Welcome to the January issue of the formerly known as the Winter issue. There have been a few changes in this newsletter. As you may have noticed, we are no longer identifying the newsletter by Season – rather, they will be listed by the month issued. This will improve minor details like sort order and eliminate the nagging contradiction that it is not actually Winter everywhere this time of year. I know that these issues have been keeping many of you up at night.

There have been a few changes in this issue that may jump out at you more. As I warned back in the Fall issue, we redesigned the format of this issue to better align with the new brand look of ASQ. Thus, we have a new color scheme and the overall look of the newsletter is a little lighter and brighter. There have been no changes to the content or substance of the newsletter – this was strictly a facelift.

I would like to thank Shirl Furger at ASQ and the designers at ASQ Creative Services for their help and patience with our many iterations. I plan to make some additional small improvements to the newsletter’s format and content over the next few issues – if you have an opinion (thumbs up or thumbs down), feel free to send me an email. I welcome opinions and ideas of any sort.

In keeping with the spirit of this new relaunch, we are also jumping ahead to start a new Volume, #31, with this issue. In the past there has been some confusion about the numbering system, which has unfortunately jumped around more than I think was initially intended. This change will align the newsletter with the calendar year, as well as the new fiscal and governance year of ASQ.

Moving on to content, our mini-paper this issue was contributed by Dr. Willis Jensen. Dr. Jensen is an Associate in the Medical Products Division at W. L. Gore & Associates, where he provides statistical support and training across the division. He holds a BS and MS in
Criteria for Basic Tools and Mini-Paper Columns

Basic Tools

**Purpose:** To inform/teach the “quality practitioner” about useful techniques that can be easily understood, applied and explained to others.

**Criteria:**
1. Application oriented/not theory
2. Non-technical in nature
3. Techniques that can be understood and applied by non-statisticians.
4. Approximately five pages or less in length (8½” x 11” typewritten, single spaced.)
5. Should be presented in “how to use it” fashion.
6. Should include applicable examples.

**Possible Topics:**
- New SPC techniques
- Graphical techniques
- Statistical thinking principles
- “Rehash” established methods

Mini-Paper

**Purpose:** To provide insight into application-oriented techniques of significant value to quality professionals.

**Criteria:**
1. Application oriented.
2. More technical than Basic Tools, but contains no mathematical derivations.
3. Focus is on insight into why a technique is of value.
4. Approximately six to eight pages or less in length (8½” x 11” typewritten, single spaced.) Longer articles may be submitted and published in two parts.
5. Not overly controversial.
6. Should include applicable examples.

General Information

Authors should have a conceptual understanding of the topic and should be willing to answer questions relating to the article through the newsletter. Authors do not have to be members of the Statistics Division. Submissions may be made at any time to the Statistics Division Newsletter Editor. All articles will be reviewed. The editor reserves discretionary right in determination of which articles are published.

Acceptance of articles does not imply any agreement that a given article will be published.

**Mission Statement of the Statistics Division**

- Promote Statistical Thinking for quality and productivity improvement.
- Serve ASQ, business, industry, academia, and government as a resource for effective use of Statistical Thinking for quality and productivity improvement.
  - Our primary customers are Statistics Division members.
  - Other key customers are:
    - Management
    - Users and potential users of Statistical Thinking
    - Educators of the above customers
- Provide a focal point within ASQ for application-driven development and effective use of new statistical methods.
- Support the growth and development of ASQ Statistics Division members.

**Vision**

**ASQ Statistics Division Vision – Statistical Thinking Everywhere**

<table>
<thead>
<tr>
<th>Philosophy</th>
<th>Analysis</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Statistical Thinking</td>
<td>Statistical Methods</td>
<td></td>
</tr>
<tr>
<td>Process</td>
<td>Variation</td>
<td>Data</td>
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</tbody>
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**Desired End State**

- Our members will be proud to be part of the Statistics Division
- Our Division’s operations will be a model for other organizations.
- We will be a widely influential authority on scientific approaches to quality and productivity improvement.

**Disclaimer**

The technical content of material published in the ASQ Statistics Division Newsletter may not have been refereed to the same extent as the rigorous refereeing that is undergone for publication in Technometrics or J.Q.T. The objective of this newsletter is to be a forum for new ideas and to be open to differing points of view. The editor will strive to review all articles and to ask other statistics professionals to provide reviews of all content of this newsletter. We encourage readers with differing points of view to write to the editor and an opportunity to present their views via a letter to the editor. The views expressed in material published in this newsletter represents the views of the author of the material, and may or may not represent the official views of the Statistics Division of ASQ.
Speaker List and has worked hard to bring interesting and timely Webinars. Mark Zabel has been working to move the platform for the Narrated Slideshows from PowerPoint to YouTube. We have recently added Lee Geddes as the LinkedIn Group Manager. Mark Kiel, Vice-Chair Outreach has been working on new ideas for Outreach and has managed the eZines. Steve Schuelka has done some great work as Membership Chair along with delivering insightful surveys through his Voice of the Customer position to help us determine what our members want. Mark Johnson, as Standards Chair, travels the world to represent us at the International Statistical Standards meeting. Harry Koval as Certification Chair has been working hard to see how the Division can be involved the ASQ certification process. Sam Gardner as Operations Vice-Chair has been working to update some of our job descriptions. Paul Prew, as Vice-Chair of Products and Services, leads the continual development of our online Virtual Resource Center. He is also Chair of publications with Mindy Hotchkiss as Newsletter Editor, Willis Jensen as Special Publications Editor, Gordon Clark as Statistics Blog Editor and Steve Schuelka as the How to Series Editor. The Awards Committee has been led by Doug Hlavacek, who has also been involved with the Fellow Nomination process and will take over as Examining Chair. Christine Anderson-Cook has agreed to take his place as Awards Committee Chair and will be leading a group that has been doing a fantastic job with Division awards: Lynne Hare with the Ott Scholarship, Tim Robinson with the FTC Student and Early Career Grants, Daksha Chokshi with the Hunter Award, Necip Doganaksoy with the Nelson Award and I will be taking over the Youden Award Chair from Christine as part of my Past-Chair duties. We also have been very active with conferences. Roger Hoerl has been working as a member of the FTC Steering Committee. Brad Jones put together an excellent 2011 FTC program and Peter Parker is taking over for the 2012 program. Shari Kraber has been organizing strong short courses at FTC and will continue in that role. Gordon Clark's committee has organized an interesting program for the Institute for Continual Quality Improvement (ICQI). Herb McGrath has been tireless as Secretary, keeping the minutes and creating a way to track the action items. Herb has also done an excellent job getting the Mentor Program off the ground. And one of the most challenging jobs of the Division is the Treasurer position, and Adam Pintar has done an excellent job getting up to speed quickly in that role. You will find details about some of the work done by these wonderful volunteers later in the newsletter.

One initiative I want to highlight is the re-vamping of our procedure for electing officers. You will be receiving a notice of the open elected positions and will have an opportunity to submit nominations for the positions. The nominating committee will take these nominations into account and will put forth a ballot which will be sent to the members for a vote in the case where there is more than one candidate. For some of the elected positions it is helpful to have served in some capacity with the Division in order to have a basic knowledge of the Division’s activities. Every year we are looking for new volunteers, so if you are interested please contact me at brenneman.wa@pg.com.

