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AS**Q**
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DIVISION

QED NEWS

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AMERICAN SOCIETY
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In this issue

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Mission Statement

To facilitate the identification, communication, and promotion of the use of quality principles, concepts, and technologies for continuous improvement in all aspects of education.

## A Message From the Division Chair

by John Dew
Chair, Education Division

What have you been reading this summer? I've certainly enjoyed reading some of the current best sellers like *Freakonomics*, but some of my best reading has come from the dusty shelves of the McLure Education Library here on the University of Alabama campus.

If you are prone to examine the history of education in the United States, and you take a look at the 1960s, you cannot miss one of the most prolific authors on our educational system—Admiral Hyman Rickover. As the father of the nuclear Navy and the chief advocate and midwife of the nuclear power industry, Rickover may have provided more testimony to Congress on more subjects than anyone else in the history of the nation.

Rickover earned the right to be a highly opinionated critic of America's educational system because of the high standard for learning and attention to math and science that he set for officers and enlisted men in the nuclear Navy.

In his 1959 work, *Education and Freedom,* the admiral identified the root cause of many of the problems with bureaucracies and hierarchies in our educational system. "American education in general," Rickover noted, "emphasizes learning factual know-how at the cost of absorbing fundamental principles, just as it stresses conditioning of behavior at the cost of developing the ability to think independently."
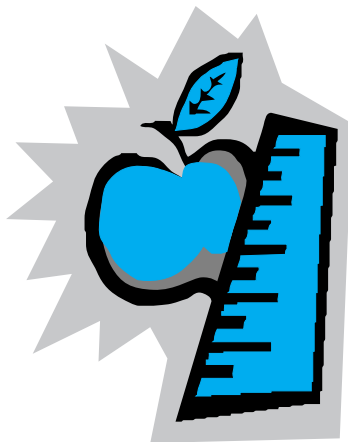
Rickover was a harsh critic of the funding priorities for education in the 1950s. In the shadow of the Sputnik launch, he noted that enrollment in public schools was growing at a rate that was five times higher than the increase in funding to support education. He anticipated the problems of the late 1960s and 1970s with overcrowded schools and recognized that school teachers were being placed under an impossible strain. It is easy to see how the choices of the 1950s set the stage for the problems we are still addressing today.

In his second book on the educational system, *American Education— A National Failure,* which came out in 1963, Rickover criticized "the dogma that no child must ever suffer the consequences of failure." Recognizing long before Garrison Keillor that everyone wants to think of their children as being above average, Rickover knew the truth from his exacting interviews with applicant officer candidates, that half of the students are always below average and in some subjects, many students must fail. What Rickover recognized, however, is that we learn important lessons from our failures.

What solution did Rickover offer for education? "I myself think," he wrote in 1963, "that if we had a first-rate school system, concentrating on the liberal arts, many Americans would regain their sense of identity with the country and their desire to be publicly active." Memorizing facts and being able to perform well on a standardized examination were not the hallmarks of a well-educated person, according to Rickover. Education should develop independent thinking skills and the capacity to critically evaluate our surroundings.

I have found Rickover's perspective to be refreshing. It is essential to set high standards and to expect students to work very hard to succeed, and it is essential to have the courage to recognize that for a variety of reasons some students will fail, if we remain true to our standards. Our challenge is to advocate and facilitate understanding and deployment of the quality principles and methods to enhance our teaching and learning processes that will enable as many students as possible to be successful, while maintaining high standards and expectations.

News and Events

Get Ready for NQEC!!!!

The 14th National Quality Education Conference, the premier conference on quality in education in the United States, will be held in Dallas, TX, on November 12–14, 2006.

This year's conference is focusing on quality in K-12 schools, with keynote presentations by Elaine Dundon, chief strategist for the Innovation Group; Kirby Lehmen, superintendent of Jenks Public Schools (winner of the Malcolm Baldrige National Quality Award); and Rick Smith, on motivating students.

The division has supported this conference for many years, primarily by reviewing proposals for sessions and by encouraging division members to attend and to provide workshops and sessions.

You will find a great deal of information about the 2006 NQEC at http://nqec.asq.org/.

Welcome to New Organizational Members!!!!!!

For many years, one of the dreams of Education Division members was that ASQ would find a way to provide Organizational membership to schools and school districts that would give an entire group of faculty and staff access to division resources, discussion boards, and newsletters. At last, it has happened. This is the first Education Division newsletter that will be available to the Society's new Organizational members from schools and school systems across the country. We welcome you all to ASQ and invite you to participate in the division's discussion boards and to submit articles to the division's newsletter that you would like to share with your peers around the world. We encourage you to make the fullest use of the Education Division's Web site at: http://www.asq.org/edu/.

