researchers have drawn attention to incoherent school reforms where diverse initiatives are set up to serve important needs. However, Newman, Smith, Allensworth, and Bryk, (2001) found that these initiatives lack the sustained support of the majority of staff within a school and result in no apparent impact on improving student achievement.

> Taylor (2006) reminds us that existing research has argued that sustainability is associated with an array of plausible variables (i.e., school capacity, political context, funding, alignment, leadership, faculty, retention, professional development, etc.) but has not yet proven consistent linkages between these variables and sustainability. So what type of structural adjustments in the organization of schools can leaders make to compensate for the lack of resources while sustaining school reform? In earlier work, this author introduced a Sustainability Model reflecting the interrelationship of three school organizational structures or dimensions as a framework for conceptualizing the sustainability of educational reform (Garcia, 2008). The Sustainability Model (Figure 1) was intended to build on the reform framework crafted by Knight and Erlandson (2003) and taking it to a new level of application. Figure 1 highlights the triangulation of the three dimensions of sustainability to illustrate the interrelationships among the three.

The Sustainability Model reflects a system's framework based on three reciprocal, interdependent organizational dimensions: commitment, congruence and coherence. These three dimensions were selected based on the extensive, longitudinal research undertaken by Knight and Erlandson (2003) in examining the multitude of variables and complexities that have

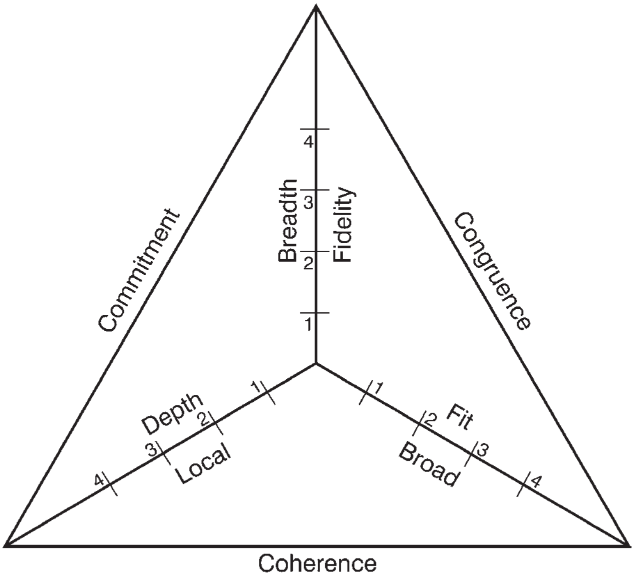


Figure 1. Triangulation of the Three Dimensions of the Sustainability Model.

frustrated reformers for decades. As a result of their seminal work, the researchers identified the attributes of commitment, congruence and coherence as primary variables in the educational reform arena.

The Sustainability Model in this work allows for the plotting and the navigation of school reform by having school leaders address such questions as: What is the level of staff *commitment* to a given reform? To what degree is the reform *congruent* or aligned to the school's goals? How *coherent* is the reform in working with other initiatives in the school? In answering these questions using surveys, focus-groups, or one-on-one interviews, school leaders can quantify and plot the results on the Sustainability Model affording the opportunity to discern the strengthening and/or weakening of the bonds between the three dimensions of the model.

The triangulation technique not only tells leaders where a reform is, but also, it tells them what to do. Using the model as a navigational map allows reformers to diagnose and subsequently take action on any or all of the three dimensions of the Sustainability Model. This reform-navigation tool is used to identify patterns and trends in the deployment of a reform and subsequently allow leaders to make necessary adjustments to extend, accelerate, or terminate a given reform. The implications of the tool are far reaching.

How is the plotting and navigation of a given reform carried out? The survey in this study asked questions addressing each of the three dimensions of the Sustainability Model: commitment, congruence and coherence. Respondents were asked survey questions about their commitment to the reform under study; questions of their perceptions of the congruence of the reform to culture of the school; and, questions of their perceptions of the coherence of the reform to other initiatives or programs in their schools. The mean of survey responses under each of the dimensions was calculated and plotted on the Sustainability Model.

The Sustainability Model provides a foundation for analyzing and developing discussions about reforms in the context of school organizational structures required for sustainability. An understanding of the Sustainability Model brings to the forefront the clear tensions among the three organizational dimensions. The three dimensions expand and contract, sometimes independently, sometimes dependently, and yet at other times interdependently, each contingent on the conditions of the reform. Through a deeper analysis of this model, the degree of sustainability of a reform can be quantified, plotted, and graphed to reflect the strengthening and/or the weakening of the bonds between the three dimensions. Subsequently, school reform can be mapped allowing leaders to make structural adjustments in schools for reform to sustain.

