Improve Processes to Improve Outcomes

The evaluation team at Ray.Taylor and Associates strives to both prove the efficacy of an initiative and to provide information, recommendations and insight to improve the initiative. To improve an initiative one must look deeply at the full system and the processes as they are actually designed and implemented.

This article is motivated by two types of work performed by Ray.Taylor and Associates; work with school districts facing academic or financial distress, frequently both, and our work in program evaluation. Both types of services lead to a similar route of inquiry. In fact, our work in fiscal and academic improvement for school systems is a hybrid of the skills and methodology applied to program evaluation. When systems fail the root to failure can often be seen threaded throughout the system of processes that make up the organization. In short, consistently successful outcomes are based in well-designed systems implemented with fidelity.

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Based on our decades of program evaluation and administrative work with public and non-public organizations a core belief of Ray.Taylor and Associates is that to improve outcomes of an organization one must attend to the operations and processes that lead to those outcomes. In the case of education, the organizational outcomes cannot be separated from the effectiveness of the financial and intellectual resources and processes that make up the system as a whole. An evaluation of outcomes alone can miss critical determinants of the system's operations.

In our work in program evaluation we strive to both present data that answers questions about the outcomes of an initiative and to provide information that can improve the initiative to reach its goals and to be useful to others, whether funders or practitioners, replicating the initiative. With that purpose in mind our evaluation models look at the full system – not just the performance outcomes and goal attainment.

By combining process analysis techniques with program evaluation the team at Ray.Taylor and Associates uncovers barriers and disincentives to reaching an organization's goals. These barriers and disincentives have been defined in the process analysis arena as ***wastes***. We build on these categories of practices and apply them to K-12 education environments.

Through our work we have demonstrated that systemic review of organizational processes can unveil wastes of money, time, effort, resources, or personnel. While waste may seem a harsh word – call them inefficiencies, or processing errors, the point is that they add strain to the system; on its finances, time, productivity, responsiveness, delivery of instruction, and legal compliance, and disrupt the organizational climate. These wastes can leave open the door to costly risks. Fiscal results and fiduciary oversight can be improved through review of organizational processes and elimination of deadly wastes.

Review of how the work of an organization is conducted and the results of that work can lead to improvements. We find that weak, non-existent processes, and dysfunctional organizational cultures that lead to risk and sloppiness can account for cost overruns, errors and failure to achieve intended outcomes.

This call for process analysis is nothing new. Indeed, it is adapted for the public sector from the SIX SIGMA and LEAN approaches used to invigorate the auto industry and applied to other areas of industry and business. At Ray.Taylor and Associates we have taken the concepts regarding *wastes,* along with risk management strategies, and adapted them to assess the efficacy and value of educational systems and processes. The SIX SIGMA process offers seven domains for system review. We have reviewed and adopted these to real world education system environments and added to the list. Our analysis and work with schools demonstrates that failure and dysfunction can be found in these areas and can impact teaching and learning, and financial stability.

The field of manufacturing has looked closely at the process impairments that can impact outcomes; but these processing missteps are not isolated to manufacturing. We see indications of similar features in other industries and service agencies. The Ray.Taylor and Associates team has adapted the indicators to the K-12 education environment. As you will see, there are clear parallels no matter whether your business is manufacturing cars, or teaching and learning.

The following chart shows the categories of waste as defined by Taiichi Ohno of Toyota in the left column and the application of the category to an educational organization, as defined by Rossi Ray-Taylor, in the right column.

Categories of Unproductive Manufacturing Practices *identified by Taiichi Ohno, the father of the Toyota Production System (TPS)*[1]	**Interpreted for Educational Environments** *by Rossi Ray-Taylor, PhD CEO Ray.Taylor and Associates* ***Here are a few examples of wastes in a K-12 setting.***
• **Overproduction** -- Manufacture of products in advance or in excess of demand wastes money, time and space.	Too much of education energy can be directed toward unconnected initiatives and activities that lack purpose. Shifting to the *next new thing* without evidence or a purposeful plan can result in an educational form of overproduction; that is, activity for activity sake with little value added and distraction of resources from essential services. A classic example - Review of middle school math curriculum has shown the tendency for the curriculum to become stuck on re-teaching computational math to students ready to move on to higher levels of mathematics. This is a form of overproduction.
• **Waiting** -- Processes are ineffective and time is	Students often need to wait; wait in line, wait for more instruction, wait as materials are distributed, wait to be

