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VISION STATEMENT: Shaping the Future Through Quality in Education and Professional Development

Message From the Chair

by Fernando F. Padró, Ph.D.

"Looking back over the course of development of the public school system in America it seems clear we have reached a new stage in that development. We have almost done the quantitative job; that is, we have crammed all our youngsters into schools. The question is: Can we go beyond and provide a high-quality education for all our children or falter and accept the easy solution of mass production education?"

Raymond Callahan, 1962, p. 145

In today's prevailing neoliberal view of society, the *nexus* between educators at all levels, policymakers, and end users provides the "grease" that allows the system, in Machlup's (1962) terms, to produce—contributing to working skills and capacity—and reproduce—replace that lost to death and retirement—the country's stocks of knowledge. Moreover, given the long-standing issues based on the different and even disruptive impact of the traditional transition points on what's expected from the learner and the learner from him- or herself (e.g., Nair & Fisher, 2000; Honkimäki & Kálmán, 2012), it is critical for the different elements of the system and stakeholders to communicate, exchange ideas, and work together to improve to find those solutions that lead to a quality education.

The Education Division's STEM conference is one of those attractor points that encourage and allow people from primary/secondary education, higher education, policymakers, and employers to come together and work through the salient issues impacting these fields. The National Quality Education Conference (NQEC) is ASQ's second attractor point to do the same. NQEC's roots are about strengthening the interconnections between all these groups to foster continuous improvement in education. Both these efforts have led to recognition from the Carnegie Foundation for the Advancement of Teaching by including the Education Division through asking former Chair, Dr. Cindy Veenstra, to participate in its recent deliberations on how to advance the continuous improvement agenda in primary/secondary education. In turn, the Education Division and the Carnegie Foundation are investigating ways to better network with each other to enhance their ability to promote continuous improvement and quality at the primary/secondary school level as demonstrated by a presentation at NCEQ by Dr. Chris Thorn.

Exchanging views and moving forward on what continuous improvement is and how to define quality of education is becoming more critical. Such action is imperative given so many new developments arising from the use of technology in education and the principles of access, equity, cost containment, and agility to meet the impact of job churning on one side of the equation. This is in contrast to the balance of approach formal education should present in relation to education (stimulus and guide to greater intellectual activity—Ritchmyer, 1932) and training (applying new knowledge and skills for practitioners—Avruch, 2009) on the other side. Developments such as open learning and related concepts like open education resources, e-learning, and massive open online courses require a "systematic analysis of assessment and accreditation systems, student support, curriculum frameworks, mechanisms to recognize prior learning, and so on, in order to determine the extent to which they enhance or impede openness" (Butcher, Kanwar, & Uvalić-Trumbić, 2011, p. 6). This is necessary from the perspectives of opportunity to succeed and lifelong learning. Micro-credentials through digital badges, touted as a more flexible alternative or complementary approach to recognizing achievement leading to a credential (not necessarily a university degree—cf. Elkordy, 23 October, 2012), pose legal, quality assurance, and quality control issues surrounding the legitimacy of what is now a portable testament that a learner has at least been exposed to and acquired a level of proficiency over something. For a smattering of the issues surrounding micro-credentials, please go to http://scope.bccampus.ca/mod/forum/discuss.php?d=16834.

This writing began with a quote from Raymond Callahan's seminal work on K-12 education to demonstrate how the issues have not changed that much. There has not been complete satisfaction regarding formal education, but it has only been since the 1980s that there has been a widening rift regarding education among teachers, educators, policymakers, and other stakeholders regarding the effectiveness and impact of education. In my opinion, most of this is due to the simple reality that quality in education is defined through policy steering because of its basis in social constructs (Padró, 2013). Even so, stripping the veneer off many of the critics and supporters of formal education does show that there is a legitimate desire to improve the educational experience as a matter of fairness. This gives hope that an open exchange of ideas in fora such as the ones provided by ASQ and its Education Division can lead to establishing a consensus or at least complementing approaches toward better education for the sake of the learner, the community as a whole, and employers.

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Note From the Editor

by Mandy Ellis, M.A.

This year's National Quality Education Conference (NQEC) is set for November 17-18, in Milwaukee, WI. The conference features keynote speakers Dr. Joann Sternke and Alan Blankstein. Sternke is superintendent of Pewaukee School District and the 2013 Wisconsin superintendent of the year. Her keynote speech will address how systems thinking leads to innovation. Blankstein is founder and president of the HOPE Foundation and his keynote address is entitled, "How Quality Changed the Course of U.S. Education, How We've Lost Direction, and What's Next."