Implicit within this Sustainability Model is the construct of reform focus. In other words, when mapping the course of a given reform on the Sustainability Model, where does the center point of the reform reside? This center point is determined by calculating the mean of the three dimensions of the Sustainability Model. It is out of this calculation that the Sustainability Index (SI) has its inception. The Sustainability Index can be used to determine the status of a reform. The next section profiles the Sustainability Index and it calculation in more detail.

Practical Application of the Model: The Sustainability Index

There is a chorus of researchers offering strategies for framing benchmarks for gauging sustainability. Knight and Erlandson (2003) provide a framework for examining four variables (commitment, congruence, coherence, and continuity) that comprise educational reform. Similarly, Goodman and Steckler (1989) describe sustainability structures along two dimensions: The breadth of the reform’s integration and the depth of the initiative. Century and Levy (2004) go as far as to offer a mathematical equation incorporating a multitude of variables to gauge sustainability.

These researchers suggest that what was once perceived to be an incalculable factor in reform sustainability is now a reality. Indeed the sustainability of a reform can and should be measured if reform efforts are to be sustained. Hence a rationale for the Sustainability Index is unearthed.

The fundamental premise of the Sustainability Index is based on research. It seeks consensus towards a reliable metric to identify the degree of sustaining power of school reform. The Sustainability Index is an average of the three dimensions of the model. The Sustainability Index is calculated from the “mean of the means” of the three dimensions of sustainability. The index is agnostic to the reform or program it seeks to measure. The next section profiles a study where the Sustainability Index was used as a basis for decision-making in reform sustainability.

An Urban Leadership Study

Building school capacity for reform sustainability is not an easy task. Hallinger and Bridges (1997) note that school reformers must shift their roles toward supporting and developing the organization's capacity for change. Cultivators of sustainability re-create a school culture that has the capacity to stimulate continuous improvement on a broad front. This capacity in turn enables people to adapt to and prosper in their increasingly changing environments and hopefully sustain reform with flexibility (Capra, 1997). The building of school capacity requires leaders to attend to the three dimensions of the Sustainability Model: commitment, congruence, and coherence.

Directed by the literature on organizational structures that enhance reform sustainability, a study was conducted in an urban school system in California. This study analyzed the impact of a leadership capacity building training initiative conducted during the 2006–07 and 2007–08 school years. This study focused on a descriptive analysis of the attitudinal surveys administered to teachers and school leaders about their perceptions of the training reform initiative using the three dimensions of the Sustainability Model: commitment, congruence, and coherence. There were 77 schools, approximately 2,344 teachers and 164 administrators in the district at the time of the study.

Seeking to investigate the relationship of the three dimensions of the Sustainability Model and their role in determining the sustainability of the systemic training initiative, the purpose of the study was to examine the practicality of the Sustainability Index.

Methodology

Beginning in the spring 2007 and throughout the 2007–2008 academic year, this researcher provided training and follow-up activities on Lambert's (2003) model for building school leadership capacity to the district's 77 school leadership teams that were charged with ensuring that school structures were in place for continuous improvement of teaching and learning at each site. The three-day training initiative focused on developing a skill set in leadership teams to monitor the quality of classroom instruction in their respective campuses.

> Early in the development of this initiative, the school district expressed an interest in ensuring the sustainability of the initiative given the time and financial investment of the reform effort. Using Lambert's (2003) 30-item survey, the instrument was distributed to all teachers and school leaders in the 77 schools in the district. Using a four-point (1–strongly disagree; 2–disagree; 3 -agree; 4–strongly agree) Likert scale, the survey items asked participants to respond to each of the survey items based on their perceptions of the impact of the training initiative. A factor analysis was con-

ducted on the responses of all of the survey items as a data reduction effort to create composite variables of the three categories on the Sustainability Model: commitment, congruence, and coherence. This factor analysis enabled the researcher to identify underlying patterns of relationships by rearranging or reducing the data to smaller sets of factors.

In the fall of 2006, the survey under went review by school level practitioners who commented on its relevance to the reform being investigated; by district policymakers to ensure that the instrument captured the district's policies accurately; and by academics to secure feedback on the survey's focus and wording. After this initial review, the survey was piloted in twelve different elementary schools in the district. Principals and teachers were requested to take the survey and then interviewed to glean their impressions of the instrument, what questions required clarification and to what degree the survey captured what was important to them with regard to the reform in question. This field-testing allowed for the administration of the survey in the subsequent spring.

