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Proposed Solution to the Funding Crisis In Four School Districts: Intervention Based on Logistics Process Modeling

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Allegany-Limestone (ALCS), Hinsdale (HCS), Olean (OCS), and Portville (PCS) are public PK-12 school districts located in remote, rural areas (the Southern Tier of New York State [NYS]). All have critically high unemployment rates and (except for OCS) are several miles from basic shopping and most employment opportunities. The data in this report focus on the impact of the NYS Gap Elimination Adjustment (GAP) and other budget restrictions on local property tax rates. This report also looks at local budget impact for school years 2009-12, plus a small but representative set of performance indicators.

Olean will close two elementary schools next school year, due to exponentially diminishing financial support from sources other than the local tax base. The Olean Board of Education has been committed to long range financial planning over the last several years. As the projections roll forward, it has become apparent that without dramatic action from the board and administration, it is possible the district could find itself in a position of facing insolvency within the next few years. Statewide analyses of the impact of NYS budget reductions downgrade the respective financial futures of all four districts. All possess wealth indices much lower than both the state average and that of comparable ("similar") districts.

Obviously, consolidation is one possible "remedy" for their financial crises. Another is the centralization of agreed-upon basic services (e.g., transportation) to eliminate redundancies and streamline costs in some areas. Because of their remoteness, the geographical complexity, and added travel and scheduling complications caused by regional winter weather, consolidation is neither practical nor potentially effective. Three of the four already share centralized bus service and are working toward a common schedule, resulting in recent years in substantial savings (details presented in following sections). The data recommend that the extreme financial crises they face call for radical, innovative measures.

The State of the Local Economy

Tables 1 and 2 (see appendix) provide a few financial vital signs for each district. Overall, the unemployment rate is much higher locally than for either NYS or the nation. The most current rate (December 2011) for both Allegany and Cattaraugus counties is 8.6 (8.3 NYS; 8.0 US).[1] Individuals with lower educational attainment have far higher unemployment rates. For the four districts combined, an estimated 45% of all those who failed to graduate high school plus those with *only* a high school diploma or GED are unemployed. In addition, family incomes overall are lower than NYS and national averages. These families and households form the local tax base for the four districts.

It is not "news" that NYS citizens struggle beneath one of the highest tax burdens of all Americans. What is stunning, however, is that the ten counties in western NYS are in the *25 most highly taxed counties in the entire United States* (approx. 2908 counties total), comparing the taxable amounts to home values (Table 3). Allegany ranks fourth and Cattaraugus, 21st.

A primary indicator for NYSED financial projections is the *combined wealth ratio (CWR)*: a ratio of combined income and property values for a district compared with the NYS average. The CWR has a mean (average) of 1. Wealthier districts have CWRs greater than 1; some are 8.0 or larger. Less wealthy districts have CWRs below 1. As the CWR approaches zero, the financial outlook for a district becomes bleaker and the challenges, exponentially greater. Table 4 displays the CWRs for all four districts and other data related to projected financial status. These are among the lowest CWRs in NYS. Districts with

low CWRs must turn to their reserves as a stopgap measure. These "… districts possess the least income capacity to create and maintain reserves and educational programs within the current tax burdens."[2] ALCS and PCS received per-student funding cuts in 2010-11 *nearly double the NYS average* ($937): $1800 and $1763, respectively. HCS's total per-student cut was $1395; OCS's, $977. In 2011-12, three of the four districts endured *additional total per-pupil cuts*: Portville ($261), Hinsdale ($477), and Allegany-Limestone ($883).

Calculations were recently published of the total ***losses*** accumulated from state-aid cutbacks (GEA or GAP), loss of state fiscal stabilization funds (SFSF) from the federal government, and the end of the federal JOBS Program. The cumulative losses for each district across the three most recent academic years 2010-2013 range from $1.88 million to nearly *eight million dollars*: $1,876,469 (HCS); $5,142,660 (PCS); $7,280,021 (OCS); and, $7,850,162 (ALCS).[4] When districts cannot absorb cuts such as these, their only alternative is to increase the local tax levy. Given the local economy and the tax cap, this choice is impracticable.

The tax rate for all four districts ***did*** increase over the last three years (the exception was HCS in 2010-11; see Table 4). All four have made difficult and sometimes painful cuts in this interval, as documented in Table 6. All are quickly approaching a point of diminishing returns, in which lower staff levels are inadequate and class sizes are instructionally ill-advised. To add to the dilemma, special needs students require services and supports that prevent further cuts in some staffing areas. Figure 1 shows that NYS districts with poorer tax bases would need to increase local levies by 15%-45% to counter current cuts. These four districts in particular would need to increase their levies between 15%-35% to offset the loss in aid in 2012-13.[5]

District Performance Indicators

All four districts received the Good Standing rating from NYSED for the last three years (based on School Report Cards for 2008-11; see Table 7). They also have attendance rates, class sizes, suspension rates, and proportion of graduates receiving Regents diplomas at least as good as those for NYS as a whole. Three of the four have teacher turnover rates and dropout rates at least as good as those for NYS. Despite recent budget and expenditure cuts, they are maintaining or improving performance.