The conference is meaningful for both higher education and K-12 educators. All higher education sessions will be held on Monday, November 18.

Collaboration, critical thinking, communication, creativity—these are all vital traits for today's learners to develop, but how can continuous improvement in your school and district help create new ways to teach these crucial skill sets and provide tailored programs to meet the students' needs? In a special interest session, ASQ and the ASQ Education Division have invited Dr. Chris Thorn, managing director of the Carnegie Foundation for the Advancement of Teaching, to share the foundation's growing understanding of the landscape of continuous improvement in education. It will be held on Monday, November 18, during the 12:45 p.m. breakout session. This session has evolved from the Carnegie Foundation's expert convening last May on continuous improvement in K-12 education that included several ASQ Education Division members. Read Carnegie's white paper "Continuous Improvement in Education" for a preview of this thinking on the promise of continuous improvement.

NQEC will demonstrate how creativity and innovation complement continuous improvement by focusing on teamwork, solutions, and the customer—in this case, the learner—no matter the grade level.

To learn more about continuous improvement at Dunlap Grade School, visit this blog: http://qualitycontinuousimprovement.blogspot.com/.

National Quality Education Conference: A Great Return on Investment!

by J. Jay Marino, Ed.D.

Every year hundreds of educators attend the National Quality Education Conference (NQEC), which is hosted by ASQ and supported by the Education Division. For the past 12 years, I've had the fortunate opportunity to attend the conference as both a participant and a presenter. There hasn't been a year that I've questioned the return on investment for me as a professional or for the educational organization that I was representing.

As the new superintendent of the Dunlap Community Unit School District No. 323 in my first year (2009), I was looking for a strategy to expose teachers and administrators to the world of quality in education. A key initiative in the district strategic plan was to embed continuous improvement practices throughout the organization from the boardroom to the classroom. I found myself reflecting on the key question any leader asks: "How do I take the system from where it is today to where we want it to be tomorrow?"

Rather than discuss the concept or have employees read about quality in education, I chose to bring 15 people—including central office personnel, building administrators, frontline teachers, and the teacher's union leadership—to the premier conference focusing on quality in education. Our group had a dynamic experience at NQEC, networking with other educators, learning best practices, and hearing dynamic presenters share their frontline experiences with continuous improvement. We used the experience not only to build our team, but to also build a vision of how continuous improvement practices could impact our district.

We returned to Illinois different than when we left. We had experienced how educators around the country were improving student achievement and creating 21st century educational learning environments. We were sold! We drank the Kool-Aid! We were inspired to take what we learned and implement it in our school system. Immediately upon returning from NQEC, our team regrouped to debrief the experience and determine our next steps. Unanimously, our team suggested that we begin immediate implementation of the continuous improvement process and tools that we learned from our experience at NQEC. Enthusiasm was high and much synergy had been created from our dynamic experience.

Within a few months of the conference, 50 teachers participated in the first round of training to learn the tools and techniques for creating a classroom learning community focused on 21st century learning. Can you guess who the first participants in the training were? Every teacher and administrator who attended NQEC chose to participate in five days of training to learn how to implement the continuous improvement classroom practices learned at NQEC.

The rest of the story is history. Out of the first group of teachers who were trained, about a dozen teachers stepped forward to serve as "continuous improvement trainers" in Dunlap schools. Within the first year of its respective teachers attending NQEC, Dunlap schools had more than 50 percent of its teachers participate in the continuous improvement classroom training, which was led by those who had attended NQEC.

During the course of our first-year's journey, we began by building teacher and administrator capacity for continuous improvement practices. The district created a stakeholder-driven, five-year strategic plan with a key focus on continuous improvement and 21st century learning. A district balanced scorecard was developed to measure the five key strategic goals. Schools are now writing school improvement plans with SMART goals that support district strategic goals.

School leadership teams are driving continuous improvement in their schools through the modeling of teamwork, collaboration, and shared leadership. Capacity is being developed for the implementation of professional learning communities throughout all schools. Classrooms have empowered students through the implementation of classroom mission statements; the creation of ground rules; a focus on SMART goals through the classroom data center; differentiation of instruction through student data folders; innovation and creativity via student-led classroom meetings; application of quality tools and the plan, do, study, act cycle in the classroom; and accountability through student-led conferences.

Continuous improvement has become the focus of our journey from good to great. Stakeholders are involved in our transformational efforts, and all employees have been empowered to drive improvements within their area of responsibility. Most importantly, students are involved in their learning and are empowered 21st century learners.