Baldrige in Education Network

ASQ hosts a network and discussion board for all educators interested in using the Malcolm Baldrige National Quality Award criteria. The network is facilitated by Geri Markley, the ASQ Education Division chair-elect. Geri worked on quality initiatives with the Detroit Public

Schools and is executive director for the Michigan Quality Council. You can access this network at: http://www.asq.org/communities/baldrige-education/.

Education Track at the World Conference

The Education Division was pleased to sponsor four sessions at the World Conference on Quality and Improvement in Milwaukee, WI, in May. The division's track included a session on "How ASQ Sections Are Engaging Local Schools" that featured Arved Harding, of ASQ Northeast Tennessee Section 1106, who provided a powerful example of how a local ASQ section has supported local schools in adopting quality improvement methods. Past-chair Dr. Hank Lindborg provided an update on the Alternative Quality Improvement Process with the Higher Learning Commission of the North Central Association that drew a large audience of national and international participants. Our immediate past-chair, Franklin Schargel, led a networking session on issues and actions related to school dropout concerns. And, Dr. John Dew provided a session on strategic planning methods that ASQ members and educators can use to quickly develop consensus and action plans for key initiatives. Work is under way to propose a track of sessions for the 2007 World Conference, which will be held in Orlando.

Puzzling Times…R.I.S.D. #41 is "Working to Put the Pieces Together"

by Alice Lee

Does the No Child Left Behind Act have you "sitting on the edge"? Rock Island-Milan School District 41 has set forth on a journey of "putting the pieces together" for increased student achievement.

In 2004 our school board listened carefully to the findings of a Citizens Facilities Study Task Force and made the choice to take action before the state did. Superintendent Rick Loy, along with his cabinet members and the school board, looked to the community for input hosting forums and dozens of other small meetings and decided to take action. Our journey was under way with the voluntary closing and restructuring of three schools and the opening of the Rock Island Primary and Intermediate Academies. What changes would we make in our instructional techniques and curriculum? After intense research, District 41 determined we would use the "90-90-90 Principle" by Doug Reeves as a structure to ensure we were headed in the right direction.

District 41 developed an "Academic Excellence Framework" as a guiding force to lead us down the right path. A plan cannot be effective without empowering teachers with the resources for students to be successful. So teachers were trained in using the model of Effective Instructional Strategies (EIS), also referred to as Understanding by Design (UBD—Grant Wiggins & Jay Tighe). UBD

focuses on unit plans specific to essential skills and assessments designed to measure growth. What were those assessments to be based upon? District 41 employees poured countless hours into developing "Power Learning Standards" based upon the Illinois Learning Standards. Teachers at the Rock Island Intermediate Academy (RIIA) took the lead in further developing these standards along with teacher clarification pieces, best teaching practices, and assessments.

Most schools in our district have nearly the entire staff trained in Koalaty Kid. The next step in the puzzle was to have teachers trained in data teams (Doug Reeves initiative) utilizing and tying together the Plan Do Study Act (PDSA) model along with quality tools and processes to measure individual student growth. At the Rock Island Intermediate Academy, we met as a grade level and in learning communities to create short-term assessments and units based upon the power standards. Students were given a pre-assessment and results were displayed within classrooms and by learning communities using quality tools. Student work was desegregated into proficient and non-proficient piles and characteristics of each were identified. Teachers met together to brainstorm researched best practices and come to a consensus of strategies to be used in teaching the standard and a S.M.A.R.T. (Specific, Measurable, Achievable, Realistic, and Timely) goal was set. After following our action plan and improvement theory, students were given a post-assessment and results were charted and studied. We then standardized and planned for continuous improvement so all

students could be successful giving multiple opportunities to demonstrate meeting the standard. After all, the goal is "No Child Left Behind." RIIA was able to move forward more quickly with the process because of the structure of our newly formed school and our clear and precise vision.

By the end of the school year, all schools in our district were working to "put the pieces together" for increased student achievement by utilizing data teams and the quality process. Performance targets are being set and exit outcomes will serve as a guide to measure student achievement. This "in process" measure allows us to gauge the student level of mastery. Academic support is provided to students below and above the performance standards. Results are promising as we look for each student to demonstrate academic excellence by meeting or exceeding RIIA "In-Process Assessments." The ultimate goal is all students meeting or exceeding the Illinois State Learning Standards…making the puzzle complete.

