

Columbus Public Schools Use Process Thinking to Improve Academic Achievement

By George Taninecz

A mind is a terrible thing to waste. Ironic, then, that a method for improving the development and learning capabilities of young minds starts by focusing on waste. But that is what's happening in Columbus Public Schools, where principals are applying lean tools and process thinking to the difficult challenge they face daily: removing wasteful activities that don't help them to help students learn.

Columbus Public Schools is working with the Educational Council and The Ohio State University, Fisher College of Business, to bring lean tools, such as process-mapping methods and value-stream maps, to urban school principals. The Educational Council serves 16 public school districts in Franklin County, Ohio, including Columbus Public Schools. The Council has a relationship under No Child Left Behind federal legislation to offer lean/process-thinking consulting to 15 urban Columbus schools, five of which have failed to meet improvement standards over a five-year period and have been reconstituted (new leadership, new teaching staff, and/or a new education focus) — if the other 10 schools don't improve, they, too, are in danger of restructuring in some manner or being reconstituted.

When Brad Mitchell joined the Educational Council in October 2004 as CEO, he began reviewing the work done with Columbus schools. Those efforts, he says, primarily consisted of coaching for principals to address a gamut of problems. “Coaching takes a broad continuum. There's coaching that is war stories and making people feel good about themselves and there's content-specific coaching, like “Here's the new program and you need to learn about it, [such as] training and technical assistance coaching. And then there's a third kind of coaching — that I didn't think we had — which is process-mapping coaching, really stepping back and with an external set of eyes to help people in the building say, ‘What process or processes are leading to what outcomes, and how can we change those processes to make a difference.’”

Mitchell approached Columbus Public Schools' superintendent Gene Harris, chief academic officer Marvenia Bosley, and chief professional development officer Josephine Scott with the lean/process-thinking method and why it was important: “In education there are a lot of school improvement plans and there are a lot of programs that vendors love to sell out there. But there's not a lot on processes. So you can have a great plan and you can purchase a great program, but if you embed it in a system that is inefficient or ineffective or you're not working through your processes very well, you can't get very far.”

Columbus Public Schools understood the value of the process approach, says Mitchell. The challenge then became finding persons with the personal and technical capabilities to bring such methods to a district the size of Columbus. “Like in any business, and especially in a business that faces such high stakes accountability and such complexity of problems as

urban education, there is a leeriness about anybody who isn't in the trenches to understand that.”

As a former professor in the College of Education at OSU, Mitchell was aware of the lean programs there. He contacted Peter Ward, chair and professor of Management Sciences at OSU and director of research for the college's Center for Operational Excellence (COE), and Peg Pennington, faculty member of Management Sciences and director of continuous improvement at COE, “to see if they were interested in being part of a new approach to value-added improvement in a large urban system. Peter and Peg — and their passion, enthusiasm and expertise — jumped right on board to launch the program.”

The program kicked off in late summer 2005 with a dinner for district principals, where they heard about process thinking. That was followed with a two-day planning session on lean tools and principals took part in process-mapping exercises. Presenters referred neither to “lean” nor “value-stream mapping” per se, but instead focused on tools that could be used throughout Columbus schools to improve students' chances for success as well as give principals and staff a mechanism for professional development. For example, 5S was coined “Clean Sweep” by OSU, and “process mapping” was used interchangeably with “value-stream mapping.” While that might irk lean purists who would argue nuances of terminology, OSU and the Columbus educators were correctly focused on *thinking* about the process and *improving* the process, and significantly less concerned with being true to lean lexicon.

Middle-School Process Mapping

At the Linmoor Middle School, principal Michelle Myles and staff have used process mapping in an effort to improve the test scores of short-cycle assessments, diagnostic tests administered every five to six weeks to students that enable staff to revise and improve teaching methods and better prepare students for Ohio Achievement Tests — tests that ultimately determine academic improvement. Myles and staff developed process-flow maps (current and future state) that define the entire assessment process, from getting students to show up, to placing test books into rooms, to analyzing results in order to swiftly address student learning gaps.

The Linmoor maps look similar to most found in manufacturing plants across the country. Countless steps are accounted for, with notes marked on the maps indicating areas of waste and potential for improvement. Myles says that in developing the maps, “We were surprised that there were so many steps that we just took for granted.” She advises principals to build time into their schedules for mapping, and to bring enough staff members on board and get their input and buy-in. Instead of a few people trying to accomplish various tasks, she says it has helped to delegate specific tasks with clear objectives among more people. Linmoor mapping started with about 10 staff members, and she gradually added staff to grow process-mapping capabilities and potential for improvement. “If you have open-minded people, people who are willing to work, and give them the opportunity to do it, they'll do it.”

OSU's Ward notes that mapping also gets staff focused on what really matters most. "One of the things you get out of [mapping] is that people, instead of arguing about *territory*, they're talking about the *process*."

"After we did the first [assessment] test, we met together to get feedback on where we needed to improve, what areas worked, what areas did not work, and who else needs to get involved to help the process run more a little more smoothly. Then we took the second test, and came back and did feedback again," Myles says.