The Division’s next big event is the World Conference on Quality and Improvement (WCQI) in Anaheim, May 21-23, 2012. The Statistics Division sponsors the Institute for Continual Quality Improvement (ICQI), a conference within a conference at WCQI. Please be sure to read the article about ICQI written by Gordon Clark in which he shares the highlights of the program. Since we are in a transitional 18 month period operationally, we will have a mid-18 month operational planning “check up” meeting at WCQI. This meeting will be held on May 20 just prior to WCQI from 1-5 pm. Please join us for the meeting – we are always looking to hear from our members as to how we can make the Division more relevant and useful. We also welcome you to come by our booth or stop by the hospitality suite.

As we have announced previously, the Division is in a transition period due to the ASQ change from an operational and fiscal year going from July-June to one going from January-December. Chair-Elect Bill Rodebaugh will take over as Chair on April 1, 2012 and will serve through December 2012. I have been honored to lead this incredibly passionate and active group of volunteers and as you will read in this issue, there is some great work going on in the Division.
Message from the Editor

Continued from page 1

Statistics from Brigham Young University and a PhD in Statistics from Virginia Tech. He is a member of the Editorial Boards of *Quality Engineering* and *Quality and Reliability Engineering International*. His research interests include all aspects of industrial statistics, including statistical process control and profile monitoring.

His article, entitled “Use of the Socratic Method in Teaching Statistical Thinking,” discusses ways to enhance the effectiveness of statistical education and training courses. As an occasional instructor myself, I was particularly interested in his practical advice for encouraging student involvement and leading discussions. In my experience, interactive involvement and active participation in course activities are a great help in effectively communicating statistical concepts and tools, especially to those with negative impressions of statistical methods. I can’t tell you the number of times I’ve heard (upon telling someone I was a statistician) “I failed that course in college!” or “I hated that course in college!” Sad, but true. As far as I’m concerned, anything we can do to help others understand what we are doing and why (especially why) is time well spent.

I would be interested in hearing what everyone thinks about the techniques described in the article. Please visit our LinkedIn site to post comments and participate in a discussion!

One of the Division’s primary objectives is to build bridges between industry practitioners and academics. The newsletter helps do this through providing practical information on real-life problems in a variety of applications. If you are applying statistical tools on an unusual dataset or nonstandard application, or if you have had to develop innovative solutions to deal with “non-textbook” problems, and you are interested in writing a mini-paper (please see guidelines on page 2), please contact me at mindy.hotchkiss@pwr.utc.com. Articles need to be written for a general audience. We are also looking for people interested in writing Basic Tools articles, which provide a brief summary and discussion of statistical tools and concepts (guidelines also on page 2). Remember, ASQ Certification credits are available for publications!

FTC Business Meeting/Mixer

by Herb McGrath

The ASQ Statistics Division held its annual business meeting and mixer prior to the Fall Technical Conference in Kansas City, MO on October 12, 2011. Approximately 30 folks attended and enjoyed the discussion, networking, and refreshments.

Chair William Brenneman welcomed everyone, introduced members of the Division Council that were present, and highlighted some of the work being done by these volunteers. In addition to being a sponsor of the FTC, the Division also helps organize the Institute of Continual Quality Improvement during the World Conference for Quality Improvement. The Virtual Resource Center on our web site continues to be updated with many searchable documents. The Division continues to offer free monthly webinars, has an active LinkedIn group, maintains a speakers list, and offers a mentoring program among many other activities. It has been a busy year!

The hard work has paid off with the Division receiving some recognition. We achieved blue ribbon status in ASQ’s Race to Retain program. William also shared the Division’s very impressive results from the Satisfaction and Loyalty Survey that ASQ administered last April. Then the 2011 FTC student and early career grant recipients (please see photo on page 18) were introduced and they received a rousing round of applause. Past Chair Christine Anderson-Cook presented certificates to the Division’s volunteers in recognition of their efforts over the past year.

Then William led a discussion of the Statistics Division’s social media presence. In addition to our current LinkedIn presence, should we be active on Facebook and Twitter? About 75% of the attendees have a Facebook page and about 25% tweet. Advantages (and disadvantages) of the Division having a Facebook page were elicited and Google+ was mentioned as an additional potential communications vehicle. There was not as much excitement about involvement in Twitter. William thanked everyone for their input and stated the Division will further discuss how to best use social media.

Then the mixing recommenced in earnest.
Committee Updates

Communications Working Group Update by Brian Sersion, VC Communication

Fellow members, please allow me to take a few minutes of your time to review some of our current work and provide a brief overview of what we do. Right now, the Communications Working Group is working on a Communications Plan, which is basically our operating plan. The purpose of the plan is to describe our external communication vehicles and define the operational requirements for member communications. It supports the strategic objectives and goals of the Statistics Division. We are also working on a Web Sites Survey, which is being administered through the Voice of Customer Committee, and a Division YouTube Channel.

The Communications Working Group is responsible for maintaining and monitoring communication vehicles for the division. The working group is composed of member leaders that have the responsibility and ownership of our communication resources. The working group exists to meet the communication needs of our members through the effective maintenance and efficient monitoring of five communication resources:

1. ASQ Web Site (Internal) – Michael Joner, ASQ Web Master
2. Statistics Division Web Site (External) – Division Web Master (position open)
3. Statistical Thinking blog – Gordon Clark, Author
4. Statistics Division Discussion Board – Timothy Folkerts, Moderator
5. LinkedIn Group – Lee Geddes, Manager

I would like to thank these volunteers for their hard work and Bob Mitchell for his continued support in the area of new technology. Through them we are able to provide information and resources to meet the many needs of our members. Visit us on the Internet today!

If you are interested in joining us, please contact Brian Sersion at bsersion@gmail.com.

Products and Services Committee Update by Paul Prew, VC Products & Services

ASQ asks all divisions to submit long-range plans annually, and track progress against those plans. To meet its 2011 objectives, the Products and Services Committee has primarily been working on completing Virtual Resource Center tasks. The VRC outcome has been to create a Library of newsletter articles, webinars and narrated slideshows available on the Statistics Division webpage: http://asq.org/statistics/quality-information/library/

So far, the following tasks have been completed:
- Gap Analysis – Several ASQ certifications have statistical components to their Body Of Knowledge. The VRC team defined gaps between that content and the resources the Statistics Division has made available in its Library. Going forward, the Division intends to request Mini-Papers, webinars, etc. to fill these gaps.
- Newsletters posted – All newsletters have been posted to the Library and are searchable, with a few exceptions. Some newsletters from the mid-1990’s are in the process of being converted to a searchable PDF format prior to posting.
- Post Content Area to webpage – On the Division homepage, under that Quality Content header there is a webpage called Content Area. It summarizes all of the categories of resources available in the library. Next year, live links will be added to take users directly to any listed resource.

VOC/Membership Update by Steven Schuelka, Membership Chair

The Statistics Division achieved the “Gold Level” Excellence Award in this past year’s Quality Management Process (QMP). We were awarded this honor for having the highest satisfaction score of all divisions and one of the top loyalty scores based on the Member Satisfaction and Loyalty Survey conducted last spring by the QMP Committee. In addition, we had the 3rd highest retention rate of the 22 divisions. This recognition is the result of a lot of good work by many as the Statistics Division leadership continually tries to improve our members’ experience. As you will read elsewhere in this newsletter, several new offerings, including webinars, are the result of input from members.