For more in-depth information on our journey during these "puzzling times" visit the RISD 41 Web site at **http://www.risd41.org**. Our Web site contains "our story" as well as many links to the researched practices we are implementing in our quest for excellence.

Alice Lee *is a 5/6 multi-age classroom teacher and quality facilitator at Rock Island Intermediate Academy in Rock Island, IL. She can be reached at* **alice.lee@risd41.org**.

Engineering Post-College Education in Statistics

by Jorge Luis Romeu
Syracuse University

There are two important issues in engineering statistical education. One is that in many, if not most cases, engineers need to use statistics in their work. This is because of the natural variation in performance measures such as device life and reliability, the need for sampling, and for implementing design of experiments for improvements, and so on.

The second issue is that, given the number of pressing topics already in engineering curriculums, there is little if any space for more (let alone in some cases, for any) statistical courses in the undergraduate engineering curriculum.

The relevance of the issue was underlined by an editorial written by Dr. Sallie Keller-McNulty, the new American Statistical Association (ASA) president, in the February issue of *Amstat News*. Dr. Keller-McNulty's article discusses the importance of engineering statistics from her perspective as both a research statistician and the dean of the School of Engineering at Rice University.

My experience in teaching statistics in engineering departments spans more than 25 years, including

implementing new methodology to improve the way it is learned, (my first article on "Teaching Engineering Statistics with Simulation" appeared in 1986). I would like to take the opportunity to briefly share some issues and problems I have encountered while teaching statistics in engineering schools.

I have found (and there is no value judgment or blame in my statement) that, in general, undergraduate statistics is either not taught at all or, if so, it is deficiently taught. Courses are very theoretical and heavily overloaded, and cover an introduction to probability and statistics. Graduate level courses are better, since the master's degree usually requires one (and sometimes two) applied statistics courses.

In addition, instructors are frequently engineers whose statistics training was obtained in the same manner described above. Or even worse, the instructors are pure mathematicians or math department statisticians, teaching mathematics department majors who are more interested in theory than applications. As a result, many engineering students leave college with poor statistical thinking and, what is even worse, a strong dislike for the subject.

But—surprise!—when these same new engineers start practicing, they discover that they need statistics, and that they have to learn it on their own. This fascinating situation is the topic of three forthcoming papers on "how engineers learn statistics, on their own, after leaving college" that I am presenting in the Joint Spring Research Conference, Knoxville, TN (June); in ICOTS-7, Brasil (July); and at the ASA Annual Conference, Seattle, WA (August).

To support and further investigate the above theses, I conducted a Web survey (**http://web.syr.edu/~jlromeu/SurveyICOTS.html**) on how practicing engineers learn statistics. This was not a random sample, but a self-selected one, with subjects from several states and professional engineering societies. For a pilot study, it provides an interesting first glimpse of the problem. I found that one-third of engineers holding bachelor of science degrees never took a single statistics course, and that one-third took only one course.

Since only a minority of engineers pursues graduate degrees, they have had to resort to learning statistics on their own. I found that several methods have been followed, including (hard copy and Web) readings; preparing for their (reliability, quality, six sigma, etc.) certification exams; and peer mentoring. I elaborate more on these issues in the three mentioned papers. In the first paper, I discuss the survey and its charactersitics. In the second, I discuss the theoretical problems and their implications on engineering education. In the last of the three papers, for the ASA Conference, I discuss in detail the statistical analysis of the survey results.

One of the conclusions of my research consists in developing academe-industry-professional-association "institutes," that would help engineers better pursue their post-college statistical education. Such partnerships could help teach courses and workshops, or help other organizations (e.g., ASQ sections) in certification preparation courses, in identifying and assessing statistics Web tutorials, in sequencing them so they include the right background to be read, and so on. I am currently working on one such "institute" at Syracuse University.

Such institutes would help in improving this situation, which will not only benefit our engineering professions, but also the scientific human capital of the nation as a whole.

Total Quality and Student Relationships

by Judith Ann Pauley and Joseph F. Pauley

Welcome to a new school year. This year as part of your task of helping students improve their academic achievement you are being asked to establish positive relationships with every student. Why are you being asked to do that and, more important, how are you going to do it?