I'm pleased to tell you that the story I described is not an isolated incident. I've served as a central office administrator in four separate school systems in the past 14 years. In each of the four school systems, a continuous improvement approach was adopted in an attempt to increase student achievement. What do all four school systems' journeys have in common? In every situation, NQEC was used as a catalyst to bring a team together to formulate a vision for continuous improvement

that could be brought back to the system for implementation.

To use the example of a popular credit card commercial:

• Sending 15 administrators to a random out-of-town professional development workshop: $15,000.

• Implementing change top-down with outside consultants: $30,000.

• Sending your own representative team to NQEC to bring lasting change to your system: PRICELESS!

Learn more about the continuous improvement journey in the Dunlap Community Unit SchoolDistrict No. 323 in Peoria, Il, at http://www.dunlapcusd.net/.

About the Author

J. Jay Marino, Ed.D. is the superintendent of schools in the Dunlap Community Unit School District 323 in Dunlap, IL. He also serves as an international consultant assisting American and European school organizations in their continuous improvement efforts. Learn more at http://www.jaymarino.me or contact Marino via email at continuous_ improvement@jaymarino.me.

Editor's note: This article is reprinted from the Fall 2011 issue of *QEDNews.* The 21st NQEC will be held in Milwaukee, WI, November 17-18, 2013.

Schools' Outstanding Improvements Impact Student Achievement

Five teams from K-12 and higher education institutions have been named finalists in the Education Team Excellence Recognition awards. The awards, which showcase the nation's most outstanding improvement efforts, will be presented at the 21st annual National Quality Education Conference sponsored by ASQ.

Live finalist presentations will take place during the conference from Sunday, Nov. 17 to Monday, Nov. 18 at the Hyatt Regency in Milwaukee, WI. The award ceremony is Monday, Nov. 18. This year's finalists include:

• Kaneland Harter Middle School, Sugar Grove, IL—Project: Maximizing the Middle School Transition—Using Quality Tools to Help Acclimate Students and Parents, Sunday, Nov. 17, 10:15-11:30 a.m. This project showcases a comprehensive plan including student orientation, community Step-up Night, and summer Jump-Start program aligned to help students and parents better acclimate to middle school transitions.

• Ingenium Charter Elementary School, Canoga Park, CA—Project: Continuous Improvement Drives Student Outcomes, Sunday, Nov. 17, 12:30-1:45 p.m. This school will share how it established, monitored, and evaluated an innovative data analysis process to drive outstanding results in student outcomes.

• Universidad Tecnológica Nacional—Facultad Regional Buenos Aires; C.A.B.A.; Argentina—Project: Improvement Project to Reduce the Time to Return Test Records, Sunday, Nov. 17, 2-3:15 p.m. This team demonstrates how they reduced the receiving time for examination records using quality improvement tools such as ISO 9001 and the plan-do-study-act (PDSA) cycle.

• University of Wisconsin–Stout, Menomonie, WI—Project: Apply Lesson Study to Improve Teaching Performance, Students' Critical Thinking and Learning Outcomes, Sunday, Nov. 17, 3:45-5 p.m. Instructors of quality and operation management courses share insights on how virtual modeling and lesson study enhanced students' critical thinking and learning outcomes.

• Kaneland School District, Maple Park, IL—Project: Hiring Really Does Make All the Difference—Bringing Panel Hiring to Your District, Monday, Nov. 18, 10:15–11:30 a.m. A team of Kaneland educators will highlight the benefits of holding panel interviews with multiple candidates being interviewed in one session. The district has seen a seven to 12 percent increase in student achievement scores in classrooms that have teachers who were hired through the panel process.

The Education Team Excellence Recognition process recognizes teams that are improving educational outcomes, stakeholder involvement, and school quality. Past honorees have used the PDSA method and other tools to improve math scores, close the achievement gap between schools, and lower employee healthcare costs by operating a highly efficient medical center within a school district.

During the conference, the five finalist teams will showcase their projects' successes. It will be a great opportunity to learn from other educators' best practices.

# Defining Continuous Improvement in Education

by Jay Marino, Ed.D.

The term continuous improvement or CI is often very loosely defined in educational circles. If we can't define it, then how can we measure it? I believe CI is a philosophy, an approach and a paradigm shift—rather than a program or a set of instructional materials to purchase. CI is designed to instill a positive and collaborative school climate and an enthusiastic, participatory learning environment focusing on being better tomorrow than we are today. CI is about understanding that being good is never good enough and that the biggest room in the house is the room for improvement.