As with any organization, retaining good people is important. That is why we have begun a program of reminding members whose dues are past due to please consider renewing them promptly and keeping the Statistics Division as one of their selections. Hopefully the programs and offerings that we have lined up for 2012 will be seen as beneficial to your ASQ experience and you will continue to be a member of our division. We look forward to serving your interests for many years ahead.
The 2012 Institute for Continual Quality Improvement (ICQI) is a conference to be held jointly with the World Conference on Quality and Improvement (WCQI), and the ICQI is sponsored by the Statistics and Quality Management Divisions. The 2012 ICQI will occur from May 21 to 23 in Anaheim, CA. The theme will be “Proven Solutions for Continual Quality Improvement.” Continual implies prolonged repeated instances of quality improvement illustrated by an on-going sequence of improvement projects. The Statistics Division members of the conference management team are Gordon Clark (Co-Chair), Ron Snee and Douglas Hlavacek. The QMD members are Dave Little (Co-Chair) and Claud Russey.

The Statistics Division keynote speaker will be Lynne Hare. The title of his keynote is “The Industrial Statistics Revolution.” We will have sixteen presentations and twelve workshops. The eight presentations and six workshops selected by the Statistics Division appear in the following tables.

### Presentations

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<thead>
<tr>
<th>Presenter</th>
<th>Title</th>
<th>Focus Area</th>
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<tbody>
<tr>
<td>William Brenneman</td>
<td>Setting Appropriate Fill Weight Targets</td>
<td>Case Study</td>
</tr>
<tr>
<td>Todd Creasy</td>
<td>“6TOC” – Next Evolution for Process Improvement?</td>
<td>Strategies and Processes for Improving Quality</td>
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<tr>
<td>Laura Freeman</td>
<td>Statistically Rigorous Decisions in Defense Testing</td>
<td>Data-Driven Decision Making</td>
</tr>
<tr>
<td>Kevin Gallagher</td>
<td>Accelerating New Product Development</td>
<td>Statistical Thinking and Engineering</td>
</tr>
<tr>
<td>Benjamin Kemper</td>
<td>Streamlining a Cardiovascular Patient’s Pathway</td>
<td>Strategies and Processes for Improving Quality</td>
</tr>
<tr>
<td>Murali Marriappan</td>
<td>Variability Considerations in Lean Implementations</td>
<td>Statistical Thinking and Methods</td>
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<tr>
<td>Susan Schall</td>
<td>Team-based Variability Reduction</td>
<td>Case Study</td>
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<tr>
<td>Geoff Vining</td>
<td>Essential Elements for Quality Improvement Programs</td>
<td>Strategies and Processes for Improving Quality</td>
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### Workshops

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<tr>
<th>Presenter</th>
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<th>Focus Area</th>
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</thead>
<tbody>
<tr>
<td>Forrest Breyfogle</td>
<td>Predictive Scorecards that Minimize Business Risks</td>
<td>Strategies and Processes for Improving Quality</td>
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<tr>
<td>Daksha Chokshi</td>
<td>Data-Driven Decisions (D3)</td>
<td>Data-Driven Decision Making</td>
</tr>
<tr>
<td>Gordon Clark</td>
<td>Using Simulation to Improve Quality and Performance</td>
<td>Strategies and Processes for Improving Quality</td>
</tr>
<tr>
<td>Jeremy Fowler</td>
<td>MSAs and DOEs in a Transaction Environment – An Approach</td>
<td>Strategies and Processes for Improving Quality</td>
</tr>
<tr>
<td>Jason Minghini</td>
<td>Solving High Impact Problems in the 21st Century</td>
<td>Statistical Engineering</td>
</tr>
<tr>
<td>Ron Snee</td>
<td>The World’s Not Red or Green: Your Dashboards Are?</td>
<td>Strategies and Processes for Improving Quality</td>
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Connect now by scanning this QR code with a smartphone (requires free QR app)
This year’s Fall Technical Conference was held October 13th and 14th in Kansas City, MO. The conference theme was Quality & Statistics: Getting Up to Date. Christopher Nachtsheim of the University of Minnesota delivered the plenary address, “DOE: Is the Future Optimal?”, where he discussed (with entertaining props) the historical development of DOE and the potential of optimal designs to provide new flexibility during the creation of designed experiments.

The Thursday lunch included a number of award presentations. The Shewell Award for the best presentation at last year’s FTC in Birmingham, AL went to Pat Whitcomb and Wayne Adams for their presentation “Practical Aspects of Algorithmic Design from Physical Experiments from an Engineer’s Perspective”. Adrian Raferty, Miroslav Karny, and Pavel Ettler received the Jack Youden Prize recognizing the best expository paper in Technometrics in 2010, “Online Prediction Under Model Uncertainty via Dynamic Model Averaging: Application to a Cold Rolling Mill.” The Frank Wilcoxon Prize for best practical application paper in Technometrics in 2010 was awarded to Richard A. Becker, Chris Volinsky, and Allan R. Wilks for the paper “Fraud Detection in Telecommunications: A Historical Perspective and a Look Forward.” The luncheon speaker was David Hawley, from the Arabia Steamboat Museum. He took us through time, describing the search, discovery and excavation of the Arabia, filled with treasures from the past.

The Statistics Division presents the William G. Hunter Award annually in memory of its founding chair. The award recognizing outstanding accomplishments in the broad field of applied statistics was presented to Geoff Vining from Virginia Tech University. Jeff gave a short talk honoring Bill Hunter. The Lloyd S. Nelson award, awarded annually to the paper in the Journal of Quality Technology with the “greatest immediate impact to practitioners”, was presented to Eric D. Schoen for the paper “Optimum Designs Versus Orthogonal Arrays for Main Effects and Two-Factor Interactions”.

Bill Notz from The Ohio State University gave the W.J. Youden Memorial Address. In his talk entitled “A Tale of Two Cities” he compared and contrasted Jeff Kiefer and George Box. Nancy Geller, ASA President, gave the Friday lunch address. “How Do I Know If This Treatment Works?” engaged us with examples of randomized clinical trials and how to draw conclusions from these studies. The conference program consisted of 18 sessions comprising 4 invited presentations, 6 invited sessions and 23 contributed papers. The sessions covered a variety of topics including Design and Analysis of Experiments, Statistical Process Control, Measurement Systems Analysis and Reliability. Short courses in Experimental Design with Hard-To-Change Factors, Reliability Growth, Statistical Engineering, and Introduction to R were offered in addition to the conference.

The 2012 Fall Technical Conference, Statistics & Quality: Expanding the Horizon, will be held in St Louis, MO on October 4th and 5th. Abstracts are due on February 28th, 2012. Come join us!

We invite you to submit papers for presentation at the 56th Fall Technical Conference to be held October 4-5, 2012 in St. Louis, MO. The Fall Technical Conference has long been a forum for both statistics and quality and is co-sponsored by the American Society for Quality (Chemical and Process Industries Division and the Statistics Division) and the American Statistical Association (Section on Physical and Engineering Sciences and the Section on Quality and Productivity). The goal of this conference is to engage researchers and practitioners in a dialogue that leads to more effective use of statistics to improve quality.