Education experts tell teachers and principals that they must establish positive relationships with students and find ways to make their classes more welcoming places if all students are to improve their academic achievement, and if educators are to reduce the dropout rate and close the achievement gap (Duckenfeld, 2004). However, no one tells them how. Many teachers would like to have better relationships with all of their students, and, in fact, do establish positive relationships with some students. However, most teachers do not

know how to establish those relationships with all of their students, especially with those students who are not motivated the same way that their teachers are. The purpose of this article is to explain how teachers and administrators can establish positive relationships with all of their students.

Dr. Taibi Kahler, an internationally acclaimed psychologist, has shown that the key to forming positive relationships with students in the classroom is to help them get their motivational needs met positively and to speak their language (Kahler, 1997). Dr. Kahler's Process Communication Model® describes the characteristics of six distinct personality types, including the way they perceive the world, their learning style, their preferred mode of communicating, and their motivational needs. The model also describes what each of the types will do when in distress and provides both proactive and reactive antidotes for dealing with them.

The six personality types are described as follows.

Reactors are compassionate, sensitive, and warm, and filter the world through their emotions. Their motivational need is for other people to show that they appreciate them, not for anything they have done, but just because they are nice people. They also need a cozy, nest-like, comfortable environment. In distress, they make mistakes.

Workaholics think first and want people to think with them. They are responsible, logical, and organized and learn best in a classroom that is structured, has clear rules, and adheres to schedules. Teachers can

motivate them by recognizing their hard work, good ideas, and their accomplishments. In distress they over-control and may criticize others for not thinking clearly.

Persisters are conscientious, dedicated, and observant. They form opinions very quickly and have a very well-developed value system that they use to steer their course through life. They need to be respected for their beliefs and values and have a very hard time learning from teachers who do not respect them or whom they do not respect. They also need to be recognized for their accomplishments and dedication. In distress Persisters may attack others for their lack of commitment.

Dreamers are reflective, imaginative, and calm. They need their own private time and their own space. They see connections between things that the other types do not see and for this reason may not do well on multiple-choice tests. Dreamers feel suffocated when surrounded by many people and cannot think in a noisy environment. Also, they cannot do more than one or two things at a time. In distress Dreamers shut down.

Rebels are creative, spontaneous, and playful. They react immediately to their environment and to people with strong likes and dislikes. Humor is their currency and they will work hard for teachers who encourage their creativity and include activities

in each lesson that are fun. In distress Rebels blame others for everything that happens and may act out. They frequently are in trouble in school and head the list of students who get expelled. Many also drop out of school.

Promoters act first without thinking and are motivated by challenges, action, and excitement. They are persuasive, adaptable, and charming and may be Mr./Ms. Popularity in class. They thrive in leadership positions and in the spotlight and like to make deals that make them look good to their peers. In distress they manipulate, con, ignore the rules, and frequently get others in trouble.

Although everyone is one of these six personality types, everyone has parts of all six in them. Dr. Kahler describes this as a six-floor condominium in which some floors are more fully developed than others. Research shows that most adults can access two or three of their parts fairly easily and most children can access only one or two of their parts (Pauley, Bradley & Pauley, 2002). Because each of the types learns differently and is motivated differently, students who are like their teachers tend to do well in those teachers' classes. Those who are not like their teachers tend to have difficulty. Many teachers have Reactor, Workaholic, and Persister as their most well-developed parts. Consequently these are the students who do well in school. Bailey (1996) found that teachers listed Rebels and Promoters and sometimes Dreamers as the students they had the most difficulty teaching. Because of the miscommunication between them and their teachers, Rebels and Promoters tend to be the students

who frequently are in trouble in school. They also make up the highest percentage of dropouts (Bradley, Pauley & Pauley, 2006). It is no one's fault. Everyone is doing the best they can with what they have available to them at the time. The teachers are doing the best they can and so are the students. That raises the question, how can everyone do better?

Research shows that students of all six types can do well in school when they are motivated according to their needs (Bradley, et al., 2006). A working knowledge of the concepts of Process Communication enables teachers to understand how to motivate each of their students so that they can build activities into their lesson plans that address the motivational needs of each type. To do so, teachers can ask themselves the following questions as they prepare their lesson plans and units.

1. How can I provide personal recognition for the Reactor?
2. How can I give recognition for work and provide time structure for the Workaholic?
3. How can I ensure that the task is meaningful for the Persister?
4. How can I provide reflection time, space, and structure for the Dreamer?
5. How can I make this fun for the Rebel?
6. How can I incorporate action for the Promoter?