The only accountability areas in which any of the districts demonstrated a challenge are five-year-cohort graduation rate (OCS and HCS) and performance in ELA or Math for students in grades 3-8 with disabilities (OCS, ALCS, PCS).[6] This underscores the fact that there are certain areas in school administration and student support services which cannot be shortchanged via budget cuts. Special education is a critical area in terms of monitoring progress and maintaining a high level of quality and transparency. Graduation rate, attendance, and other behavioral indicators are essential contributors to success beyond grade 12. Research has shown that factors most linked to academic success relate to persistence, level of effort and engagement, and influence from support systems. Studies from the 1960s through the 1990s have found that mother's level of education, low absenteeism, and failures (earned F in course or retained at grade) were the best predictors of secondary and postsecondary performance. Mother's education level is not within the control of school staff. However, intervention, coaching, tutoring, and progress monitoring can greatly influence the other attributes. These traits result in habits and attitudes that pay off throughout life, in career and other personal pursuits.

The districts demonstrate a commitment to and success with preparing graduates with the academic skills and motivation to continue on in postsecondary education. They are also addressing training needs for those students who opt for employment after graduation in skilled trades. It appears that the districts might benefit from a concentrated review of current offerings among all four in the areas of AP, college preparation, dual enrollment, and training matched closely to skills required in local high-demand occupations and related career pathways. For example, one district might concentrate on health services and allied careers; another might focus on construction trades, while a third might target information management. The investments made at each district would yield returns in all four. Districts would collaborate with the local work investment board, colleges, training organizations, and industry and trades associations to match in-school training and education with required skills and knowledge for local employment needs.

Is Consolidation "The" Answer?

Apparently the reflexive solution during most of the last century to a school district's anemic local tax base and impending budget limits has been consolidation with a willing neighboring district. One of the partners included in this paper became a merged school district (Allegany-Limestone) in 1995. While this particular merger has been a success, it has not come without mixed public reaction. The recent closing of Limestone Central School was difficult for some of the local community. The nonfinancial fallout from consolidation for a small community is covered just below in this section.

In 1930 there were around 130,000 school districts in America; by 1990 there were just 14,166. The United States landscape became dotted with one-room schoolhouses beginning in the 1600s. In 1869, Massachusetts passed a law providing free public transportation. Soon after the advent of the horseless carriage, followed by the rapid development of paved roads, the original schools began to close as families moved closer to urban areas. The consolidation of farms in rural areas continues to fracture communities and families, migrating away from their roots. Schools, other social institutions, and local enterprises soon follow. A one-way flow of resources has drained much of the vitality from rural communities, including the exodus of youth, many of them the best and brightest.[7]

The industrial revolution added fuel to the fire for centralizing schools in urban areas, based on the success of economy of scale and efficiency of larger facilities in industry. It is ironic that small, especially rural, schools were decried widely as a waste of resources and a feeble means for educating growing generations of citizenry. There were virtually *no research studies nor substantiating, objective data* whatsoever for these claims. James B. Conant conducted a study for the Carnegie Corporation in the late 1950s of the "comprehensive" American high school. He published *The American High School Today: A First Report to Interested Citizens* in 1959, partly to provide a convincing argument that would allay American fears of Soviet technological and perhaps political supremacy (remember Sputnik). Conant recommended that every high school ought to have *at least* 100 students per graduating class. He actually said that small high schools should be eliminated, as they were "the most outstanding problem in education."[8] Thanks to these unfounded claims, "… under the rubric of school improvement, many places that once provided schools no longer do; for they have been improved out of existence." [9]

In the eight counties of Western New York there were 1,549 school districts in 1920, with an average attendance area of four square miles[10]. By offering state aid in the form of transportation and construction bonuses for "centralizing," the Cole-Rice Act of 1925 sweetened the pot for small, rural schools to merge.

Friendship Central School became the first in the region to consolidate, comprised of nine districts. By 1952, less than 400 districts remained in Western New York. Currently there are less than 100.

Thankfully, small schools, rural schools, and the impact – both positive and negative – of school consolidation has been a vibrant area for research since the 1980s. Interested readers will have no difficulty finding dozens of syntheses and summaries of research, not to mention original reports, online by using the terms *small school*, *rural*, *consolidation*, and *impact* in any efficient search engine. Several options for starting points are available in the endnotes.

The research is unanimous in the finding that smaller schools are more effective and better in several regards, with one exception. Large schools in middle- and upper-class communities seem to provide better alternatives for students in those neighborhoods. Smaller schools benefit minority and low-socioeconomic students much more.[11] A study published by the National Association of Secondary School Principals (NASSP) claims that schools can be too large to perform effectively or even efficiently.[12] Even the U.S. Department of Education (USDOE) admitted that smaller schools offer "more intimate learning communities" for students of all socioeconomic levels, which promote greater success.[13] Security improves on smaller campuses as violence, alcohol, and drug abuse decrease. A panel of school security experts convened by USDOE after the Columbine tragedy urged reducing the size of local schools as an effective violence prevention tactic.[14] The experts noted a few "artifacts" associated with schools with at least 1,000 enrolled students, compared with schools with 300 or fewer students: an increase of 825% more violent crime, 270% more vandalism, and 1,000% more weapons incidents. (PLEASE NOTE: These are *not* numerical typos. – Ed.)