If you are interested in presenting an applied or expository paper in any of three parallel sessions (Statistics, Quality Control or Tutorial/Case Studies), contact our FTC representative; Peter Parker, NASA, at peter.a.parker@nasa.gov. Work should be strongly justified by application to a problem in engineering, manufacturing, process/chemical industry, physical sciences, or a service industry. The mathematical level of the papers may range from introductory to that of Journal of Quality Technology or Technometrics. Please note which level of audience is targeted (Introductory, Intermediate, or Advanced) so the committee can pair papers appropriately and plan a balanced program. The program committee welcomes any suggestions for special session topics or speakers. The abstract submission deadline is February 28, 2012.
MINI-PAPER
Use of the Socratic Method in Teaching Statistical Thinking

Willis A. Jensen
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Introduction
Statistics is inherently the broad science of obtaining information from data. Many have the opportunity to teach statistical tools, statistical concepts and statistical thinking. These opportunities arise in formal classroom environments as well as in informal one on one consulting situations. In reality, all who work in the field of statistics must be teachers to those around them, whether or not they teach formal classes. As teachers, we serve as catalysts to help people learn and develop their abilities to think statistically and maximize the information that they obtain from data. A common theme in statistics education is to shift the focus of teaching away from viewing statistics as a collection of tools (See for example Cobb (1992), Moore (1998)) and Garfield and Ben-Zvi (2008)). Rather statistics should be taught such that students have improved critical thinking skills or statistical reasoning abilities, meaning that they are better able to understand critical concepts related to data, variation and drawing conclusions from data. Statistical thinking, as defined by the ASQ Statistics Division (2011) falls within this category of critical thinking and reasoning skills. As a result, those who seek to teach concepts of statistical thinking must use teaching methods and techniques that correspond to the type of learning that must take place. Britz et al. (1997) gave an example of how to teach statistical thinking concepts. I illustrate here another teaching method, the Socratic Method, which I have successfully used in formal statistics training in academia and industry and in consulting situations to teach concepts related to statistical thinking. After describing the method, I’ll give an example of how to use the method to teach statistical thinking concepts related to Design of Experiments (DOE).

What is the Socratic Method?
The Socratic Method is named after the famous Greek philosopher, Socrates, who lived in the 5th Century BC. As we do not have any of his own writings, all of what we know about him comes from the writings of his students and contemporaries, Plato being the foremost of them. The writings of Plato depict Socrates as a man who continually questions individuals, thereby challenging their assumptions until at some point a logical fallacy is exposed in their thinking. This process of using a series of questions to guide the learner to a conclusion has come to be known as the Socratic Method. It can be thought of as a method of answering a question with a question.

It is a valuable approach to teaching because it shifts the focus away from rote memorization and mechanical calculations toward the development of critical thinking skills. I believe we need less teaching of statistical tools which can be handled ever more easily with computing power, and more teaching of appropriate use of statistical tools. While I was a student, one of my professors loved to quote a saying attributed to George Box, “Why do we aspire to be second-rate mathematicians when we could be first-rate scientists?” (Vining 2010, p. 135). This saying emphasizes how statistics is much more than just a collection of tools. To be a good practitioner of statistics, there are critical reasoning skills required to know how and when to use the tools. Along a similar vein, I would ask, why do we teach students to be second-rate calculators when we can teach them to be first-rate users of statistics?

When employing the Socratic Method, the teacher is not specifically trying to expose a flaw in the student’s thinking to then ridicule them, as Socrates was wont to do. Rather the teacher is challenging their assumptions and gut reactions. This challenging of assumptions helps the student to understand their own thought processes and forces them to explain why they think a particular way. Even when a strict form of the Socratic Method is not used by the teacher, it is the “questioning mode” that adds value and helps the students become more independent thinkers. In addition to helping the students understand their thinking and improving student learning, the Socratic Method is also useful for real time assessment of learning.

Example
To illustrate how the Socratic Method might be applied, consider the following conversation similar in flow to an actual group conversation. This is not a verbatim manuscript but rather a composite of types of questions/comments that typically occur. The ‘Student’ responses actually may come from different students at different times. Although they are not all part of the discussion at the same time, students are following the conversation and are able to jump into the middle of the conversation with their own

Continued on page 9
questions and thoughts. This example occurs in a discussion on how to plan an experiment. To set the stage, I bring some blank pieces of paper to class and ask two students to make a paper airplane, ensuring that they are of two different designs. After the chuckles die down because of the irony of a teacher encouraging students to make paper airplanes in class, I tell them that our objective is to determine which of the two airplane designs is best. My objective as an instructor is not to teach a particular statistical tool such as a full factorial or blocking design. Rather, I want them to understand how there is variability in the process of collecting the data. I want them to learn that understanding that variability and reducing that variability (through good DOE principles such as defining the experimental objective, determining the experimental procedure, randomization and replication) will make the experiment a success.

Teacher: Now that we have made two different airplanes, which of the two types is best?
Student: I don’t know.
Teacher: How would you find out which is best?
Student: Do an experiment.
Teacher: How would you do the experiment?
Student: I’m not sure, maybe throw both airplanes a bunch of times and measure them?
Teacher: Okay, so if you get some data about how far the paper airplanes fly, will that tell you which is best?
Student: Yes.
Teacher: How so?
Student: The airplanes that fly farther are the best so we can see which paper airplane flies the farthest.
Teacher: So you are saying that an airplane that flies the farthest is the best airplane?
Student: Right.
Teacher: It sounds like we have an objective for our experiment – to determine which airplane type flies the farthest. So if I throw this one airplane once and the other one once, then whichever one goes the farthest is the best?
Student: Not necessarily.
Teacher: Why not?
Student: Because the airplanes don’t always fly the same way every time.
Teacher: Why not?
Student: Because people don’t throw things the same way and the path could be a little different each time.
Teacher: So what can we do to account for those differences?
Student: Throw it multiple times.
Teacher: What would that do?
Student: That would allow us to see if one plane is better than the other on average.
Teacher: Good point. Now what would you call this?
Student: Repeat the experiment multiple times.
Teacher: Good. In the statistical world, this principle of repeating the experiment is called replication.

Notice how the teacher is responding to questions with questions that help the students formulate their own thinking. Recognize that each time this is done, the flow of questions changes depending on the student responses. Clearly, the teacher can take the discussion in a number of different directions. For example, a student might propose to make multiple airplanes of the same type, using multiple pieces of paper, rather than just throwing the same airplane multiple times. This could lead to a discussion of true replication based on multiple experimental units versus repeat measurements.

Teacher: So what other benefits are there is repeating the experiment multiple times?
Student: If something weird happens on one throw, it won’t mess you up.
Teacher: How so?
Student: Say one of the throws got stuck in the ceiling vent, then you would still be able to figure out which was best from the other throws that didn’t get stuck.
Teacher: Nice observation. So, let’s figure out in more detail the experiment we want to do. How many times should we throw each airplane?
Student: Let’s do five.
Teacher: Why five?