If teachers will do this, student motivation and academic achievement will improve and they will stop or at least greatly reduce their negative behaviors. This will allow teachers to spend more time teaching and less time being lion tamers. Savage said, "Learners who get their needs met in school, seldom cause trouble, because doing something that interferes with getting a need met is not in their self interest" (Savage, 1991). Dr. Jonathan Knaupp, a professor at Arizona State University, said, "We can give students what they deserve or what they need. If we give them what they need, they will deserve more" (Knaupp, 1990). This is the key to establishing relationships and to the success of every student—helping them get their motivational needs met in every class.

In their book, *Effective Classroom Management: Six Keys to Success*, the authors have included 68 true stories from teachers all over the country demonstrating the impact of this approach. Shioji conducted a study in which she measured the impact of teaching style on student motivation in a population of low-achieving students in the Watts community of Los Angeles, an area with a high dropout population. She was having an especially difficult time with one class, all but three of whose students were Rebels and Promoters. She designed her daily lesson plans to ensure there were elements that appealed to each personality type. She incorporated a variety of activities into each class to appeal to each of the personality types. Through pre- and post-testing, she found that every student in the experimental class showed an increase in motivation, every student's grade improved, and all the negative behaviors stopped (Shioji, 2004).

This is true even in cases with students who have run afoul of the law and are placed in juvenile detention centers. The staff of the Ware Youth Center in Coushetta, LA, began using the concepts of Process Communication with their students in 2002. In the first eight months after they began applying the concepts there was a 44% reduction in student incidents from the previous six months. In addition, only two students were expelled in that time compared with 14 in the previous six months. Also, every student's grades improved. The recidivism rate is only 25%, the lowest in Louisiana (Ware, 2005).

This is what is possible when teachers (or mentors) establish positive relationships with students and help them get their motivational needs met positively. Dr. Dianne Bradley, a professor at the University of Maryland, has researched the over-representation of African American males in special education. The teachers and principals she interviewed for her study were aware of cases where students were placed in special education because of behavior problems that could have been avoided if their teachers had individualized instruction by including something in every lesson to help each student get his motivational needs met positively (Bradley, 2006).

Bradley compiled a list of cultural differences between the qualities in the White American culture that predominates in our school system and the African American culture. She found that African American students, especially boys, need movement, a strong appreciation for visual and performing arts, emotional expressiveness, a preference for oral communication, spontaneity, practice, and experimentation. They also need to see the total context of the information being studied (Bradley,

2006). Ironically, these are the same traits that are common to Rebels and Promoters. If teachers include some of these activities in every lesson, will they be able to establish positive relationships with more students and help close the achievement gap? Research by Bailey, Bradley, Gilbert (2004), Pauley, Shioji, and others indicates that this is exactly what is needed to reach every student and is the key to closing the achievement gap.

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You can contact the authors at: **judy@kahlercom.com**.

Innovation and Continuous Improvement in Engineering Colleges

by Cindy Veenstra
Higher Education Vice Chair

"Engineers bridge the gap between what the mind can imagine and what the laws of nature allow.…Science and engineering are essential partners in paving the way for America's future" —National Science Foundation Web site

It is fitting that in a year that the National Science Foundation (NSF) has increased its support for engineering research and innovation that ASQ has established as the theme for its 2007 national conference, "Fueling Innovation." What has led to this focus by the NSF and in what direction are it and major engineering colleges headed?

Here is a brief review the significant happenings of the past few years:

- The prestigious National Academies Committee on Science, Engineering and Public Policy published "***Rising above the Gathering Storm***" which identified the critical need for more engineers, research, and science and math teachers. The report is available at: **http://www.nap.edu/catalog/11463.html**

- In January 2006, the American Competitiveness Initiative was formed; NSF is implementing this initiative with a goal of encouraging innovation.

- Thomas L. Friedman's book, ***The World is Flat***, provides forward thinking on the challenges of global competition and the need for change in our schools and colleges.

- In the past year, U.S. Secretary of Education Margaret Spellings organized a Commission on the Future of Higher Education, which is currently considering a number of significant recommendations related to all universities. (See **http://www.ed.gov/about/bdscomm/list/hiedfuture/index.html**)

- The summer 2006 issue of *The Bridge*, a publication of the National Academy of Engineering, addresses the state of engineering education and need for innovation. (Highly recommended to read, **http://www.nae.edu/TheBridge**)

Our U.S. engineering colleges are considered world-class. So, why is there a focus on innovation in the engineering colleges? Engineers are

seen as the *innovation-makers*, the professionals who make technology advances happen. This is driving the call for more engineering research *and* engineering education research. More engineering research will lead to innovation in engineering technology.