The goal of CI is to engage every student through empowerment, ownership, responsibility, and accountability for his or her own learning. This is accomplished by creating a customer-focused environment that involves students in the implementation of observable (and measurable) components of the CI classroom such as:

Classroom ground rules: Students participate in the creation of classroom expectations that all agree to follow to accomplish the mission of the classroom.

Classroom mission statements: Students collaboratively create a mission statement that focuses the learning for the year and gets everyone "on the same page" for learning.

Classroom SMART goals: SMART stands for specific, measurable, attainable, results-oriented, and time bound. Students participate in goal setting that puts a laser-like focus on instruction.
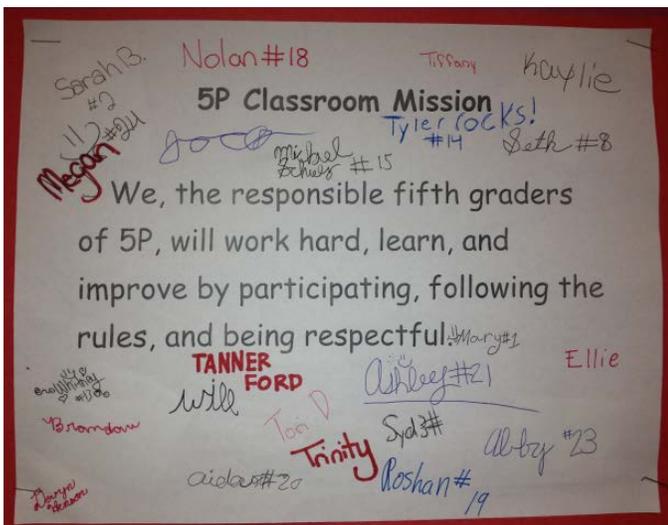
A classroom mission builds accountability and ownership in students.

A school-wide data center displays and monitors school-wide expectations and progress toward school goals.

Classroom data centers: Once goals have been created in student-friendly language, it is important that students participate in the collection and monitoring of progress toward the goals. The data center is the collection point to monitor academic progress.

Individual student data folders: To connect every learner to the classroom goals, students maintain a data folder that tracks and measures their individual progress toward their goals.

Classroom meetings: Effective classrooms take time to reflect on how CI is progressing. This forum provides students with opportunities to problem solve and modify the classroom system to obtain maximum results.

Student-led conferences: In a student-centered classroom, students are expected to be able to articulate their own progress of learning demonstrated through the review of their data folder. Students (instead of the teacher) facilitate the conference with parents.

Quality tools and PDSA in the classroom: Twenty-first century learners prepare for creative problem solving in the world ahead by learning and applying quality tools and the plan-do-study-act cycle of CI.

Students play a unique role in CI-driven systems. They are not only served by the system, but also are active workers and participants in the system. Learning is focused on what's most important and students are able to monitor their performance and readily observe their academic/instructional progress. Consequently, students become more receptive to learning when they are active participants and learn powerful 21st century skills that will prepare them for the world ahead.

About the Author

J. Jay Marino, Ed.D. is the superintendent of schools in the Dunlap Community Unit School District 323 in Dunlap, IL. He also serves as an international consultant assisting American and European school organizations in their continuous improvement efforts. Learn more at http://www.jaymarino.me or contact Marino via email at continuous_improvement@jaymarino.me.

Be a STEM-er! A Third Successful Year for the Advancing the STEM Agenda Conference

by Cindy P. Veenstra, Ph.D.

After the University of Wisconsin-Stout hosted the first two years of the conference, we moved our Division-sponsored Advancing the STEM Agenda conference to Grand Valley State University (GVSU) in Grand Rapids, MI, for its third year. (STEM stands for science, technology, engineering, and math.) It was an exciting opportunity to have it hosted by the Seymour and Esther Padnos College of Engineering and Computing at GVSU on June 3-4. The facilities and onsite planning were excellent, and the keynotes and breakout sessions were engaging. We received many compliments on the networking and new ideas that attendees took home with them.

With the recognition that the Seymour and Esther Padnos College has received for its co-operative education and capstones, the natural theme for this conference was "Collaboration with Industry on STEM Education," providing a connection between education and the development of the STEM workforce. One of the joys of serving as a conference co-chair is inviting the participants for the keynotes and having them accept your invitation. Thanks to our keynote participants who included:

Opening Keynote
Preparing the Next Generation of STEM Professionals

• Reginald McGregor, Rolls-Royce Corporation

Scenic reception overlooking the city of Grand Rapids.