Continued on page 10
Student: It sounds like a big enough number.
Teacher: Okay, while we could talk about how to calculate a good number from a statistical perspective, I want to hold that discussion for a later time. So let’s use five, assuming that it is a good number. Now, I’m going to stand here at the front of the room and throw this airplane 5 times and then go over to the other side of the room and throw the airplane 5 times.
Student: You can’t do that.
Teacher: Why not?
Student: Because it would be better to throw the airplanes from the same spot.
Teacher: Why would that matter?
Student: One of the spots is close to the wall and the other isn’t so we wouldn’t want to have the wall impact how far the plane goes.
Teacher: So you’re telling me that you want to make sure that the starting location is consistent so as to reduce the likelihood that the airplane will crash into the wall?
Student: Right.
Teacher: Would this be a true principle in general for any experiment?
Student: Yes.
Teacher: What would you call this principle?
Student: Keep things the same as you perform the experiment.
Teacher: That’s a good way to say it. Are there other ways you could apply this principle to this experiment?
Student: We could throw the airplanes the same way. We could throw them in the same direction.
Teacher: Any other ways?
Student: We could make sure the paper is the same for both airplanes. We could have the same person throw the airplanes.
Teacher: Excellent. What is the benefit of keeping things the same?
Student: It makes the results comparable.
Teacher: What do you mean by that?
Student: Well, if different people threw the airplanes and one person threw harder than the other then it could screw up the results of the experiment.
Teacher: How so?
Student: Then we wouldn’t really know if the airplanes are really different because the difference might be in the way that the people throw the airplane.
Teacher: So you’re saying that keeping things consistent in the way we do the experiment helps us to ensure that we will get good conclusions?
Student: Right.

Again the teacher could take this conversation in multiple directions. For example, a student may note that with multiple throws the paper airplanes get deformed which impacts the results of the experiment, thus leading the class to propose that the airplanes be repaired between each throw. It is important that the teacher be comfortable with going different directions based on student responses. Notice though that the teacher can also choose to defer a particular direction to a later time point, as was done here in discussing a sample size calculation.

Teacher: All right, let’s have the same person throw the airplanes as similar as possible from the same spot in the room. And we’ll do this multiple times. Should we do all of the first type in a row and then all of the second type in a row?
Student: No.
Teacher: Why not?
Student: Because we should mix up the throws.
Teacher: What could happen if we don’t mix them up?
Student: If the person gets tired of throwing the airplanes, their throws might get worse. Or they could get better as they figure out how to throw the airplane further.
Teacher: So mixing it up will help make the experiment better. Why?
Student: Because it won’t let other things get in the way of what we really want to know.
Teacher: Good. The fancy statistical name for mixing up the runs is randomization. Randomization is very valuable in that it will allow us to counteract any sources of variability that could occur over the course of the experiment.

Student: Yeah.

Teacher: So are we ready to do the experiment now?

Student: No.

Teacher: Why not?

Student: How are we going to measure it?

Teacher: True – how should we measure it?

Student: With a tape measure.

Teacher: Unfortunately, I don’t have a tape measure handy. Can we use something else as a substitute?

Student: We could measure the number of paces. Or the number of tiles on the floor.

Teacher: Does it matter what we use?

Student: No – as long as it is consistent for each throw?

Teacher: Excellent. It’s important to recognize that we want to control the variability in how we measure the distance as well as in how we throw the airplane.

At this point the experiment can be performed. The teacher can then lead the discussion to another topic as appropriate. In this example, I don’t get into the analysis but save it for a later time. Ultimately, my objective is to have them realize principles that make for good experiments that they can apply to a variety of situations. I will often make a list of principles on the board and then talk about how those principles might apply in another situation, such as an industrial experiment that has the objective of determining the optimum temperature at which to operate a manufacturing process. Although the paths may be different the end result is the same – increased understanding of how variability can impact the results of an experiment and how it should be controlled to maximize the information obtained from the data.

Later when discussing the analysis, I typically use less of the Socratic Method because of the need to explain a specific statistical method. However, I can still ask questions such as “How does this method compare to other methods you know of?”, “When is an appropriate time to use this method?”, “What situations have you seen where this method would have been useful?” I want them to figure out for themselves when they would use the method and not get too caught up in the details behind the method.

**Comparison to Other Approaches**

Clearly, this Socratic Method has some differences from the traditional “lecture” style of teaching which is characterized by very little interaction between the teacher and student. However, a high level of interaction does not ensure that the Socratic Method is being used. Perhaps this can be explained using an analogy shown in a simple illustration in Figure 1. Notice in the top panel (A) that the students are on the left side with the teacher on the right side, facing away from them. This is representative of the lecture style mode of teaching where the teacher is “pouring” out knowledge to the students. The facing away of the teacher from the students represents the lack of questions and interaction in the lecture style. The teacher does not know whether or not the students are making progress in their understanding.

![Figure 1: Illustration of the Differences between the Socratic Method and other Teaching Methods](image-url)
In the middle panel (B), the teacher is with the students, facing them. In this scenario the teacher is pointing them the way to go and knows what type of progress the students are making to that goal. There is a high level of interaction with the teacher asking a lot of questions to gauge the level of understanding by the students. An experienced teacher may already have a good idea of where the students should go and can more easily guide them there. Yet in this panel, the teacher is still in front of the students showing them where to go. This approach may be very appropriate when demonstrating how to do an analysis using statistical software.

Contrast the middle panel with the bottom panel, where the teacher is behind the students guiding them as they make their way to knowledge. Because the teacher is behind the students, he or she has concrete evidence of the progress the students are making and can note when/where they may be getting off track. Notice in this illustration that the teacher and the students are both facing the final destination and that the teacher does not have to divide his or her attention between the goal and the students as in the middle panel. This is representative of the Socratic approach, where the “teaching with questions” mode serves as a method for the students to help find their own way. This approach still has a high level of interaction, like the approach in panel B. However, rather than the teacher, the students are in the lead, figuring out the way to go.

Success Factors for Applying the Socratic Method
In my experience, it is not easy to use the Socratic Method. It requires the teacher to be able to think quickly and be able to change directions as the students make comments. This is one technique where practice really does make it easier to use. In addition, there are a number of things the teacher can do to ensure that the Socratic Method is effective. Here are a few success factors.

1. Use Smaller Groups - Because of the high level of interaction between the teacher and student, this type of approach works better in a smaller classroom setting than a larger setting, however I have had success applying it to larger groups. Often large groups can be temporarily broken up into smaller groups where this type of approach could be applied.

2. Slow Down - While the example shown earlier can give the impression of a rapid fire exchange between the teacher and student, it is crucial to use this approach at a slower pace with a clear tone of voice. Pauses in between questions will allow the students the necessary time to think of how to respond, which time is crucial in a critical thinking exercise. During the conversation, it is helpful for the teacher to repeat the students’ responses for the benefit of the entire group, so that everyone is following the points being made.

3. Set Expectations for Participation - The effectiveness of the method increases when the students know they will have to participate rather than just silently listen or sneak in a nap. The teacher can set that expectation from the beginning by always asking questions and seeking input and thoughts from the students. Setting that expectation that there will be high level of interaction makes it easier to apply the Socratic Method when desired.

4. Be Positive in Responding - This Socratic approach can be disconcerting for students who have never experienced it before. The students may feel that the teacher is adversarial and doesn’t really have their best interests in mind. The desire to truly help rather than demean students is paramount and increases the effectiveness of the method, while reducing the discomfort that may initially feel. One way to make it a positive experience is with liberal amounts of positive feedback. In the earlier example, notice how often the teacher has the opportunity to say things like “That’s a good idea” or “Excellent point”.