The first survey was administered in the spring of 2007 with the second survey administered in the spring of 2008. This study used data from the 77 schools that participated in the surveys in both years. The response rate for the 2007 administration was 67 percent compared to the response rate of 76 percent in the 2008 administration. Responses were averaged in each school to produce a measure of each organizational level (elementary, middle, high school, and district composite) in the three dimensions of the Sustainability Model. For the purposes of this study, the 2007 survey results are classified as Pre-Results and the 2008 survey results are denoted as Post-Results. Table 1 reflects the means, standard deviations, and the Sustainability Index of both administrations of the survey.

In Figure 2, the means of the survey's three factors are plotted on the Sustainability Model to illustrate the interrelationship among the three dimensions of the model. Plotting the survey results by organizational levels (elementary, middle, high school, and district composite) allowed for the identification of any fluctuations in the three dimensions of the Sustainability Model from the Pre-Results to the Post-Results. These fluctuations are described in the findings of this study. Furthermore, plotting the snapshots of the respondents' perceptions on the three dimensions of the Sustainability Model provided an infrastructure from which to host focused dialogues on adjustments to the implementation of the training initiative. Patterns and trends between the pre and post survey results among the school level groups offered a basis for discussion about the status of the reform in this study.

As the data were interpreted, two provisions were kept in mind. First, sensitivity was clearly established with both survey administrations that the data collection was not an evaluation mechanism of the respondents' performance in schools. Secondly, it was important for the researcher to identify any distinguishing sustainability trends between elementary and secondary respondents in order to modify future training approaches.

Table 1
Means, Standard Deviations, and Sustainability Index for the Three Dimensions of the Sustainability Model.

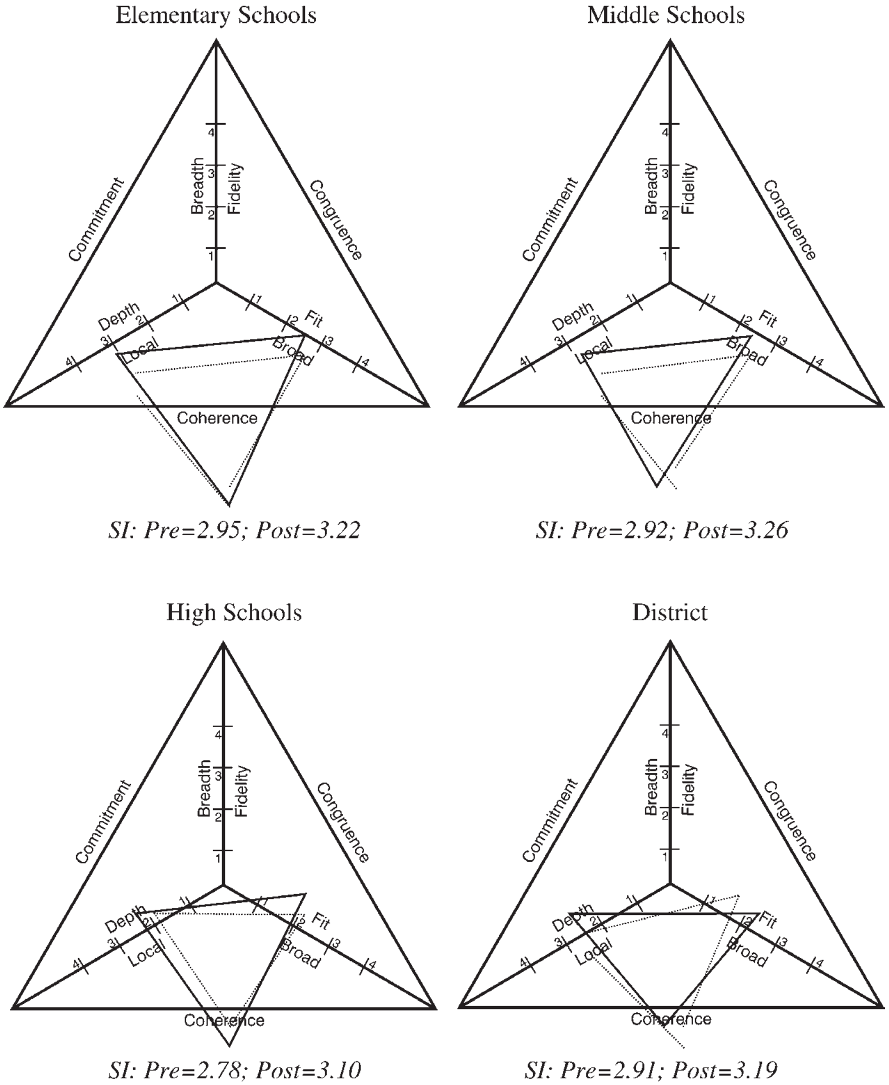
		Means, Standard Deviations, and Sustainability Index			
		Commitment	**Congruence**	**Coherence**	**Sustainability Index**
Elementary Schools	Pre N=937 Mean/SD	2.83/0.16	3.13/0.39	2.69/0.49	2.95
	Post N=1,047 Mean/SD	3.14/0.12	3.39/0.32	2.94/0.51	3.22
Middle Schools	Pre N=230 Mean/SD	2.83/0.15	3.09/0.32	2.67/0.34	2.92
	Post N=249 Mean/SD	3.21/0.09	3.38/0.23	3.03/0.24	3.26
High Schools	Pre N=396 Mean/SD	2.56/0.21	2.96/0.30	2.72/0.48	2.78
	Post N=482 Mean/SD	2.96/0.09	3.23/0.25	3.02/0.39	3.10
District Average	Pre N=1,563 Mean/SD	2.78/0.17	3.08/0.33	2.71/0.45	2.91
	Post N=1,778 Mean/SD	3.11/0.11	3.34/0.26	2.96/0.41	3.19