Professor Chris Plouff talks about the importance of the co-op experience at the luncheon keynote. (Photo Credit: Victoria Fawcett-Adams)

Industry Panel Keynote
Industry Initiatives to Develop STEM Professionals

• Carrie Houtman, Dow Chemical (panel leader)

• Bryan Dansberry, NASA Johnson Space Center, Education Office

• Scot Lindemann, JR Automation

• Wendy Ljungren, GE Aviation Systems

• Natalia Kovicak, The Right Place, Inc.

Education Panel
University Response to Industry's Requirements

• Paul D. Plotkowski, Grand Valley State University (panel leader)

• Gayle Elliott, University of Cincinnati

• Chris Plouff, Grand Valley State University

• Joy Watson, University of Cincinnati

Closing Keynote
Creating a Globally Competitive Workforce

• Glenn Walters, New Mexico Higher Education Department

Reginald McGregor opened the conference with an interactive session on the three silos in STEM education: K-12, higher education, and industry. He encouraged everyone to be a "STEM-er" and to work together toward more collaboration for exciting K-12 students in the possibilities of STEM education

and future careers and mentoring them throughout their college careers. He also encouraged industry to work with education. After McGregor's address, we had an engaging reception overlooking the city and the Grand Rapids' "blue bridge," which was symbolic for bridging the gaps in STEM education.

The panel discussions provided content to the collaboration with industry theme with discussions about K-12 outreach, co-op and internship experiences, and capstone sponsorships by industry. International co-ops were discussed with the luncheon keynote. The industry panel talked about the success of the F.I.R.S.T. robotics outreach competition, NASA internships, and industry wanting to do more to help schools and colleges. On that note, we encourage Education Division members to talk with their managers about sponsoring an internship for an engineering or science major next summer. Many of the slide presentations are available on the conference proceedings pages, and can serve as a resources for such discussions.

Site of conference: Eberhard Center

In the concluding keynote, Glenn Walters addressed the nature of the global competitiveness of the STEM agenda and encouraged continued energetic efforts in advancing the STEM agenda. Many innovative advances are occurring that can excite students about STEM careers. A severe shortage of engineers and scientists in the workforce is projected, however. The United States has been slipping in world rankings in education, and we must turn it around and achieve more. While Walters entertained with his magic tricks, he explained

Networking at the conference. Left to right: Terri Talbert-Hatch, IUPUI; Reginald McGregor (keynote speaker), Rolls-Royce Corporation; and Terri Schulz, Project Lead the Way.

that there is no magic wand, and that improving STEM education has many parts. He noted how quality professionals must use the Baldrige framework and plan-do-study-act cycle to improve STEM student success, college readiness, and create a competitive STEM workforce.

Pre-conference breakout sessions complemented the conference with workshops on the success of GVSU in using process improvement to increase graduation rates, entrepreneurship supporting STEM and innovation, STEM learning communities, and developing highly effective partnerships for engineering co-ops and capstones.

We received many positive comments about the breakout sessions and presentations. Thirty peer-reviewed papers were presented in addition to a special session on industry-sponsored projects. All the conference papers were peer-reviewed and are included on the breakout session page. The conference program includes biographies of the keynote participants and descriptions of breakout session papers.

In celebration of the conference, our May issue of Quality Approaches in Higher Education was dedicated to STEM education and includes a commentary by Dean Paul D. Plotkowski on real-world engineering education at the Seymour and Esther Padnos College of Engineering and Computing and its journey in continuous improvement and collaboration with industry.

This conference was a team effort. A special thanks to the conference committee members: Don Brecken, Julie Furst-Bowe, Jay Marino, Paul Prunty, Terri Showers, James Teeple,

and Joan Visser. We especially want to recognize the ASQ Automotive Division for its gold sponsorship support and the ASQ Grand Rapids Section and its members who volunteered to staff a hospitality table for the conference. Several ASQ divisions and sections supported us in sending emails to their members. A special thanks to Linda Milanowski, ASQ administrator, who coordinated ASQ staff support to make the conference a success.

Finally, I would like to thank the Seymour and Esther Padnos College of Engineering and Computing for hosting the conference and Dean Paul Plotkowski and Assistant Dean Charlie Standridge for the many hours of planning for the conference. We all have learned so much.

Glenn Walters using "magic tricks" to show that that is no magic in advancing STEM education for a globally competitive STEM workforce: everyone's effort is needed!

If you would like to learn more about the STEM agenda, we encourage you to read our Division-sponsored book, Advancing the STEM Agenda: Quality Improvement Supports STEM and the Georgetown University publication *STEM* by Anthony P. Carnevale, Nicole Smith, and Michelle Melton.