Engineering education research is needed to address the need for more engineers. The number of graduating engineers has remained constant over the past 10 years and some engineers are reaching retirement age. At the same time, fewer high school students are expressing an interest in an engineering career. Students who are applying to U.S. engineering colleges are in competition with international students who also want to attend the same engineering college. At issue is how to prepare students in high school and how to retain students once they are admitted to an engineering college. (The current national six-year graduation rate from engineering colleges is less than 55%.)

Leading engineering colleges are innovating in teaching engineering, in engineering education research, and in K-12 outreach programs. For example, most engineering colleges have a freshman course on engineering that is project-based about engineering. Some engineering colleges are including service-based learning (applying engineering to a community project) in this course. At the University of Michigan, a service-learning project includes designing greenhouses for community gardens. The result is a higher level of interest by engineering students. Purdue University has established a graduate program in engineering education, focused on
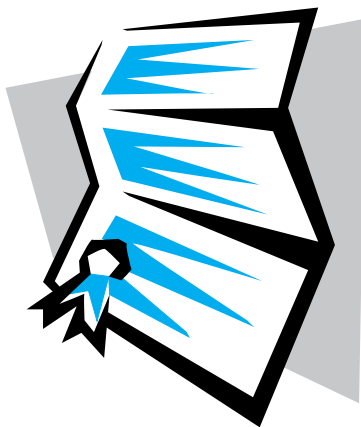
engineering education research. Many engineering colleges have established K-12 outreach programs. Look for a more in-depth discussion of some of these success stories in innovation in the Education Division's winter newsletter.

The **Baldrige process** holds much promise for educators by providing a systematic approach to innovation. As engineering colleges consider how to innovate, the Baldrige process needs be considered. In addition, the **Six Sigma process** has a track record in industry for continuous improvement and "raising the bar" through innovation, and should also be considered.

As we all prepare for the coming school year, I encourage everyone to read the reports noted in this article and think about how we all can "fuel innovation" in our education system.

Data-Driven Decision-Making in Higher Education

by Cindy Veenstra
Higher Education Vice Chair

Have you visited Jay Marino's Quality in Education blog? (Go to **http://www.asq.org/blog/**.) Jay addresses the issue of what being

"data-driven" means. He indicates that the K-12 school systems collect all kinds of data. He writes: "So what? So we can collect all of this data… Does this mean we are data driven? It is only when we apply this data in the decision-making process that various questions can be answered and we become 'data-driven'."

His thinking is equally appropriate for our colleges and universities. We can include in "data-driven" both data collected by the university (student data, graduation rates, industry placement statistics) and empirical research studies. Colleges and universities have much research available to them on student learning. Some of this research indicates the need for data-driven decisions. The latest statistics indicate the national average of the six-year graduation rate of students who start as freshmen at a college is 55-58%. It has been constant in this range for a number of years. We all want to see a higher student graduation rate and evidence is increasing that being "data-driven" helps improve it. For each college dropout, a potential career is lost.

Each college or university is different with its own mission, subset of students, and strategy for teaching/learning. More and more colleges are using their college's student data and research on retention in a data-driven approach to effectively improve their college's graduation rate. Quality engineering tools such as Pareto charts, flowcharts, and implementation of the plan-do-study-act system work very well. The sequence of courses can be flowcharted to look for continuity of the curriculum. Pareto charts of the percent of students with a grade of a

C or less can be charted for courses, especially freshmen courses. The highest percentage courses can be targeted for PDSA brainstorming. A redesign of the curriculum related to these courses may be needed. Consideration of placement of incoming freshmen into appropriate courses may be explored. Using quality engineering tools together with implementation of available retention research should lead to higher graduation rates.

A Conference is Planned

The Education Division is planning a regional conference this year on continuous improvement in higher education with emphasis on student success. As the conference chair, I would like to organize a small committee to help with the details of the conference. Success stories on data-driven strategies that work for student success will be emphasized at this conference. Plenty has been written on descriptive research on student success. We want to get to the "**how**" of improving student success. The conference will be held in the Ann Arbor, MI, area. If you would be interested in helping make this conference a success, please contact me: **cpveenst@umich.edu**.

Find more articles on the Education Division Web Site Forum Library

http://www.asq.org/perl/ forums/edu/categories.pl

Education System in Nepal

by Binod Shrestha
Kathmandu, Nepal

In Nepal the process of giving and receiving education has been going on from ancient times. In the beginning there were no formal institutions to educate people. The children learned skills related to their occupations, and learned social norms and values from their parents. Many things were fixed by religion. Therefore, education can be said to have begun from the religious institutions. According to Hindu tradition, people were given education based on a "Gurukul" system and in Buddhist tradition, people were taught in monasteries. Similarly, people were taught at public buildings and open sitting spaces.