More efficient collecting, grading, and analyzing of tests enables teachers to do enrichment or intervention with students in a timely manner, preparing them better for the next test. And it's been working, says Myles. "Our opening goal was to improve academic achievement for the students. That's our ultimate objective. ... We were able to quickly see where weaknesses were in the process, and we were able to identify those weaknesses and correct them for the next test so that we don't have the same problems."

The biggest and most immediate impact from process mapping allowed the school to cut days out of the grading process. This allowed teachers to take test results and use them to quickly remediate areas of weakness, which is critical because of the short review period that follows testing days — if tests are not graded quickly, that window is missed and that opportunity to improve student learning also is missed. Another impact was that for the first time everybody involved in the testing process shared a common understanding of the process. Consequently, steps in preparation (e.g., reconciling the frequently changing roster in an urban school, developing pretest and post-test classroom activities) were better planned and improved through PDCA.

"As far as if the process has helped the students academically, we did see gains from the practice test to the first grading period assessment test, and in addition to that it gave our teachers the ability to provide our students with the necessary intervention that they need," adds Myles. "We were also able to get feedback from the staff in order to make the process run smoothly and more efficiently." Improvements have continued from the first assessment to the second assessment, adds Yvonne Jones, Educational Council project manager.

"Using process mapping, particularly for short-cycle assessment processes, you've got built-in performance metrics," says Mitchell. "You see the process, you change the process, and if it doesn't lead to direct changes in achievement, you've got a direct understanding of that. It depends on what's being mapped what metric of success will be important." He notes that at Linmoor, the processes and metrics mapped extended beyond teaching and technical testing to social behavioral processes and outcomes, such as motivating kids and the number of kids showing up to take the tests. And "more kids took their time taking the test and there were less disruptions on those days, and that was critically important to them. You can teach well and the kids know it, but if the kids blow off the test you're in trouble."

Myles had never heard of mapping (and initially thought, “here we go, another thing”), but trusted Jones, a retired principal and district-level administrator, and her endorsement of the approach. In addition to being the initial liaison between OSU staff and Columbus principals, Jones has helped principals scope their mapping efforts, steering them from processes that are too large (and need broken into smaller processes), those not really under a principal’s control, or those that lack impact that the school needs now (invest the time and energy where it makes a difference).

“I think that there are a lot of aspects of corporate America that we can use in education to run more effectively and efficiently. ... My biggest objective is to raise academic achievement of students at the school and pull Linmoor out of academic emergency,” says Myles. “I see this process as helping me to do that more efficiently.”

Standardized Seeing and Sharing

At the Brentnell Elementary School, Principal Deborah Copeland worked with OSU to develop a more standardized process to monitor teachers’ classrooms and record and share the findings of her daily walks through the facility. For example, among the many facets she’s reviewing, Copeland studies the method of teacher instruction, such as the level of Bloom’s taxonomy in use — the taxonomy progresses through knowledge (e.g., recall information), comprehension, application, analysis, synthesis, and evaluation (e.g., judgments about ideas).

“On the Ohio Achievement Test, the questions that children will be asked are at the application [level] and above, so if we are giving them content — the information covered in the test — we also are responsible for teaching the context of the test. So if my teachers were all working down in the knowledge [level], we haven’t given students a fair shot at showing what they know. We haven’t taught them the practice to utilize what they know in the appropriate context.”

Efficiently capturing and sharing classroom observations can improve teaching, but it also is a professional development tool for Copeland and teachers. An Excel spreadsheet developed with OSU enables Copeland to see teaching trends over time, and she shares this with teachers in weekly meetings and one-on-ones. She previously would have made disparate notes, not necessarily compiling information in a standardized way, aggregating findings, or seeing long-term trends. The new process links with other professional development efforts with which teachers are involved, says Copeland, and the teachers, too, will soon be recording observations of their own practices. “Teachers can use this to become self-reflective on their practices, and then move to the next level of, ‘What am I going to do about this.’ That’s the mark of an effective teacher and how we all get better by looking at this.”

Copeland’s work isn’t a mapping initiative, per se, but it demonstrates the value of end-to-end process thinking as a development tool *and* improvement tool. Mitchell says that too often best practices, programs, and research received at day-long workshops get lost when principals reenter their harried school environments, unlike the applicability of process thinking and process mapping. “They can spend a half day or day under a professional

development lens and actually work on the work and go back with something they can immediately implement or at least fine tune. And that to me is the greatest value-added aspect of it. It turns professional development time actually into continuous-improvement time. ... It's not a waste of time, it's a tool they can immediately use on a problem or practice that is immediate in their minds, and they can have immediate results."

"You get the [mapping] tool and you have something that you can actually work with," says Jones. "It's so new to us in education. But once you see it, you say, 'Why didn't we think of this? Why haven't we been using this?'"

Simple Start and Customized Solutions

The Columbus schools are uniquely applying lean tools to their facilities, however, almost all of the schools began with a common lean tool, coined "Clean Sweep," which essentially is a 5S housekeeping initiative targeting the principal's office and that of the school's secretary. During the planning sessions with principals, Ward encouraged each facility to start with Clean Sweep. He says it is a tangible way to work with principals and show immediate improvement, and has helped get buy-in from principals for other initiatives.