About the Author

Cindy P. Veenstra, Ph.D., is a principal consultant for Veenstra & Associates and the 2013 conference co-chair for the ASQ Advancing the STEM Agenda Conference. She is an ASQ Fellow and immediate past division chair. Her research includes using continuous improvement ideas to improve retention of STEM majors.

# Rework in Undergraduate Education

by Michael J. Armstrong, Ph.D. and Ernest N. Biktimirov, Ph.D.

In an ideal world, university students would always learn their material thoroughly and earn good grades. In reality, they do not always perform so well, and sometimes need to retake (repeat) a course to earn a higher mark. For example, in our undergraduate program about 25 percent of the students repeat at least one course. Repeating is particularly common in first-year courses, where students are learning how to adapt to the university environment.

We recently investigated the quality of this course repeating (educational rework) by analyzing student grades in our undergraduate business program. Our sample covers 116 students who repeated 232 first-year courses across six required subjects. In this group, 58 percent of the original grades were failing (out of specification), while 42 percent were passing (within specification but low quality).

These repeating students improved their course grade by an average of 16 marks out of 100, from a mean of 44 in the original attempt to 60 in the repeat. The results, however, varied widely as shown in Figure 1, and nine percent of the repeat grades were lower than the original.

Figure 1: Histogram showing changes in grades due to course repeating
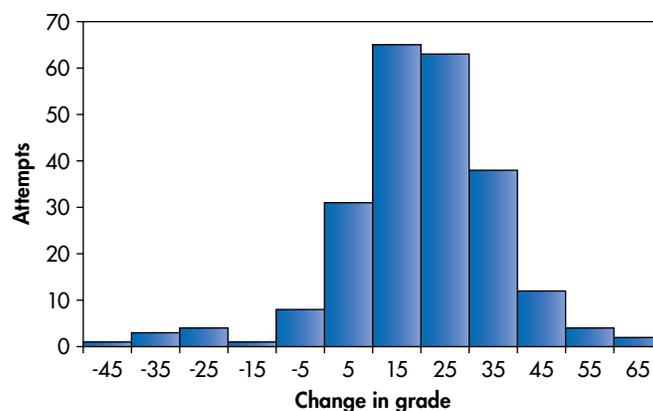
Our analysis shows that the original course grade is positively associated with the repeat grade. That is, students with relatively high grades on the original attempt tend to get the highest grades when repeating. Conversely, the original grade is negatively associated with the amount of improvement. That is, students with relatively low grades on the original attempt tend to get the largest increases in their grades when repeating.

The best predictors for the repeat grade are the student's original grade and their university average. A simple estimate of the repeat grade can be obtained by averaging the original course grade with the student's cumulative university average and then adding ten marks. That is, $Repeat \approx 10 + (Original + Average)/2$. The elapsed time between the original and repeat attempts does not seem to affect the results, nor does student age or gender.

We believe this is the first study to focus on student performance in repeated courses. As such, it provides some initial guidance for students who are thinking of repeating a course. A repeat attempt is likely to be most successful if the original grade was not too low and the student's other marks are high. Conversely, students with a relatively low grade on the original attempt and weak marks in their other courses should be cautious about repeating. It might be better for them to improve their own learning process (e.g., by allocating more time to studying and attending learning skills workshops) before trying to repeat any courses.

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About the Authors

Michael Armstrong and **Ernest Biktimirov** are associate professors in the Goodman School of Business at Brock University. They are both winners of the Chancellor's Chair for Teaching Excellence award.

A Viewpoint: Industry Panel Discussion Fills the Room
2013 Advancing the STEM Agenda Conference

by Victoria Fawcett-Adams, M.S.

An ideal collaboration of education and industry today would look like a panel talking about STEM workforce issues. In the morning keynote panel discussion, five leaders of industry met to help the ASQ Education Division conference construct a dialog built around STEM workforce issues. They were invited to discuss their points of view in *Industry Initiatives to Develop STEM Professionals.*

Panel members included Carrie Houtman, regulatory services leader, Dow Chemical Company; Bryan Dansberry, project manager, NASA Johnson Space Center–Education Office; Scot Lindemann, vice president, JR Automation; Wendy Ljungren, avionics chief consulting engineer, GE Aviation Systems; and Natalia Kovicak, events manager, The Right Place, Inc.

Morning industry panel keynote speakers from left to right: Carrie Houtmann (panel leader), Natalia Kovicak, Wendy Ljungren, Scot Lindemann, and Bryan Dansberry.

I felt an urgency to leave my comfortable hotel room so early in the morning and walk over to the Devos Center on Grand Valley State University campus for this panel discussion. Since I only had two days at the conference, I had to take advantage of every opportunity to network and learn everything possible. What transpired was beyond my consciousness as I listened and was immediately immersed in the conversation when I arrived.