Modern education began in Nepal with the establishment of the first school in 1853. However, this school was only for the members of the ruling families and their courtiers. Schooling for the general people began only after 1951 when a popular movement ended the autocratic Rana family regime and initiated a democratic system in the country. Further efforts in education were made after Tribhuvan University was established in 1959. The National Education System Plan was developed in 1971, and instead of a traditional education system, vocational education was emphasized. The late King Birendra declared primary education would be free in 1974. School currucula were revised in 1981. After that, as a landmark in the development of education, school level curriculum and new program launched were revised in 1992.

In the past 50 years there has been a dramatic expansion of educational facilities in the country. As a result, adult literacy (15+) of the country was reported to be 48.2% (female: 34.6%, male: 62.2%) in the population census, 2001, up from about 5% in 1952-54. Beginning from about 300 schools and two colleges with about 10,000 students in 1951, there now are 26, 000 schools (including higher secondary), 415 colleges, five universities, and two academies of higher studies. Altogether 5.5 million students are enrolled in those schools and colleges who are served by more than 150,000 teachers.

Despite such examples of success, there are problems and challenges. Educational management, quality, relevance, and access are some of the critical issues of education in Nepal. Societal disparities based on gender, ethnicity, location, economic class, etc., are yet to be eliminated. Resource crunch has always been a problem in education. Because of all these problems, achieving the universal goal of education for all has been a challenge for the country. With national as well as international support, the government is committed to address the issues realistically and efficiently and achieve its goals and objectives.

You can contact the author at:
Sbinod55@gmail.com*.*

Putting the Academic Audit Methodology Into Professional Auditing Terminology

by Becky J. Starnes

In the Winter 2006 issue of *QED News*, I introduced the reader to the Academic Audit proposed by William Massey, professor emeritus of education and business administration at Stanford University. Recently, I was informed that the Professional Studies Department at the School of Technology and Public Management, Austin Peay State University, would be reviewed using this audit methodology in lieu of the traditional five-year review. I immediately had several questions. What was the audit's purpose? Would I be participating in a product, process, or quality management system audit? Was it to be a first-, second-, or third-party audit? Would it be an internal or external audit? To answer these questions and others, I studied three of the most respected resources used in the quality auditing field: (1) *The Quality Audit Handbook* by J. P. Russell, (2) *Quality Audits for Improved Performance* by Dennis R. Arter, and (3) *The ASQ Foundations in Quality Learning Series—The Certified Quality Auditor*. This article uses the question and answer method to apply professional auditing terminology to the Academic Audit methodology.

Q. What is the purpose of an Academic Audit?

A. It is the client's responsibility to determine the purpose of the audit. In *Educational Quality Improvement: A Handbook for the Academic Audit*, the Tennessee

Figure 1 The Academic Audit Curricula Quality Management System
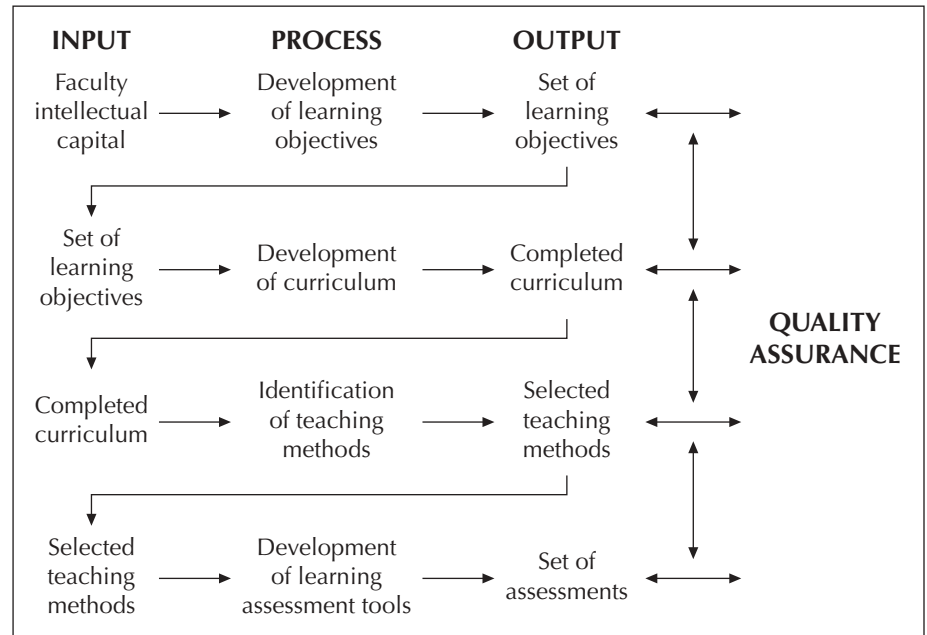
Board of Regents writes, "The purpose of an academic audit is to encourage departments and programs to evaluate…faculty activities required to produce, assure, and regularly improve the quality of teaching and learning" (TBR 2006, p. 3). The final audit report is also used by management in making program performance funding decisions.