[1] Source: http://whatis.techtarget.com/definition/seven-wastes

wasted when one process waits to begin while another finishes. Instead, the flow of operations should be smooth and continuous. According to some estimates, as much as 99 percent of a product's time in manufacture is actually spent waiting.	logged in or for internet access, wait for feedback - each is an example of wasted instructional and learning time Waiting can be seen in the time it takes to order and receive supplies, equipment and furnishings (think textbooks and classroom desks) or the time it takes to fill a vacant position – in the case of classroom teachers necessitating use of a substitute teacher and thereby impacting the quality of instruction and learning outcomes. A costly form of waiting can occur as districts and schools wait for the release of Title 1 and other grant funds. Not only does waiting for approval limit access to the grant funded services and supplies, it may open the district to exposure for unapproved costs, underspending of grant dollars and penalties for excessive carryover. And most importantly waiting for release of Title 1 funds can result in withholding of needed services from students, and failure to meet goals.
• **Transportation** -- Moving a product between manufacturing processes adds no value, is expensive and can cause damage or product deterioration.	Students line up to move between instructional locations and classrooms; itinerant teachers (art, music and physical education specialists) move between schools. This movement consumes time, can disrupt the course of instruction for students, and lead to costs in mileage and travel time for teachers. In an overlooked example students in secondary schools are transported (moved) every 55 minutes from one classroom to another. This disruption in the flow of an instructional day eats time and can be the source of costly hallway oversight and disciplinary infractions (everything from running, to fighting and truancy). In some cases districts still use a warehouse based distribution system for routine products like paper, cleaning supplies, etc. – this can be a costly means of managing routine frequently used products that requires transportation from distributor to warehouse to school with energy and staff costs associated with maintaining a standalone warehouse.
• **Inappropriate processing** -- Overly elaborate and expensive equipment is wasteful if simpler machinery would work as well.	Some processes used are excessive – too many signatures, too much paperwork, too many duplicative reports. Some argue that the excesses in assessment can be seen as a form of inappropriate processing. Schools report having to respond to data requests for similar information in different formats for separate reports to local, state, or national administrators. The result is often waste in time and resources at the school level and can result in inconsistent or compromised

	data. In contrast, failure to appropriately review, vet and report transactions can lead to waste, fraud, theft, or other forms of misconduct. Breakdown, skirting, non-application of organizational processes, or processes that are ineffectively designed or implemented can result in waste, fraud, and theft.
• **Excessive inventory** wastes resources through costs of storage and maintenance.	Some student materials and technology sit on the shelves and are not distributed for student or other intended use; an example of this can sometimes be seen in Title 1 funded materials. Title 1 monitors look for and cite districts for slow distribution of Title 1 funded supplies, materials and equipment. They require that Title 1 supplies, materials and equipment be made available for a substantial portion of the school year of purchase. Warehousing as described above can also be a factor in excess inventory sitting on a shelf.
• **Unnecessary motion** -- Resources are wasted when workers have to bend, reach or walk distances to do their jobs. Workplace ergonomics assessment should be conducted to design a more efficient environment.	Unnecessary motion may be seen in office configuration and how work is performed, particularly by those who conduct back-room services and support service. Ergonomic assessment may well be in order for students. How are students expected to move through their school and classrooms? And while purposeful movement can add exercise and break monotony of too much seat time, consider design factors like time needed to navigate from one classroom to the next, and the impact of movement for students or staff using wheel chairs or other mobility devices.
• **Defects** -- Inspecting and quarantining inventory takes time and costs money.	Examples of educational defects include: Failure to teach – poorly qualified or unqualified teachers, e.g., long-term substitutes Failure of the school or district to meet state and local learning and assessment standards Failure to properly implement required processes, financial audit findings, failure to meet state and federal program requirements, legal infractions Student suspensions, expulsions, staff disciplinary infractions, underperforming staff Grade level retention, course failure, failure to graduate on time, dropout rates

Additional categories of waste have been identified since SIX SIGMA was established	
• **Underutilization of employee skills** -- Although employees are typically hired for a specific skill set, they always bring other skills and insights to the workplace that should be acknowledged and utilized.	Underutilization of employee skills can come from lack of a system to deploy highly qualified and experienced, effective faculty to gain highest organizational and instructional impact. This may be seen in the lack of effective coaching and mentoring systems that makes use of highly skilled employees to onboard, mentor and coach the workforce. By failing to build a path for employee growth organizations fail to optimize their resources. Insufficient targeted needs-based training to improve performance is also a source of underutilization of skills. Lack of ethnic, cultural, gender and language diversity in a workforce can foster narrow skills and outlook that may deprive an organization of new skills, creativity, perspective and experience. Inadequate succession planning for central office staff and principals / building leaders (acutely seen in finance/accounting and HR staffing) and lack of a plan to fill (recruit and retain) hard to fill positions e.g., high level mathematics and science teachers, can cause weak staffing and skills gaps. Other signs of an underutilized workforce include: Not fully using the leadership skills of faculty Mismatch in promoting staff from within and matching needs to skills Lack of a system of career growth for professional staff (allowing teachers advance their careers yet stay close to instruction) Limited impact of “highly qualified and skilled” (specialist) teachers Use of social workers and psychologists for paperwork and testing with little direct student work Concentration of counselors in scheduling with little time spent on social emotional counseling or career guidance. Due to funding constraints counselors concentrated at middle and high school with no elementary counselors