The panel participants were engaged in a lively, yet thoughtful discussion that drew me in emotionally to the passion you may also feel for STEM education. My thoughts ranged from thinking that these people are vested in the same issues as I am; I really have to meet them. I wondered how I could use these new contacts to help me in my research on science career choice or to further my understanding of important education and industry collaborative efforts. Each person had some valuable nugget to add to the conversation. I sensed that maybe for the first time they were hearing a newer way of viewing STEM from each other. The full auditorium was soaking it all in, and you could have heard a pin drop. Stakeholders from many different areas who attended the Advancing the STEM Agenda Conference were clearly interested in what would come from this panel. I do not think any one of the attendees was disappointed as everyone stayed for the entire session before running off to the next session.

I wanted more, as I always do, from the individuals on the panel, so I stayed and waited my turn to approach the dais. Everyone on the panel was engaged with a member of the audience in a one-on-one conversation. I wanted to eavesdrop on every private conversation and soak in the commentary and rebuttal taking place. However, I also had my own questions—NASA, no JR, no NASA, all lively conversations, and I had to pick. Fortunately, I was able to speak briefly with Scot Lindemann, vice president at JR Automation, but long enough to exchange cards. After I told him how wonderful it was to hear how he was involved in STEM education, I rushed off to moderate a session. We promised to keep in touch. Well conference goers, you know how that goes; time passes and we eventually stumble across a business card in the bottom of a satchel. I have connected once again with the panel through LinkedIn, and hope to nurture these conference connections in the interest of STEM education, an ideal collaboration of education and industry, a panel able to walk the talk about STEM workforce issues.

About the Author

Victoria (Vicki) Fawcett-Adams is a doctoral candidate at Shenandoah University, Winchester, VA. She is studying the environmental influences and motivations of science career choice from the adult perspective. Fawcett-Adams is leader at large for ASQ Education Division, has contributed to newsletters, peer reviewed conferences, moderated sessions, and reviewed journal articles. She can be found on Twitter and LinkedIn.

Education for the Stronger Tomorrow
by Paul Borawski, CAE

You don't need to search long to find stories about the quality of education around the world.

This month, Indian Prime Minister Manmohan Singh notified the press that there was a need to improve the quality of education as well as continue with India's educational system reform program.

At the same time this news hit the media, an editorial appeared critical of the Kenyan government for investing in an education reform program that, thus far, has done little to improve the skill set of the average graduate. The editorial was published after the Kenyan attorney general Githu Muigai expressed concern about the quality of the lawyers being produced in Kenyan universities. Muigai went as far to say that the "... degree programme is a 'con game' set up by universities to 'mint' money."

Another African official, Libyan President Ellen Johson-Sirleaf, said that although school enrollment is at its highest since 2000, the quality of education has not kept pace, despite favorable efforts from the Peace Corps.

On the positive side, Costa Rica (ranked 21 out of 144 countries worldwide in the 2012-2013 Global Competitiveness Report, World Economic Forum) is quite proud of its education system and would credit its system, in part, to the country's quality of life.

These are a few of the stories about education systems around the world. They skew toward the negative side, but positive stories can be found. In a general sense, these stories speak to the dreams and frustrations of many government officials. Each country wants its education system to assist it in becoming or remaining competitive in the global market. These stories highlight that stated goal. What these stories do not address is the root cause of the failure (or even if a root cause has been sought) or the methods to achieving and maintaining a strong educational system for youth and young adults.

Education is the key to knowledge. Knowledge moves us forward. Quality improves everything. So, if education is so important in our lives, why shouldn't quality be part of education? It is an argument ASQ sections and the ASQ Education Division have been making for more than 30 years. ASQ members have helped many school districts throughout the United States, Canada, Mexico, India, Sweden, and many other countries bring quality tools into the districts and even classrooms.

The ASQ Education Division, involving roughly 1,200 ASQ members, supports the annual National Quality Education Conference, to be held in Milwaukee, WI, November 17-18. Many of the educators at the conference are very familiar with the *Malcolm Baldrige Criteria for Performance Excellence in Education.* Educational institutions in many countries have turned to this quality in education framework to introduce and strengthen quality initiatives.

The division created and sponsors the Advancing the STEM Agenda Conference and recently published the book, *Advancing the STEM* (science, technology, engineering, and math) *Agenda: Quality Improvement Supports STEM.* Division chair, Fernando Padró, states that this conference goes a long way in promoting workforce development by "including the workforce component into the conference."