More recent research has found benefits in larger enrollments from consolidation *for operational but not for capital spending*.[15] Some factors are advantageous to larger enrollments while others actually increase per-pupil costs. Savings may accrue for instruction and administration, but transportation spending may skyrocket. Adjustment costs characteristic of the initial transition from single to combined schools and districts are often unexpectedly large, yet these generally diminish after several years. Because there are so many factors involved, both within and between schools and within the community itself (economically and sociologically), consolidation is an undertaking that deserves a deliberate pace and thorough study before posing it as an option to local taxpayers and school staff. The following discussion points out some of the complex factors involved.

Over thirty years of accumulated research shows that small schools are firmly established as more productive and effective than large ones and are almost invariably preferred according to a wide slate of criteria.[16] Raywid (1999, p. 1) states: "… All of these things we have confirmed with a clarity and at a level of confidence rare in the annals of education research." In smaller schools, learning quality and quantity are greater; progress toward graduation, faster; dropping out, uncommon; and disadvantaged students, most positively impacted.

Following are documented, consistently confirmed advantages of smaller schools.[17]

- Higher rate of parent involvement
- Increased benefits for economically disadvantaged or minority students
- Smaller classes and teacher–pupil ratios
- More flexible scheduling
- Greater potential for individualized instruction

- Teaching teams more common, as are integration of subject matter, multiage groupings, cooperative learning, and performance assessments
- Greater emphasis on experiential learning related to the world outside school
- Higher attendance (even for students moving from large to smaller schools)
- Significantly higher graduation rates
- Lower dropout rates
- Significantly higher participation in extracurricular activities
- Improved levels of students' self-esteem, academic self-concept, locus of control, and personal and academic self-concepts
- Higher quality of interpersonal relationships
- More human contact, improving morale of students and staff
- Greater sense of belonging and less alienation
- Increase in social bonding to teachers and school
- Less tension between teachers and students
- Less discipline problems and their costs (time, effort, money)
- More efficient (lower) per student costs calculated by dividing dollars spent by number of *graduating students*
- Better funded sports programs and extracurricular activities
- Streamlined staffing (faculty and administrative)
- Less red tape
- Closer relations between faculty and administration
- Higher participation rate in decision making by teachers and administrators

In contrast, these are commonly identified issues associated with larger schools and communities that underwent consolidation of the local school:[18]

- Significantly lower rate of family involvement due to distance from school
- Lack of clarity about who should teach values and beliefs (family vs. staff)
- Lower grade averages, standardized test scores, and graduation rates
- Higher rates of dropouts, truancy, classroom disorder, vandalism, violence, aggressive behavior, theft, substance abuse, and gang participation
- Dampened enthusiasm for involvement in school activities
- Long bus rides for students due to distance and topography in rural areas
- Impersonal climate

Consolidation can have a direct, negative impact outside of the school hallways. Whenever the school is a major employer or primary provider of community service, the impact of all those lost jobs and removal of support services is pervasive. In some cases, the economic pressure destabilizes families and interpersonal strife results, sometimes leading to disintegration. The stresses related to students travelling a substantial distance to the new school and the loss of input parents feel because of distance create difficulties at home. Profiles of communities with local schools compared with those that lost their schools to consolidation show negative side effects. Proportionally fewer people in communities that closed neighborhood schools are employed, graduate from college, and work in professional occupations. It is ironic that one of the claims consolidation advocates use to justify mergers is the decrease in non-teaching positions. Data show that the opposite actually happens. More staff in support services and administration are needed to handle increased bureaucratic demands.

Advocates of consolidation tout significant cost reductions as an incentive. In fact, some costs (e.g., administrative) may decline in the short run but are replaced by other expenditures, especially for transportation and more specialized staff. A large body of research within the last three decades documents the concerted undermining of rural communities as well as their economies due to school consolidation (Lewis, 2004, p. 2). The loss of a school negatively affects the tax base and fiscal capacity of the district. Low-income and minority communities often bear these costs disproportionately. Lyson (2002) analyzed the impacts of consolidation in 352 incorporated small, rural villages and towns in New York State with 2500 or fewer residents.[19] He compared those with less than 500 residents (n_1=71) to those with more (n_2=281). Only half of the smaller communities had a school, contrasted with more than 73% of the larger ones. Some of Lyson's conclusions were:

- Sixty percent of the communities with schools saw population growth from 1990 to 2000; only 46% of those without schools grew.
- Average housing values in the communities with schools are 25% higher than in those without schools.
- Houses are newer in the communities with schools and more likely to be served by municipal water and sewer systems.
- Communities with schools enjoy higher per capita incomes, a more equal distribution of income, less per capita income from public assistance, less poverty, and less child poverty.
- Where there are schools, there are:
  - More workers from professional, managerial, and executive positions
  - More households with self-employment income and 57% more per capita income from it
  - More workers employed locally
  - Fewer residents who commute at least 15 minutes to work

He cites additional research in Iowa, Minnesota, and Nevada, all reporting similar results.[20]

Perhaps no case study of school consolidation has been as closely watched nationally and carefully documented as the West Virginia consolidation initiative from the early 1990s. The State of West Virginia mandated school consolidation by denying approval for capital improvements to all districts with enrollments less than an arbitrary cut off. Small districts that yielded to consolidation enjoyed more than comfortable funding for projects. Within a decade, 202 schools were closed.[21] In ten West Virginia counties, more than 100 advanced classes were promised but never materialized[22]. Increases were noted, however: there were 76 (12.4%) more central administrators than when they started in 1992 despite a decline of 41,000 in the number of students to be served (13% decrease). A decrease of 135 principals (15.2%) was somewhat offset by the increase of 44 assistant principals (17.3%), and there were 656 fewer classroom teachers. Per-pupil transportation costs increased, forcing counties to make drastic cuts in other areas.