Additionally, it should be noted that there are inherent limitations in a self-reported survey study of this caliber. The survey responses were perceptions of school staff regarding their opinions about their commitment, coherence and congruence of a reform in study and therefore may not represent the actual reform sustainability.

Findings

The question of the generalizability of this study cannot be definitively answered since this research study reflected data from a single urban school system. This study has unveiled key findings which include the following:

1. The Sustainability Index (SI) increased at all school levels from the


Elementary Schools

SI: Pre=2.95; Post=3.22

Middle Schools

SI: Pre=2.92; Post=3.26

High Schools

SI: Pre=2.78; Post=3.10

District

SI: Pre=2.91; Post=3.19

Figure 2. Pre & Post Survey Results Plotted by School Level.
Note: Pre-Results (2007) are denoted by dotted lines. Post-Results (2008) are reflected by broken lines. SI represents the Sustainability Index.

Pre-Results to the Post-Results. The highest SI in the post year's results was at the middle school level with an SI of 3.26. This grade level group also had the highest increase (0.34) in the SI from the previous year.

2. The Commitment Dimension displayed its prevalence with increases between the Pre and Post Results across all school levels: elementary, middle, and high schools. The high school group reflected the highest increase from the pre to the post results in this dimension with a difference of 0.40 in the means.

3. The Congruence Dimension was particularly pronounced in the elementary school group with a mean of 3.39 in the post results. The greatest difference between the Pre and Post Results occurred at the middle school level with a 0.29 difference in the means from the previous year.
4. The Coherence Dimension's dominance was evident at the middle school level with a mean of 3.03 for the post results. The highest increase in Coherence from the previous year's results was also reflected at the middle school level with a 0.36 difference in the means.
5. For the district aggregate, the Congruence Dimension displayed its influence with a mean of 3.34. Interestingly, the greatest difference between the Pre and Post Results was seen in the Commitment Dimension with a 0.33 increase in the means in the post results.

As reflected in Table 1, all school level groups made gains in the means in the three dimensions from the pre to the post-administrations of the survey. This phenomenon may be attributed to the respondents' knowledge of, and comfort with, the training reform initiative in the district. The Sustainability Index also saw an across-the-board increase in all grade level groups.

The increasing trend of the Sustainability Index in the three dimensions of the Sustainability Model provided a foundation for analyzing and developing discussions about the impact of the training reform initiative in the district. The results of this study allowed leaders to make structural adjustments in schools in order to sustain the training initiative.

The need for caution in interpreting the evidence in this study is reiterated. While the Sustainability Model, and concomitantly the Sustainability Index, denotes some degree of linearity in its calculations, reforms in schools, however, rarely follow linear paths. Yore, Anderson and Shymansky, (2005) offer a profile of the concentric effects of reforms. Many reforms are superimposed in schools where other reforms are in operation adding to their complexity and at times to their obscurity. Reforms have a way of stalling or being shelved entirely once they have lost their novelty or luster.

Additionally, the origin, range, scope, and nature of reforms influence their sustainability. Similarly, the multitude of external factors to a reform initiative may influence its sustainability. These assertions add to the vast paths for further study in the arena of reform sustainability.

Implications

This study identified a number of implications for reformers, school leaders as well as for university preparation programs faced with the challenge of sustaining systemic reform efforts in public schools in an era of diminishing resources. These implications include the following:

1. Reformers now possess a metric, in the form of a Sustainability Index, with which they can benchmark the sustainability status of a reform. The

Sustainability Index is a metric for informing practitioners and researchers of the location of a reform on the Sustainability Model.