Padró also notes the ongoing development of quality in higher education. The division continues to "engage ASQ in the national and international discourses on higher education, in particular (a discussion) based on a dialogue with the International Network of Quality Assurance Agencies in Higher Education (INQAAHE) and our peer-reviewed e-journal *Quality Approaches in Higher Education.*"

Efforts through ASQ sections and divisions have helped get quality methods into school districts and higher education facilities, and place quality tools into the hands of students. If you have not had the pleasure of witnessing a first-grade student explain the use of control charts, you are missing out on a joyous experience. In a district where ASQ members have helped dedicated educators bring tools into the classrooms, not only can young children explain what a quality tool is, they also can explain the benefits of its use and most importantly show you how it is used for continuous improvement.

The ASQ Knowledge Center is full of case studies explaining how schools and districts use quality for continuous improvement. Some of the case studies go right into the classroom and explain improved test scores. Others discuss reduction of waste throughout districts. There is a case study describing the use of quality tools to curb bully behavior. Quality is effective in each of these cases. There is no reason the methodology should not be used in every classroom throughout the world.

• Texas District Uses Peer Assessments to Measure Scorecard Achievement
http://rube.asq.org/2009/10/continuous-improvement/peer-assessments-measure-scorecard-achievement.pdf
—The Aldine Independent School District's peer review assessment model has received state and national recognition as a best practice for performance improvement.

• Disambiguation: Through the Looking Glass—From Debriefing to Process Improvement
http://rube.asq.org/quality-participation/2011/01/disambiguation-through-the-looking-glassfrom-debriefing-to-process-improvement.pdf
—Three members of a dissertation committee conducted a debriefing of an advisee's dissertation at the Graduate Center for Research and Retention at Western Michigan University. See how these researchers improved the process.

• Quality Strategy Improves Business School Placements for Indian Institute
http://rube.asq.org/public/wqm/rims-business-school-placements.pdf
—At Ramaiah Institute of Management Studies (RIMS), data showed that only 25 percent of students graduating with an MBA in India were employable. In response, a cross-functional team used quality tools to improve placement numbers as well as attract recruiters, enhance salaries, and earn revenue.

• Iredell-Statesville School District: Using Baldrige to Improve Teaching and Learning
http://rube.asq.org/2008/06/baldrige-national-quality-program/iredell-statesville-school-district-improve-teaching-and-learning.pdf
—The Iredell-Statesville School District in North Carolina was over budget, out of money, and mired in mediocre academic performance and administrative scandals. New superintendent Terry Holliday trained instructional and support personnel on the use of the plan, do, study, act (PDSA) method. Six years later the district enjoyed improved test scores, a firmer economic footing, and greater public confidence.

Editor's note: This article is reprinted with permission from ASQ and originally appeared in *Quality Now* on August 31, 2013.

Education Division
ASQ The Global Voice of Quality™ **STRATEGIC "PLAN on a PAGE"**

ASQ
EDUCATION
DIVISION

MISSION

To promote networking worldwide on quality in education, including K-12, Higher Education and Workforce Development.

VISION

Shaping the future through quality in education and professional development.

VALUES & BELIEFS

We believe that:
- Members network in different ways.
- Our networking will improve student learning outcomes and achievement at all levels.
- Our networking will improve excellence in our education systems throughout the world.
- Helping low income school systems to achieve student success is part of ASQ's social responsibility focus.
- Effective collaboration requires trust and mutual respect
- We encourage student members to network with us as they develop a career as a quality educator.
- Continual member feedback through surveys guides improvement.

GOALS

- To network to improve student success at all levels.
- To use members' dues effectively.
- To support ASQ's global and social responsibility initiatives.
- To increase member satisfaction and participation in the Education Division.
- To empower educators to demonstrate 21st century leadership and learning.
- To provide publications, conferences and discussion boards for networking on quality in education and to provide targeted networking for each focus area: K-12, Higher Education and Workforce Development.
- To show how quality thinking can improve solutions to current educational challenges such as preparing students as leaders in the 21st century, decreasing the achievement gap, improving STEM education and providing a learning culture in the workforce.

GUIDING PHILOSOPHY

We think of Quality in Education in two ways:

- "QUALITY in Education" Attaining excellence in the education system by monitoring key performance indicators and performing the strategic and tactical work necessary to meet goals and improve continually.

- "Quality in EDUCATION" Integrating quality leadership, thinking, concepts, and skill areas in K-12, higher education, and workplace curricula and classrooms.

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Shaping the Future Through Quality in Education and Professional Development