5. Earn Their Trust - Referring back to the bottom panel of Figure 1, the students may be more nervous about their ability to get to where they need to go with the teacher behind them. It will take a certain amount of trust by the student and the result of that trust is an increased independence and self-sufficiency for their own learning. A good teacher can help alleviate the concerns by being patient and even explaining the objective of the approach.

6. Be Aware of Student Backgrounds - An understanding of student background is invaluable in implementation of this approach. It is important to be sensitive to personality or cultural differences when employing the method. For example, some students may be uncomfortable with direct questions or being called out by a teacher. I generally avoid picking specific students to answer questions, but rather let them choose when to participate while creating a respectful environment where all the students will be comfortable participating. When there is a wide variety in the background of the students, the variety of different perspectives that the students have will be particularly valuable and can lead to different kinds of answers and different ways of thinking. In addition, if the teacher knows the background of the students, they can tailor the initial questions to get them started. If the teacher doesn’t know their background, then they can start with simpler questions, which build the students’ confidence before moving up to more challenging questions. This tailoring of the approach to the audience provides flexibility and can accommodate a group of diverse backgrounds and experiences.

Continued on page 13
It is important to note that there are situations where use of the Socratic Method is inappropriate. On occasions a direct answer to a student’s query is the most appropriate. We don’t want them to get frustrated in a situation where they feel like they never get an answer to what they are seeking. For example, if a student is trying to figure out how to print output from statistical software, asking them “How do you think you should do it?” will not be very helpful. In this case, there is a specific answer to the question of the student that can be quickly given. A specific answer is appropriate when discussing specific statistical methods and analysis techniques. However, I may supplement that discussion with questions such as “What do these results mean?”, “What do you see in this graph?” or “What would you do based on the results?”

Conclusions
If we really are going to teach people to think critically and develop sound statistical thinking skills, then the teaching approaches have to match what we are trying to accomplish. A teaching method based on the Socratic Method can be particularly useful in helping students discover what they should know for themselves, rather than telling them what they need to know. I’ve found it useful in teaching introductory concepts as the paper airplane example demonstrates, as well for more advanced concepts related to statistical planning and analysis. When students discover for themselves something new to them, they are better equipped to use that knowledge and understanding in the future. They will be more likely to use appropriate statistical methods and be able to make the right conclusions from data. There are many opportunities that we have as practitioners of statistics to help others develop their own skills. In so doing, it allows statisticians to become what Hahn referred to as a “proactive statistician” (Hahn, 2002).

Acknowledgments
I wish to thank Richard Newman, a colleague and mentor of mine for the many conversations that we have had on the topic of teaching statistics and for the idea behind the diagram in Figure 1. He is an excellent example of how to effectively use a Socratic Method approach in teaching.

References
Congratulations to Gale Hoyer, who won the $25 Amazon.com gift card for submitting his solution to the Halloween Probability Puzzler in the October issue of the newsletter. Gale was chosen as the winner in a random drawing of those with the correct answer. Thanks to all who participated! Gale’s description of the approach required is also incorporated into the explanation below.

Halloween Probability Puzzler

The number of trick-or-treaters knocking on my door in any five minute interval between 6 and 8pm on Halloween night is distributed as a Poisson with a mean of 5 (ignoring time effects). The number of pieces of candy taken by each child, in addition to the expected one piece per child, is distributed as a Poisson with a mean of 1. What is the minimum number of pieces of candy that I should have on hand so that I have only a 5% probability of running out?

The amount of candy needed is 281 pieces.

To solve this question, it is important to note the nested structure. The number of children arriving in each interval is random, as well as the amount of candy pieces received by each child. This question also assumes known probabilities. Since there is no uncertainty due to the sampling method, there is no confidence level.

This question can be solved with a short simulation. The programming language is unimportant as long as it enables conditional processing. The same solution was obtained by different people programming in SAS, R, and Visual Basic in Microsoft Excel.

The two hour trick-or-treat window was divided into 24 five-minute intervals. The number of trick-or-treaters during each five-minute interval was determined by a random draw from a Poisson distribution with a mean of 5. Each trick-or-treater took at least one piece of candy. Some took more than one piece. The number of extra pieces of candy was determined by a random draw from a Poisson distribution with a mean of 1 for each simulated trick-or-treater. The total number of pieces of candy required for each Halloween iteration was determined by summing over all the trick-or-treaters for the two hour window.

When repeated for a large number of hypothetical Halloweens, we learn that 94.8% of the Halloweens required at least 280 pieces of candy and 95.2% required at least 281 pieces. Therefore, the minimum number of pieces of candy to have on hand to have a 5% or less probability of running out is 281.

New Year’s Probability Puzzler

My New Year’s Resolutions fall into the following 3 categories:

<table>
<thead>
<tr>
<th>Type</th>
<th>Number of Resolutions</th>
<th>Estimated Probability that Each Resolution is Kept</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Important</td>
<td>3</td>
<td>0.1</td>
</tr>
<tr>
<td>Important</td>
<td>5</td>
<td>0.2</td>
</tr>
<tr>
<td>Less Important</td>
<td>15</td>
<td>0.3</td>
</tr>
</tbody>
</table>

My friend has no faith in my ability to keep resolutions and wants to propose a friendly wager: if I keep more than a certain number of resolutions, he will buy me a (toy) truck. What target number of resolutions will result in him having a 5% probability of having to pay out? 50%? 95%?

Submit your solutions (method plus final answer) to mindy.hotchkiss@pwr.utc.com. A $25 Amazon.com gift card will be awarded to the winner who will be determined by lottery from those with the correct answer submitted by March 15, 2012. Solutions will be discussed in the next newsletter.
Statistical Resources on the Web: Google Fusion Tables, Google Refine, and Google Chart Tools

by Mindy Hotchkiss

This feature in the Statistics Division newsletter highlights resources available on the web of particular interest to industrial statisticians or quality and reliability engineers. Please feel free to contact me with any comments at mindy.hotchkiss@pwr.utc.com or if you know of any particularly useful sites or tools that you would like to recommend.

https://docs.google.com/
http://www.google.com/fusiontables/
http://code.google.com/p/google-refine/
http://code.google.com/apis/chart/

Many of you may already be familiar with Google Docs, Google's free online cloud-based office suite and data storage service where users can create documents, spreadsheets, and presentations. While there is limited statistical capability, tools for data cleaning and visualization are becoming more flexible and more easily accessible within Google Docs.

Google's Fusion Tables was once a separate tool, but is now included as of the 2011 update as a default feature under ‘Tables (beta)’. It has a wide variety of graphical options, including map capability and motion charts (changing over time). Note that your data must be uploaded so will reside on Google's servers – which may be an issue for people working with proprietary data or a benefit if you care most about easy access or bandwidth.

Google Refine is a separate tool with some intriguing capabilities for data cleaning, including the text clustering needed to do textual data analysis. It also has options for looking at the distributions of your data to identify outliers that could be possible input errors or format differences. When we work with data, it often seems like we can spend more time on data processing and scrubbing than on actual analysis – this tool may be able to help us quickly identify and resolve issues so we can spend more time looking for meaningful effects.

Google Chart Tools offers a gallery of customizable charts that can be used on your website. For example, you can set up your own charts, including controls and dashboards, using dynamic data so that they are automatically updated in real time.