Mitchell says that Clean Sweep, in addition to redesigning physical space to be more efficient and effective, helped overcome the concern about a college of business helping an urban school district. "It was almost like servant leadership; it was a humble approach to begin, and then it gave [Ward and colleagues] a chance to really understand school cultures and the language of school cultures from a very ground level. We didn't plan it that way, but in retrospect it was a smart thing to do in terms of building legitimacy and efficacy."

The customization of process thinking, which is unlike traditional professional development or continuous-improvement efforts that cascade down onto facilities and is done by all, has also impressed Mitchell: "What we've worked out with them is that this is customized coaching. One building might need one kind of lean management tool, another building might need another one, or they both might be doing process mapping but one will be doing it on scheduling and the other might be doing it on academic achievement or discipline issues. The early metric on [customization] is that principals find that incredibly important. It's a real-time tool with real-time results that can fit the timeframe of action that principals and teachers are facing, especially in urban educational reform."

Mitchell says that principals, working within their own zones of influence, are able to address a specific need. That is especially important because with No Child Left Behind there is a disaggregation by subgroups, meaning a school or a district might do well with their overall population but not well with a subpopulation. "They could be two or three students away from hitting the mark and being considered a continuously improved effective school or being an academic watch school. What process mapping has allowed them to do is to look at these subpopulations and say, 'What processes are we doing to help them particularly get successful and turn it around.'"

Jones credits Ward and Pennington with being flexible to the unique and varied needs of the principals and keeping them engaged and moving forward to explore new areas for application of process thinking. For example, Linmoor's Myles is part of a project with other principals to help students transition from elementary school to middle school and middle school to high school, and she hopes to apply mapping to those processes.

Achieve Success Then Expand Approach

OSU's work with Columbus Public Schools is scheduled to run through June 30, 2006. Mitchell certainly hopes it continues much longer, but notes that urban school reform typically offers a one-year window of opportunity to show results and there's no guarantee of continuation. He sees far-reaching benefits, though, if the program remains.

"Clearly our first hope is that we will serve the 15 schools that we are working with, that the five redesigned schools significantly improve their metrics, and that as many of the 10 schools as possible don't move into the redesigned academic emergency status and we help them avoid that — that's Job 1," says Mitchell. "Job 2 is to develop an infrastructure in which these tools and this approach can be spread throughout the system," which could include developing web-based systems to disseminate tools, approaches, and success stories for staff to access and share in their own time and own way. "For instance, people could go up and access the various maps used at Linmoor to streamline their assessment testing.

"The third wave, ultimately, is, if we can do well here, is to share these approaches and whatever we learn with other urban systems and other school systems as the lean management movement takes a greater purchase in public schools overall."

Education involves working with many "constantly changing variables" (students, colleagues, teachers, parents), says principal Copeland, and because of that she had been hesitant to believe that business or industry tools could be successfully translated to the education sector. "But with process mapping, the applicability of that tool to education is a good fit because we're talking about *processes*, we're not talking about finite variables. It makes sense to use it." Copeland challenges other educators to embrace process thinking: "Do you see your job, your role, defined by processes? If you answer in the affirmative, then how well are you managing those processes? Is managing those processes a struggle, a challenge. Suppose you had a tool to help you manage those processes a little more efficiently and effectively. ... If I'm talking to another building principal, I know how they're going to answer those questions. 'Yes, I am overwhelmed by the processes.'"

Many *external* factors affect urban schools and student achievement and are difficult to address with any business tool," says Ward. "But the systems that are *internal* to your school you can make less variable and, therefore, give principals more time to deal with the bumps that are inevitable. Again, these are smart, dedicated people who can really utilize these tools so much. The notion of 'learning to see' in this environment is so powerful. In manufacturing, we've been thinking about processes forever, the last 100 years, and trying to fix them and make them good. And we've squeezed out the most

egregious wastes. Here [in education] that hasn't happened. So you go and arm these people with the ability to apply process thinking, they can do great things.”

For More Information

Contact Peter Ward at The Ohio State University: *ward_1@cob.osu.edu*. In addition to chair and professor of Management Sciences at OSU, Ward also is steering committee director of the **Lean Education Academic Network (LEAN)**, a group of university educators dedicated to implementing lean education in U.S. higher academia.

The Lean Education Academic Network (LEAN)

LEAN wants to engage leaders from industry and academe in developing new approaches to teaching university students lean thinking. Steering Committee members are Peter Ward, The Ohio State University; Bohdan “Bo” W. Oppenheim, Loyola Marymount University; William Parr, University of Tennessee; Art Hill, University of Minnesota; Joachim Knuf, University of Kentucky; Ross Robson, Utah State University; and Helen Zak, COO of LEI. Contact: LEAN, 600 Fisher Hall, 2100 Neil Ave., Columbus, OH 43210, Phone: 614-688-5891, Fax: 614-292-1272, www.teachinglean.org .