Customer satisfaction was not one of the positive outcomes. Parents and students complained that the long bus rides (43% longer on average) exhausted the children, caused grades to drop, and shortchanged involvement in both family and school activities.[23] When surveyed, they reported some students got lost in the larger schools, felt anonymous, and often fell behind or simply dropped out.[24] Students who don't "stand out" in some niche or because of discipline issues just seem to fall through the cracks. Extracurricular participation suffers because many students are too tired after their long days travelling to join in. Others, too shy or insecure about their abilities to compete, never even try out. School consolidations are still being hyped in West Virginia in spite of the clearly demonstrable damages and nonexistent advantages.

Researchers and practitioners have recommended several considerations for small districts wishing to avoid the disappointments and losses in West Virginia. Community plays an important role in education. Fanning (1995) offers a thought-provoking description of a healthy community according to the sociological dichotomies of *genuine vs. spurious culture*. A genuine culture (as defined by Edward Sapir[25]) greatly influences roles, relationships, and responsibilities of those who belong to it. As a result, genuine cultures are resilient ("highly viable") and manage to withstand internal social, political, and economic fluctuations without reliance on external intervention. Spurious cultures are highly susceptible to external influences and are, therefore, basically unstable and less viable. Experience is interpreted according to beliefs, traditions, and values, the hallmarks of the collective wisdom and values of a genuine community (p. 3). What are known as "right relations" are modeled and inculcated in genuine culture. When schools are removed from communities, children's development is no longer linked to the well being of that genuine culture. The result is the inventory of socially destructive behaviors sadly witnessed in urban venues.

Small schools and districts should target talent and resources both within and outside the community for inclusion and deployment in redefining operations. Collaboratives and partnerships with public and private institutions and foundations need to be nurtured and continually expanded to bring in new resources and perspectives. Administrators should consider focusing instructional programs on subject matter found in or near the town or neighborhood, whenever possible.[26] Others stress that in addition to maintaining a small but effective size, a focus must be adopted.[27] Processes and established linkages both in the school and at the system level must be analyzed with an eye toward redefinition for the sake of improved performance and impact.[28]

Raywid (1999, p. 3) lists the essential elements of small schools and traits associated with success:

- Self-selection of faculty
- Autonomy, at least to some degree
- Cohesive pedagogical approach
- Inclusive admissions policy
- Full curriculum
- Cohesive learning environment
- Staff selected at the site
- Culture supportive of teachers
- Accountability focused on student achievement
- Control over educational and budgetary decisions
- Non-tracked program equipping all students for the option of college or work

Several commonly employed methods for partially reorganizing a school or district operationally have been identified (Rincones, 1988):

- Central high school districts: separate elementaries in local communities, common high school
- Cluster districts: services are shared by separate neighboring districts making academic programs accessible to all students in concert
- Exchange of students for tuition: paying tuition to other districts to allow high school students to enroll there
- Sharing services, programs, or resources: personnel, programs, equipment, transportation, instructional materials, support services (e.g., counseling), special education, vocational education, food services, joint purchasing

- Via state organizational structures (e.g., BOCES)
- Voluntary arrangement between two or more school districts

All of these methods allow schools to maintain identity and autonomy while expanding program offerings and streamlining costs. Cluster districts and voluntary arrangements between districts differ in that students are shuttled between schools in the former. Resources and services are shifted from school to school in the latter.

There are still other options for sharing services and resources while avoiding consolidation. Monk and Haller [29] describe several ways that state agencies and governments can intervene financially and procedurally. One such measure is "necessity aid," included in the operational budget and reflective of special economic circumstances in local communities where typical consolidation tactics are not feasible. Encouraging teachers to become certified in more than one area is another way to maintain high quality staff for a broader coverage area without increasing personnel. An added effect of this option is increased teacher retention. Other suggestions are helping communities to design the reorganizations and modeling projected enrollment and other population trends locally. Each alternative must be considered in light of a school's unique circumstances and parameters.

Finally, distance learning (DL) and other educational technologies provide additional strategies for increasing instructional options for students without substantial investments. Every district in New York State is equipped with a high-speed internet connection and at least one DL room. Broadcasts and videoconferencing are available at every school, connecting faculty and students with peers all over the globe. Many districts already use DL to enable advanced students to earn college credit without leaving the local school. Repackaging college coursework and professional certification training for online or hybrid instruction (online plus face-to-face meetings and correspondence) is a booming industry. Public schools can take advantage of the market with minimal investment.

Geographic barriers may be insurmountable impediments to benefiting from consolidation. When geography does not play a dominant role, savings for very small districts due from merging may be as much as 30%. Some studies support the conclusion that it is the aid bonus (as in NYS) that causes housing values to increase in consolidated attendance areas, whereas the values suffer when capital improvement bonuses are meager or missing. Where housing values are disparate between the local communities involved, often a house values and rent are adversely affected by mergers.[30] Current researchers argue against interpreting increased housing prices as evidence of positive consolidation impact and recommend that states rethink their aid programs carefully. In contrast, they also recommend that states look into designing a system of reinforcements for districts with extremely low enrollments or low population density to balance the current incentive system based solely on capital improvement. The pros and cons inherent in the question to consolidate are complex and intricately interrelated. Rushing headlong into a merger based on the promise of decreased per-pupil spending is not the solution.