To use Google's suite of tools, you will of course need to set up your own login account.
New ASQ Fellows - Statistics Division Award Winners

Once a year, ASQ grants Fellow status to a limited number of its members who are recognized as having achieved professional distinction and pre-eminence in the technology, theory, education, application or management of quality control. Two Statistics Division members, Christine Anderson-Cook and Steven Prevette, were elevated by ASQ’s board of directors to Fellow in November 2011. Their citations follow.

Christine Anderson-Cook: In recognition of research in quality in the areas of design of experiments, response surface methodology, graphical assessment of designed experiments, and reliability; for interdisciplinary collaboration and training of statistical thinking and quality ideas; and for dedicated service to the growth and practice of the quality profession.

Steven Prevette: For advancing the field of statistical process control and Dr. Deming’s management philosophy; for implementation of these methodologies in the U.S. Department of Energy; and for service to the Columbia Basin Section, ASQ discussion boards, and the Statistics Division.

Ellis R. Ott Scholarships

Beginning in 1998 and continuing each year since, the Ellis R. Ott Scholarships are given in memory of its namesake (1906 – 1981), a founder of the American Society for Quality and the founder of the Statistics Center within the Graduate School at Rutgers University.

Professor Ott’s academic program was unique in its day, with a focus on applications underpinned by a strong grounding in theory. Most of his faculty had industrial backgrounds, and taught from the perspective of that experience and with examples taken from it. His objective was to prepare students for careers in statistics, and he recognized the need for well roundedness and excellence in communication regardless of the intended career, academic, governmental or industrial.

Funding for Ellis R. Ott Scholarships came from proceeds of three conferences held a few years after his death and sponsored by the Ott Foundation which closed its doors and requested that the Statistics Division use the money to manage the Scholarship program. The Division appointed a Governing Board, many of whose members are former Ott students. Board members are Dr. Susan Albin, Ms. Nancy Belunis, Dr. Lynne B. Hare, Professor J. Stuart Hunter, Mr. Thomas Murphy, Dr. Robert Perry, Dr. Susan Shall, and Dr. Ronald D. Snee.

Scholarships are open to masters and doctoral students interested in a career in applied statistics and/or quality management and studying in the US or Canada. The application period opens January 1 each year and closes April 1. At least one $5000 award is given annually in each of two categories, M.S. and Ph.D. Announcements are made by August 1. Details and application forms can be found at: http://asq.org/statistics/about/awards-statistics.html.

To date, there have been 40 winners studying at over 20 different academic institutions.
Read what our FTC Grant winners had to say about attending the FTC!

Sara Wilson, Statistician, NASA Langley Research Center:

*Attending the 2011 Fall Technical Conference provided a great opportunity to learn about innovations in statistical methodologies and to connect with other statisticians. I also had the chance to present some of my recent work and obtain insightful feedback. I enjoyed attending the conference, and I appreciate the ASQ Statistics Division giving me this opportunity.*

Byran Smucker, Assistant Professor – Department of Statistics, Miami (Ohio) University:

*On behalf of a new group that I just now formed in my head—call it Occupy the FTC—I would like to say that I am part of the 99%. The 99% being, of course, the percentage of attendees that have only glowing things to say about the Fall Technical Conference. Since I do research in the area of experimental design, the FTC is an ideal conference because a) top design researchers habitually swarm to it; and b) practitioners are there too, to keep the researchers grounded. As per usual, the conference resulted in networking opportunities, both with those whom I previously knew as well as a few that were new. I am grateful to the ASQ for the support of the Early Career Grant. I do have one suggestion for the powers-that-be at the FTC, though: Do everything in your capacity to appease the 99%. In other words, keep doing what you are doing, because it is working.*

Shilpa M. Shinde, PhD student – Industrial Engineering, Arizona State University:

*The Fall Technical Conference gave me the opportunity to not only attend talks with relevance to my research, it also gave me an opportunity to interact with researchers and academics who I had not got a chance to meet before. It was a humbling experience to meet and interact with the greatest minds in the field of quality and industrial statistics. The size of the conference is perfect which allowed enough time to attend the talks and interact with fellow researchers. It gave me an awesome opportunity to network with other researchers whose interests are in line with my interests. I am grateful to ASQ for giving me this wonderful opportunity and hope to be able to continue attending the conference in years to come.*

Yongtao Cao, PhD student – Statistics, University of Wyoming:

*As a Ph.D. student who is aspiring to be a statistician, this FTC was not only a chance for me to speak to well known statisticians whom I was previously familiar with only from textbooks and reference papers, but also a great opportunity for me to see this individuals first hand. It was a wonderful experience to watch these professionals in action as they explained how they came up with their research ideas and how they were able to solve hard problems artfully and efficiently. I especially enjoyed observing these individuals communicating with their colleagues and clients seamlessly about real word applications. Their rigorous scholarship is amazing and their willingness to help and guide individuals such as myself gives me hope and motivation with my own research endeavors.*

*I would like to specifically thank Dr. Nachtsheim and Dr. Notz for sharing with us the past, current and future directions of DoE as well as some anecdotes from our predecessors. The originality and practical appeal associated with the research of Dr. Anderson-Cook and Dr. Jones was quite appealing to me. I found it quite encouraging to hear from young statisticians such as Dr. Smucker who is a great role model for demonstrating how to do a wonderful job in their early career. Lastly, I enjoyed the fresh examples from the real world that Dr. Brenneman presented to us.*

*In summary, I cannot express enough how much appreciate the ASQ STAT division for awarding me the student grant. It was an awesome experience and I hope the student grant program can continue to more and more students in the future.*
Cameron Willden, graduate student – Brigham Young University:

Attending FTC was the most rewarding experience so far in my young career as a statistician. The talks were so valuable, and it’s been fun to apply some of the tools and techniques presented at FTC in my master’s project and other work. One of the highlights for me was the presentations on definitive screening designs by Chris Nachtsheim and Brad Jones. I felt like I was witnessing a landmark moment in the history of experimental design.

My favorite part of the whole experience, however, was meeting so many of the giants of our field. Sitting next to Stu Hunter at the luncheon on the first day is an experience I’ll never forget. It was exciting to see and meet the authors of many of my textbooks such as Chris Nachtsheim, Bill Meeker, and Doug Montgomery. I did not anticipate putting so many faces to the names I’ve become familiar with throughout my education.

I am so grateful for the opportunity to attend FTC and for the grant provided by ASQ. I hope to attend as often as possible in the years to come.

Clara Shin – Undergraduate in Mathematics, Glendale Community College, CA:

I could not believe it when I got the acceptance letter from Dr. Timothy Robinson because I thought there was little possibility that I won. I was the only undergraduate student among the awardees and it was such an honor for me. I live in La Crescenta, California, where is quite far from Kansas City. However, I was very willing to travel because I knew that the conference would be a great opportunity to know the reality of the field I am planning to study, and meet the experts, scholars and older students.

What I liked most were the atmosphere of the conference. The scale and number of attendants of the conference were small and it was good for me to adjust and meet people. I was new to everything, and it was exciting to learn about the field. Also, people were very nice and kind so that they helped me a lot to learn and understand.

The conference guided me what to do in my near future. I am applying to graduate school in Statistics major for next fall and the experience in FTC helped me what to prepare for my study. Now I am learning SAS through online lectures and taking probability classes. I would like to attend more conferences after I become a graduate student. At that time, I believe that the conference would support me more of my studies and career.