	Lack of health care support services e.g., school nurse type services – especially critical in medication dispensing and public health care support
• **Unsafe workplaces and environments** -- Employee accidents and health issues as a result of unsafe working conditions waste resources.	The result of unsafe workplaces and environments can be injury, loss in students and staff through transfers out of the system, increased insurance and liability costs, and legal exposure. These issues include student discipline and oversight, environmental and facility factors like lead paint and pipes, infestations, molds, and asbestos. Safety issues can also include the school neighborhood that children need to walk through to go to school; upkeep of buses, bleachers, outdoor and playground space, food safety. Staff and student safety include physical safety, abuse, harassment and bullying, as well as sports injuries and hazing. Some schools have points of congestion (e.g., near cafeteria, in hallways, in entrances, near stairway, near bus drop off and pick up).
• **Lack of information or sharing of information** -- Research and communication are essential to keep operations working to capacity.	Information transfer failure is seen in failure to share information about student instructional needs e.g., Special Education IEPs and service needs, sharing with next teachers as students advance from one grade or school to another, and other service providers, inefficiency and noncompliance with rules, and guidelines. Information sharing requires both the transmission of information and also receipt and understanding by the targeted audience. Lack of sharing of strategic and school improvement plans and lack of these plans to adequately guide the vision, standards and work of the system. Requests by multiple offices within the district or by multiple agencies outside the district for the same or similar information – lack of data request and distribution coordination. When relationships with parents, community and students are inadequate valuable sources of information can be lost.

	Additional examples of faulty communications include: Lack of knowledge and alignment of curriculum and instructional and learning expectations and standards Inadequate vetting of potential employees Lack of cross agency communications e.g., with municipal government, health, social services, mental health, safety, housing, municipal planning etc. Lack of timely, accurate, creditable and relevant data for decision making Lack of program evaluation (both formative and summative), lack of student formative assessments, lack of credible and timely employee evaluation data
• **Equipment breakdown** -- Poorly maintained equipment can result in damage and cost resources of both time and money.	The classic example of equipment breakdown is breakdown of technology and internet access – technology offline just when you need it. Too little planned maintenance of sites, facilities and equipment, leaky roofs, site surfaces (e.g., parking lots, playgrounds, sidewalks), HVAC, electrical systems, plumbing, poorly maintained buses can result in breakdowns and citations. Failure to maintain sites and facilities to required codes. Similarly, planned maintenance and equipment replacement not adequately budgeted (e.g., inadequate plans to maintain up-to-date technology and software) and inadequate planning and budgeting for replacement especially for technology and buses can lead to breakdown and waste. Because education is highly reliant on professional contact between student and teachers high levels of absenteeism and vacant positions can be seen as a sort of equipment breakdown – that is the means of delivering service of the organization is non-working or not available.
	Theft and corruption – although not specifically stated in the SIX SIGMA design the impact of theft and corruption creates waste and organizational risks, and can contribute to or create the condition for the other sources of waste addressed above and increase operations costs (e.g., legal fees, costs of borrowing and insurance).

Why Process Matters

While a comprehensive process review may not underlie every outcome evaluation, exploration of processes can help pinpoint system fault-lines that can lead to overall systemic failure.

The take away from the chart above is that there are myriad ways that wastes can be found in K-12 school systems; many more than shown in our examples. Any organization that intends to improve to meet goals and to maintain improvement must attend to the full system of resources, process, operations and outcomes. As with any system, K-12 education is a system of interlocking activities and forces that cross responsibility, staff, departments and resources. To achieve excellence and sustain growth the full system must operate at peak performance. With careful and vigilant review the leadership team can look for the wastes outlined above. The process audit and evaluation models conducted by Ray.Taylor and Associates use these indicators along with others to identify whether an organization's processes are ineffectively implemented, missing, incomplete or redundant and are therefore the source of system failure and waste.