It seems that consolidation is not the only answer for the financial crisis in many school districts, nor is it necessarily a desirable alternative. Many other collaborations promise efficiency and effectiveness and still allow the school to remain rooted in its place as an important hub for the whole community. Perhaps rather than closing small schools, those most knowledgeable about daily operations ought to review their *processes*. How do all the tasks required to carry a process from a quick and ready start to successful completion pass along intervening information and results? Are there bottlenecks in a process that create waste of dollars, time, or effort? Are final results available in a timely manner and in the most useable

form? School districts should look to the compelling successes in business and industry initiated by the total quality management (TQM) movement for proven ways to streamline while maximizing quality. The next section will propose components of an initiative incorporating business and industry best practices and applied logistics that could substantially ease current economic woes.

The American Quality Improvement Movement

U.S. business and industry ardor for quality and continuous improvement began with their all-out investment to help Japan rebuild after World War II. Just weeks after Japan's surrender in September 1945, General Douglas MacArthur was charged with initiating a comprehensive reconstruction in that country. Although in the 1930s and early 1940s a few initiatives had already occurred addressing quality in production operations, Japan's involvement in the war terminated all activity not directly focused on executing and winning the war itself. After surrender, executive management of all the industrial cartels underpinning Japan's military was simply permanently removed. Facilities had to be totally rebuilt. Equipment and tools were largely demolished, missing, or archaic. All levels of the workforce were unaware of modern production practice and science. [31] The intent was "to teach them to fish", to borrow a Biblical metaphor, but first they had to learn to build the tools and design the processes employed by successful fishermen.

An American statistician, W. Edwards Deming, joined this effort near the end of 1946. He taught Japanese engineers how to select, implement, track, and interpret basic statistical indices to monitor efficiency and quality of manufacturing processes. To be sure, Deming was just one of many agents (e.g., S.A. Rice, Joseph M. Juran) collaborating and eventually helping the Japanese populace to get back on its feet and eventually set the standard for efficient industry yielding generous profits. Deming's statistical measures and procedures for tracking progress, coupled with Juran's methodologies for interpreting the indices and adjusting processes to improve efficiency and quality, form what came to be known as *quality management*. American companies soon became concerned about maintaining world-class status as Japanese industry demonstrated consistent, remarkable, increasing returns. By the 1970s, Japan was the leader in quality control applications.

In the early 1980s, the U.S. Naval Air Systems coined the term **TQM** – *total* quality management, based in part on Japanese quality control applications. TQM incorporates not only Deming's and Juran's earlier work but also research and theories in personal development (e.g., A. Maslow) and leadership (e.g., D. McGregor). Likely fueled in part by the recession of the early 1980s, American business and industry embraced TQM with a fervor bordering on evangelical. The impact of competitive world markets, both abroad and domestic, sparked an initiative that remains strong even today and has spread throughout a wide range of "industries" not concerned with manufacturing (e.g., health care and education). The federal government officially threw its weight behind the movement with the passing of The Malcolm Baldrige National Quality Improvement Act of 1987 (August).

The Baldridge National Quality Program was created by this law, which specified criteria for judging an organization as "excellent" in its field. The program was renamed in 2010 as the Baldridge *Performance Excellence* Program, to accentuate its current holistic focus on *organizational* quality, no longer restricted to products and service. Since 1987, the President of the United States annually presents the Malcolm Baldridge National Quality Award to organizations that meet published criteria for excellence through their implementation of TQM, quality control, strategic management, continuous improvement, and lead-

ership. There are six categories for application, based on organizational focus: manufacturing, service, small business, education, health care, and nonprofit.

Starting then in the late 1980s, continuous improvement along with the myriad approaches to achieving it became a central issue for American organizations of all sizes and types. Lectures and publications abound with central topics derived from these common grounds: time management, effective leadership, reengineering, mentoring, benchmarking, systems analysis, management by objectives, just-in-time inventory, six sigma, and value-added, to name a few. The sine qua non for TQM, continuous improvement, and all related endeavors is *change*. Those who would commit to the continuous improvement of their organization must welcome change as a full partner along with all the joys and pains it promises. After all, *improvement* implies that something "needs to be fixed" in order for the current situation to "get better." Educational professionals must overcome the reflexive impulse to arrive at a point where things are "working" and assume that status quo equals optimal performance. In the words of Tom Peters, author of *In Search of Excellence*, a status-quo mentality is a danger sign:

> *There are no excellent companies. The old saw "If it ain't broke, don't fix it" needs revision. I propose: "If it ain't broke, you just haven't looked hard enough." Fix it anyway.*[32]

The Alchemy of Process Logistics

What do TQM, continuous improvement, the Baldrige criteria, and related topics have to do with helping financially strapped school districts in the remote Southern Tier of NYS? The districts referenced in this paper accept that something must change, and quickly, if they are to achieve their common goal of turning out successful graduates with twenty-first century skills, prepared for higher education and gainful employment. Education as an industry works with at least one constraint not commonly shared by other industries. If a school lists its inputs (resources) and outputs (products), there is one fundamental input – the local student population – with at least some characteristics that are not within its control. These characteristics are *constraints* – something which must be factored into the equation but are not manipulable. Schools cannot select the brightest, most highly motivated, healthiest, best prepared children to teach – those who promise the greatest return on investment, no matter how efficient the teacher. This is not a problem, it is simply a fact. When theoretical procedures and statistical formulae migrate from business, and industry, this fundamental difference sometimes renders the theory or formula inapplicable in education settings. When borrowing best practices from these other industries, educational practitioners must remember to consider the extent to which basic assumptions and requirements of a model are either directly satisfied or can be modified to fit their reality.