2. Because of its confluent nature, the Sustainability Index poses greater implications for educational reforms than the isolated analyses of the three dimensions of the Sustainability Model. The triangulation of the three dimensions tells where a reform is in a school. The Sustainability Index not only tells constituents where a reform is, but it actually tells reformers what to do. In other words, the metric can be used to identify patterns and trends in the deployment of a reform and subsequently allow reformers to make the necessary adjustments to extend, accelerate or terminate a reform.
3. Reformers can consider ways to leverage the impact of the Sustainability Model and the role it can play in the navigation of a reform through its three dimensions: commitment, congruence, and coherence. These three dimensions offer potent points for dialogue which could invariably help reform constituents make necessary adjustments to reforms.
4. Public school practitioners, in conjunction with university researchers, can embrace the Sustainability Model, with its accompanying Sustainability Index, as tools for reform planning. These tools provide a scale of opportunity for making reform sustainability a reality.

Time for Action: The Role of Higher Education

Universities impact the learning infrastructure of public education in this country. The academic freedom and diversity of skills that higher education possesses enable it to engage in bold experimentation in sustainability (Cortese, 2003).

In advocating for change in schools, Schmoker (2006) argues that in ". . . the education professions, including higher education, an honest encounter with the brutal facts will unleash untold amounts of talent from students, teachers, and administrators" (p. 46). The brutal fact is that educational reform sustainability in this country has been lacking. The research has shown that reform after reform has done little to close the student achievement gap. So what role should university preparation programs play in ensuring that emerging school leaders possess the skill sets to advance school reform in an era of scarcity of resources?

Public schools need help in sustaining reform if the closing of the student achievement gap is to become a reality. Astin and Astin (2000) suggest that higher education has a significant role to play in helping schools in the sustainability arena. Leadership preparation programs are in a posture to help public school leaders address the sustainability crisis that continues to plague them (Garcia, 2005). The critical role that higher education has to play in the arena of sustainability remains untapped. Cortese (2003) contends that institutions of higher education prepare most of the professionals who develop, lead, manage, teach, work in, and influence the establishments in society.

With the thrust for increased and stronger outreach programs between universities and public school systems, universities have a significant role to play in reform sustainability. This era of high stakes accountability is forging strong alliances between public school systems and institutions of higher education. Partnerships between K–12 schools and universities are gaining momentum as an effective way to boost student achievement while serving as a catalyst for the sustainability of reform.

School-university partnerships provide the infrastructure for lifting reform initiatives to an accelerated level thus increasing schools' potential for sustaining reforms. In some states, school and university partnerships are claiming success with the sustainability of reform. In California, seven school-university partnerships are contributing to significant improvements in student achievement through the application of key principles of effective partnerships identified by research (California Alliance for Pre K–18 Partnerships, 2004). Leadership preparation programs are well suited and supplemented with research and practice to intervene in the sustainability crisis in public education.

Conclusion

Drawing conclusions about the effectiveness of comprehensive school reform is difficult because of the complexities that comprise public schools systems. While the literature on reform sustainability is replete with examples of rationales for the failure of reform efforts in public schools, many of the studies focus on the dilemmas faced by school leaders and teachers in the context of systemic reforms (Flett and Wallace, 2005). Schwartzbeck (2002) suggests that measuring student achievement in schools that adopt multiple reform efforts presents many obstacles to discerning trends.

Few would argue that school systems have seen the ebb and flow of reforms in the past three decades. The current robust school accountability movement, coupled with challenging economic times demand ambitious and complex organizational changes of educators. Century and Levy (2004) argue for the shaking of school organizations in order for reforms to sustain. Sustaining reform requires the identification of entry points for throwing the inert school systems into imbalance to create a wedge into which new and improved practices can take root and grow. The Sustainability Model, and its partner Sustainability Index highlighted in this manuscript, offers such a wedge.

This study has provided district reformers a theoretical model as well as data on the benchmarking of an initiative toward sustainability. Additionally, the introduction of the Sustainability Index offers reformers a metric to reframe their approach to the sustainability of reforms in public schools.

At the outset, this work set out to highlight the chronic challenge of reform sustainability in public school systems. This manuscript has laid out a Sustainability Model with a Sustainability Index as its centerpiece. The study investigated in this work has tested a reform sustainability tool in public education that can become commonplace. Revealing a scale of opportunity in challenging economic times, this work postures the Sustainability Index as an instrument for benchmarking exponential growth in educational reform.

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