Q. Who are the key participants of an Academic Audit?

A. The *client* is the entity requesting the audit. In my case, this was the Tennessee Board of Regents (TBR). The *auditors* were faculty working for TBR universities (other than the university being audited) and the *auditee* was the Austin Peay State University Professional Studies Department.

Q. Is the Academic Audit a system or a process audit?

A. The Academic Audit, as designed by Massey, is a curricula quality management system audit that evaluates a set of interrelated processes and control mechanisms to ensure an excellent academic learning experience is provided for students. This process is shown in Figure 1.

Q. What do the auditors look for and what auditing strategy, methods, and data analysis techniques do they use?

A. The auditors looked to verify that the department's *self-identified processes were being followed; goals were being realized; and that inefficiencies, potential risks, and opportunities for improvement were identified* (ASQ 2004). The auditors used a *process method auditing strategy* because they evaluated the sequence and interaction of the five focal areas of curricula quality

management system shown in Figure 1. They did not use departmental or element strategies because their assessment did not include linkages with horizontal (cross-functional) units of the university. The auditors made their assessments through the use of *document and record reviews and face-to-face interviews* with faculty and students.

Q. Are the auditors looking for compliance or performance?

A. Conformance audits are conducted to assess how well the organization is complying with a specific set of rules. Performance audits focus on and assess how well an organization is achieving its goals. The Academic Audit methodology is a *performance audit* because the focus is on how well the department is meeting its stated learning goals and objectives.

Q. Is the Academic Audit a horizontal or vertical audit?

A. It is a *vertical audit* because the methodology is applied at the individual department level. A horizontal audit would include cross-functional groups such as the offices of admissions and registration.

Q. Is the Academic Audit an internal or external audit?

A. Internal audits are performed by members of the organization who have no "vested interest in the audit results." External auditors are individuals external to the organization being audited. Since the client, the auditors, and the auditee were part of the same chain-of-command, the audit I was participating in would be classified as an *internal audit.*

Q. Is the audit a first-, second-, or third- party audit?

A. First-party audits are performed within an organization, second-party audits are performed on suppliers, and third-party audits are conducted by independent, outside organizations free from any conflicts of interest. Since the university and the department being audited were part of the client's formal reporting chain, it was determined that this would be a *first-party audit.*

Q. What quality standard do the auditors use? Is it conformance, guidance, regulatory, or consensus focused?

A. The Academic Audit provides a *nonprescriptive* set of *guidance* standards that focus on the five processes identified in Figure 1. These processes are: the development of learning objectives, the development of an aligned curriculum, the selection of appropriate teaching methods, selection of measure for assessing learning, and quality assurance. The standard is not conformance required because it does not provide a prescriptive set of procedures. They are not regulatory because they are not required by law. Finally, the standards are not considered consensus standards, because they are not voluntarily adopted by the auditee but provided by the client.

In summary, the Academic Audit is an internal, first-party systems audit that uses the process-method auditing strategy to verify performance in relation to a set of nonprescriptive criteria for achieving learning objectives. The main benefit of this methodology is the capability to evaluate the effectiveness of curricula planning, development, and implementation in relation to departmental set learning goals and objectives. The primary disadvantage is that there is no assessment of the roles cross-functional offices play in the department's ability to achieve its goals.

References

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This review expresses the opinions and observations of Becky J. Starnes, assistant professor of professional studies at Austin Peay State University, Clarksville, TN. Dr. Starnes is an American Society for Quality (ASQ) Certified Quality Auditor, Quality Manager, and Quality Improvement Associate and served as the vice chair of higher education for ASQ's Education Division (2005-06). She also served on the Baldrige National Quality Program Board of Examiners in 2000, 2001, and 2003. Dr. Starnes can be reached at **starnesb@apsu.edu**.