Since 2001, there have been nine educational organizations – six school districts and three colleges – who received the Baldridge award. Collectively the six public school districts demonstrate impressive benchmarks in literally dozens of indicators (see Table 9). The majority reflect academic mastery, postsecondary follow through and success, "client" satisfaction (students, parents, employers, staff), enrichment, and individualization to accommodate a wide constellation of needs, potential barriers, and constraints. Each one cites increased total and per-pupil expenditures directly related to instruction. None of them won and applied *additional* financial resources to reach their goals. How did they manage to streamline spending in some categories so that they could re-invest in their primary product? What did they sacrifice?

In a word, the answer is, "nothing": at least, nothing that contributes to producing a top-shelf product. Improvement protocols entail a thorough analysis of every task comprising each process throughout the organization. Michael Hammer, who coined the term "reengineering" in the late 1980s, cites three distinct categories of work activities[33]:

- Value-adding (customer is willing to pay for this);
- Not value-adding but requisite (administrative infrastructure and overhead); and,
- Waste (neither required operationally nor adding value) (p. 33).

By definition, waste work, if discontinued, would not be missed from a customer's perspective. Hence, all waste work should be rooted out and eradicated as soon as possible. The serious savings, however, generally derive from deliberately reorganizing and restructuring the tasks that do not add value but are required operationally, thereby improving efficiency.[34] As Hammer attests, activities in this category represent the organizational "glue" that binds together all the fragments that contribute to the successful production of value-adding outputs. Unfortunately, as organizations grow, the proportion of non-value-adding work wantonly expands and eventually eclipses that for value-adding work. Hammer cites that all too often less than 10% of activities in a process actually *add value*. Yet, simply to extirpate all of these activities from a process would be like dissolving every weld, rivet, and other connector on an airplane, leaving nothing to hold it together. The better solution is a judicious *reengineering* of the complete process so that it consists of more value-adding tasks that can be performed from start to finish by significantly less workers:

> *We suffer from high costs not because our individual tasks are expensive, but because we employ many people to ensure that the results of individual tasks are combined into a form that can be delivered to customers.*[35]

Educational professionals, particularly those elevated to administrative positions, typically lack both *intensive training* and *extensive, supervised practice* in best-practices, research-based quality and continuous improvement strategies and methodologies. This is no surprise, yet Americans persist in expecting its children's teachers and school staff to meet an ever increasing share of not only instructional but also developmental, psychological, and even physical needs. To become "excellent" schools, do they now need at least a post-graduate minor in modern management practices?

Admittedly, no one (including this writer) advocates this approach to school improvement. A better answer would involve a resident expert *from the corporate world* in a district's professional lineup, with a proven track record of designing and orchestrating continuous, substantial improvement while streamlining costs and increasing operational efficiencies. What is needed is a logistical guru whose role is to reengineer certain processes. The goal is the elimination of waste plus the reallocation of funding from redefined, *improved* processes to mission-critical processes composed primarily of efficient, value-adding tasks.

> *Reengineering is a way of seeing the processes of the firm.*[36]
>
> > *Inefficient processes are costly in terms of dollars, waste, rework, delays, resource utilization, and so on. Ineffective processes are costly as well because they are not reliable. They don't do what they are supposed to do.*[37]
> >
> > > *Quality improvement is the primary source of cost reduction. Poor quality has a huge, documentable cost.*[38]

The processes targeted could be pooled among the four districts in point, so that *a cooperative operational unit for all four districts* would yield additional benefits from centralizing redundant

but necessary (viz., non-value-adding) administrative functional operations. The central unit would also offer a mechanism whereby the four districts could take advantage of each other's strengths (e.g., enrichment options, electives, intramural sports) without additional investment or staffing. Table 8 lists the rich menu of electives and extracurricular offerings currently available to a student within the four combined attendance areas. These lists will expand substantially after a formal review of online and DL courses that can be brought into local classrooms. Faculty will form teams to identify student interest, local and online options for credit courses, and potential partners in business and industry. Add to this the establishment of career pathway academies linked to local high-demand occupations. All four districts commit to monitoring both the cost savings and return on investment in terms of success after graduation and employment indices, as well as following up with graduates and their employers or postsecondary institutions. The effectiveness and efficiency will be tracked in the same way all quality processes are in leading corporate and industry trendsetters. Table 9 displays success indicators commonly tracked by educational Baldridge award recipients, as a starting point for consideration.

A Proposed Solution

Allegany-Limestone, Hinsdale, Olean, and Portville districts have agreed upon three goals:

1. Create a logistics division that would coordinate making sure the right resources are in the right place at the right times to maximize sharing between districts.
2. Improve instructional implementation and intervention.
3. Amplify or create specialized programming in each district to enhance career and college readiness.

Each goal will be considered separately.

A central unit that coordinates resources for all four districts in common

The central logistical unit will be headed by a Chief Process Engineering Officer (CPEO). The individual selected for this position will possess a documented track record of successful analysis, reorganization, and testing of required operations and responsibility for implementing approved modifications and monitoring performance data (quality and quantity). The eligible candidate will have both an excellent personnel dossier and academic records from accredited institution(s) in graduate-level coursework in quality management, continuous improvement, performance monitoring, and directly related organizational topics. First-hand experience in the education or training industries is preferred. The central unit supervised by the CPEO will include a full time technical assistant. The districts' administration, Boards of Trustees, and the CPEO will establish and maintain close collaborative relationships with both local corporate entities and postsecondary educational institutions concerning process improvement issues. Interns will be selected for at least a twelve-month period from collaborating partners to provide tactical support in return for college or professional credit. Further details about how the central unit fits into the organization chart(s) and the direct reporting characteristics will be determined collaboratively by the four district administrations.

Hammer points out that change does not happen automatically. Rather, it requires proper mechanisms and a suitable process.[39] It appears that not uncommonly the institutional forces of an organization are inimical to innovation. In fact, many organizations hoping to become institutions are actually designed *not to change*.[40] Or, as Hammer asks, were they merely *not designed* to change? Without change there can be no improvement, no true growth. Perhaps the intentional design of a mechanism to promote and

achieve systemic and institutional capacity for change is actually an organization's single, most valuable asset.[41]

Two business systems are needed, described by Hammer[42] in linguistic terms:

- A *surface* system, comprised of all the organized tasks of the business process along with its discrete components. This system creates and delivers products and services but periodically needs major modifications,
- A *deep* system, that actually embodies the capacity to change the surface system as well as the organization itself. This system serves to detect external changes, interpret them, and step in to modify or transform the other system as needed.

What many organizations lack is this acknowledged and necessary underlying system that ensures evolution and resists stagnation and complacency. The deep system consists of two primary processes – learning and redesign – coupled with the ability to transition. A "learning" organization is open to exploring beyond its comfort zone and status quo, and excels at the higher-order skills required to interpret what it discovers. In this sense, an organization open to novelty, able to make judicious choices among options, and strong enough (facile, energetic, and functional) to craft and execute changes in form and function will surely demonstrate "fitness" in the hierarchy. This illustrates how organisms and organizations evolve, and why. The alternative leads to extinction.

The creation and contribution of the central process engineering unit is the primary but not the only change proposed. The CPEO will perform the analyses and delineate recommended changes. However, the system in this instance is composed of people – staff, teachers, students, and parents, at the very least. These human resources must embrace the changes eventually agreed upon by all stakeholders. Likely there will need to be some training, support, and other interventions to facilitate the acceptance and implementation of agreed upon changes. The CPEO will be responsible for recommending how best to accomplish a smooth and positive transition to the administrators and Boards of Trustees.

It is a myth that reengineering necessarily entails staff reductions. People may be assigned to different functions stemming from redesigned processes. Job descriptions may greatly change, and often workers are trained in new skills that are beneficial in and of themselves:

> *You always need to reallocate people because you change the processes. But I am not sure that even the majority of reengineering cases require fewer people. You may need fewer of one kind and more of another.*[43]

In addition to the resources cited here from the 1980s forward, more recent writers, promoters, and trainers in management improvement and organizational excellence offer additional insights, especially the works of James C. Collins.[44] The following ideas are gleaned from his books on creating and growing super-successful organizations that last, withstand the tsunamis of modern economic trends and downturns, and evolve with the inescapable demands brought about by new technologies.

- Identify the organization's core ideology and establish it as the central focus at all levels.
- Introduce and encourage a work culture that supports the core ideology.
- Encourage and support passion for the core ideology.
- Allow for entrepreneurial experimentation and development.
- Focus on getting the right people – those with the requisite skills who embrace the core ideology – and give them good opportunities.

- Focus output(s) on that at which the organization can be the best in the world, can make money, and can maintain a high level of passion.
- Slow and steady wins the race: momentum comes from constant, diligent work building upon itself.
- Invest in slow, steady, methodical approaches and avoid abrupt, radical trends and fads.
- "Don't try to come up with the right answers; focus on coming up with good questions."[45]
- Foster empirical creativity by basing decisions on data, evidence, logic, and solid arguments.
- Avoid undisciplined growth.
- Set clear performance markers and self-imposed constraints to maintain steady, consistent momentum.
- Remain hypervigilant to detect changing external conditions and respond accordingly.

The common goal: improved instruction and intervention

In terms of improving instruction, the districts identified three strategies they will undertake:

- Create an online remedial assistance center, offering learning tools coupled with real time help through instant messaging and video conferencing, with nearly 24/7 virtual accessibility.
- Create common curriculum maps, unit tests, and quarterly assessments 7-12 among all four districts.
- Align scheduling and technology to enable content-specific planning time on a common schedule across the districts.

Each district has already made substantial investments in technology, professional development, and standardized procedures for monitoring instructional quality. A majority of all three of these strategies is in development or being implemented in at least one of the districts. The faculty of all four districts will collaborate in refining the solutions they design.

The common goal: improved instruction and intervention

Finally, four initial strategies have been identified to expand the academic options for students, with the goal in mind to prepare every one of them for employment or further postsecondary education after graduation, or both:

- Implement various technologies (e.g., DL and Skype ®) to enable a single student to enter a traditional classroom setting electronically as well as access instructional tutoring and coaching.
- Create a shuttle system to enable students to travel among the four districts and the BOCES vocational center so they can participate in specialized programs.
- Offer a tuition reimbursement for teachers to get additional certification as requested by the district.
- Grow and expand middle-level extracurricular offerings through shared intramural programs for students.

All four districts already have certain academic "niches" in which they offer unique and popular alternatives to students. Olean is developing a health services careers program, as a special academic and vocational niche. Portville has begun analysis of local industry needs, employment opportunities, and facilities so that a building trades academy for grades 9-12 can be initiated as soon as possible. Both academies will work collaboratively with county labor organizations, trade associations, and local business and industry to facilitate and monitor placement and job performance for participating students. By pooling these and developing others, the districts will ensure a first-class, 21st century education for all children in their combined attendance areas. The districts will also work closely with the Allegany County collaborative – Creating Opportunities for Rural Education (CORE) – to refine career pathways already available and develop new options based on local job demand and student interest. Each high school will be able to define model programs, carve out special curricular areas, without the restriction of enrollment capacity, geography, transportation, or budget limits.

Conclusions

> *Playing safe is probably the most unsafe thing in the world. You cannot stand still. You must go forward. – Robert Collier*

Education as a business must change. Cultural and economic forces together promise that continuing to "do business as usual" leads to certain failure, for schools and citizens. Through judicious communication, commitment, and the drive to collaborate and pool resources, positive outcomes are possible without destroying local resources, undercutting benefits, or incurring debt. We must build an effective, efficient solution for the broader community while still honoring and fostering the locally established way of life. True change comes from implementing modifications in an organization's culture *and* structure at the same time – modifications that complement and build upon each other.

Our challenge is to create open doors, embrace collaboration, identify and capitalize on common needs and strengths, and select and nurture individuals with the needed skills and total commitment to both the journey and the outcomes. Changing the culture alone may impact beliefs, but sometimes the existing structure of an organization cannot support the fulfillment of those new beliefs. Sometimes the structure directly opposes or undermines the expansion of new beliefs. These four districts must develop the necessary management skills and assemble the operational structure to guarantee the fulfillment of those beliefs. Commonly accepted templates for how to teach and instill a love and motivation for learning may need to be evaluated carefully with new eyes. To meet the real-world needs of 21st century citizens, schools and teachers must adapt skills, styles, and presentation toolkits and cultivate flexibility. Institutional structures and cultures must become responsive and adaptable. Identifying what to change and how to do it is only a starting point. We must follow through and act based on thorough understanding.

A centralized, collaborative unit will link all four districts and be responsible for overseeing the operational logistics to assure continuous improvement and maximize resources. Initially, this unit will establish and monitor common scheduling, transportation, technological interfaces, and specialized programming for the districts. This deliberate design and oversight for continuous improvement can and should be practiced in schools, but historically it has not been accomplished at significant levels. We believe that this is due to the inadequate resources and attention dedicated to selecting a candidate with the strongest credentials needed for this work.

These districts propose the creation of a *centralized logistical unit* headed by a business professional with a proven track record whose role is to reengineer targeted, common, operational processes. The goal is to identify redundant, unnecessary, tangential, and inefficient bits of processes required for common business operations. These processes are critical but could be performed much more quickly with as much or more impact by redesigning *how* they occur, from start to finish. The districts will reallocate the reclaimed funding to mission-critical ones composed of efficient, value-adding tasks. The central logistical unit would also facilitate each district accessing the others' strengths (e.g., enrichment options, electives, intramural sports) without additional investment or staffing. There are three strategies: empower the central logistics unit to maximize sharing between districts by coordinating shared resources; improve instructional implementation and intervention; and, create specialized academies in each district to maximize career and college readiness. The districts are considering the creation of an online remedial assistance center and a real-time homework help "hotline" (chat, IM, Skype®), as well as common secondary curriculum maps, unit tests, and quarterly assessments. They are also discussing scheduling

common instructional planning time across the four districts within specific content areas. District administrators are also looking into setting up a shuttle system between the districts and BOCES to facilitate transporting students enrolled in vocational and other specialized programs. As new courses are offered, teachers could be reimbursed for tuition to earn specific certifications. Traditional instruction opportunities will be offered via DL (videoconferencing) tailored to interests and credit requirements. The districts have begun discussing the expansion of middle level extracurricular offerings through shared intramural programs.

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[6] More detailed indices for student performance by subject area are not included in Table 7 for a good reason. The New York State assessment system has been and still is undergoing an adjustment cycle to raise the criteria for meeting and exceeding standards of performance, so that the standard for success at graduation (grade 12) is comparable to the performance entry level required by state postsecondary institutions. While the criteria in ELA and Math are increasing each year, the comparison of proportions of students by performance level is at best misleading. The effect of comparing annual performance to the gradually rising criteria is equivalent to raising the bar for a high-jump competition at the end of each meet. In addition, the state assessments are specifically designed not to be compared across grade levels within a subject area, nor between successive school years within a grade level and subject area. There is virtually no basis for determining improvement, either for one student across several grade levels nor of cohorts of students across school years.

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