From left:
Past Chair Christine Anderson-Cook,
Early Career Grant winners
Byran Smucker and Sara Wilson,
Student Grant winners Cameron Willden, Clara Shin,
Shilpa Madhavan Shinde, and
Yongtao Cao, and
Chair William Brenneman.
**American Statistical Association Conference on Statistical Practice:**

**Innovations and Best Practices for the Applied Statistician**

*February 16-18 (Th – Sat), 2012, Orlando, FL*

[www.amstat.org/meetings/csp/2012/index.cfm](http://www.amstat.org/meetings/csp/2012/index.cfm)

The 2012 Conference on Statistical Practice will provide opportunities to learn new statistical methodologies and best practices in statistical design, analysis, consulting, and statistical programming through courses; sessions with papers, panels, and posters; and keynote and plenary presentations. Advance conference registration closes January 31, 2012.

**2012 Lean and Six Sigma Conference**

*February 27-28 (M – T), 2012, Phoenix, AZ*

[asq.org/conferences/six-sigma/](http://asq.org/conferences/six-sigma/)

The 2012 ASQ Lean and Six Sigma Conference Theme is “Positive Outcomes: Putting Lean and Six Sigma to Work”. Lean and Six Sigma are time-tested, powerful and proven enablers that deliver results. These principles allow us to develop solutions that add real value and purpose. The results are demonstrated in many different ways – top line, bottom line, product quality, service excellence – but in all customer-focused outcomes. It takes leadership, people, and the commitment to excellence with lean and six sigma solutions that help to produce these outcomes.

**World Conference on Quality and Improvement**

*May 21-23 (M – W), 2012, Anaheim, CA*

[wcqi.asq.org](http://wcqi.asq.org)

The 2012 ASQ World Conference on Quality and Improvement Theme is “Producing Results: Solutions for Today’s Challenging World”. Focus areas are Changing Technology, Managing Risk, Globalization, Best Practices in Supply Chain Management, and Basic Quality. WCQI also features special programs on Healthcare, Software, Sustainability and Continuous Improvement (ICQI co-sponsored by the Statistics Division!).

**CALL FOR PAPERS – Submit Abstracts by March 1, 2012**

**29th Quality and Productivity Research Conference**

*June 4-7 (M – Th), 2012, Long Beach, CA*

[www.qprc2012.com](http://www.qprc2012.com)

The goal of the conference is to stimulate interdisciplinary research among statisticians, scientists, and engineers in quality and productivity, industrial needs, and the physical and engineering sciences. Statistical issues and research approaches drawn from collaborative research will be highlighted.
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Non-Voting Member

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Non-Voting Member

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Non-Voting Member

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CONSTITUTED

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Joel Smith Speaker, List/Webinars
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814-753-3224
Treasurer’s Report  
Statistics Division - Winter 2011

<table>
<thead>
<tr>
<th>Revenue</th>
<th>Approved 2nd half 2011 Budget</th>
<th>YTD Actuals</th>
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<tbody>
<tr>
<td>Dues</td>
<td>$14,112</td>
<td>$16,767</td>
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<td>Retail Sales</td>
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<td>Workshops/Courses</td>
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<td>Interest</td>
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<td>Royalties</td>
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<td>$98</td>
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<td>Miscellaneous</td>
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<td>$0</td>
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<td><strong>Total</strong></td>
<td><strong>$15,312</strong></td>
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**Assets - 2011**

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<tr>
<th>Chase Checking Acct</th>
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<td>Balance Date</td>
<td>July ‘11</td>
<td>Oct ‘11</td>
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<td>$10,706</td>
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<th>Money Market Acct</th>
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<td>$51,741</td>
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<thead>
<tr>
<th>ASQ Reserve Fund Investment</th>
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<tr>
<td>Balance Date</td>
<td>July ‘11</td>
<td>Oct ‘11</td>
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<td>$203,957</td>
<td>$197,153</td>
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<th>ASQ Statistics Division - Total Assets</th>
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<tr>
<td>Balance Date</td>
<td>July ‘11</td>
<td>Oct ‘11</td>
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<td>$266,403</td>
<td>$256,311</td>
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<table>
<thead>
<tr>
<th>Ott Scholarship</th>
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<tbody>
<tr>
<td>Assets</td>
<td>July ‘11</td>
<td>Oct ‘11</td>
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<tr>
<td>Scholarship Fund</td>
<td>$235,993</td>
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<thead>
<tr>
<th>Ott Scholarship</th>
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<tbody>
<tr>
<td>Expenses</td>
<td>Actual 2nd half 2011 Budget</td>
<td>YTD Actual</td>
</tr>
<tr>
<td>Scholarship (2)</td>
<td>$15,000</td>
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**Expenses**

<table>
<thead>
<tr>
<th>Expenses</th>
<th>Approved 2nd half 2011 Budget</th>
<th>YTD Actuals</th>
</tr>
</thead>
<tbody>
<tr>
<td>WCQI Events &amp; Meetings</td>
<td>$0</td>
<td>$2,521</td>
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<tr>
<td>Meetings/Hospitality</td>
<td>$0</td>
<td>$2,078</td>
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<tr>
<td>Travel</td>
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<tr>
<td>Exhibitor Fees</td>
<td>$0</td>
<td>$442</td>
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<tr>
<td>Promotional Items (C-in-C)</td>
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<td>$0</td>
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<tr>
<td>Miscellaneous</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td><strong>FTE Events &amp; Meetings</strong></td>
<td><strong>$11,500</strong></td>
<td><strong>$3,005</strong></td>
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<tr>
<td>Meetings/Hospitality</td>
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<td>$1,075</td>
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<td>Travel</td>
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<td>$720</td>
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<tr>
<td>Student Grants</td>
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<tr>
<td>Early Career Grants</td>
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<tr>
<td>Hunter, Nelson, and Youden Awards</td>
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<tr>
<td>Hunter &amp; Nelson Recipient Travel</td>
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<td>$0</td>
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<tr>
<td>Youden Speaker Travel</td>
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<td>$0</td>
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<tr>
<td>Promotional Items</td>
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<td>$0</td>
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<tr>
<td>Planning &amp; Events</td>
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<tr>
<td>OPS Planning Meeting</td>
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<td>OPS Planning Travel</td>
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<td>Other Conferences</td>
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<td>Outreach (Sponsorships)</td>
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<td>Standards</td>
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<td>$2,286</td>
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<td>Travel (including DAC mtng)</td>
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<tr>
<td>Publications (Body of Knowledge)</td>
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<tr>
<td>Newsletter Printing</td>
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<td>Newsletter Postage</td>
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<td>Special Publication Printing</td>
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<td>Special Publication Reprints</td>
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<td>Narrated Slideshows</td>
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<tr>
<td>Body of Knowledge Activity</td>
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<td>Administration</td>
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<td>New Member Mailings</td>
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<tr>
<td>Technology Related (Web, Apps)</td>
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<td>Teleconferences</td>
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<td>ASQ Testimonials ($60 each)</td>
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<tr>
<td>Service Awards (WCQI, FTC Reps)</td>
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<tr>
<td>Outgoing Chair’s Gift</td>
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<td>$484</td>
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<td>Miscellaneous</td>
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<td>gotowebinar</td>
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<td><strong>Total</strong></td>
<td><strong>$31,470</strong></td>
<td><strong>$19,828</strong></td>
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* All values are through October, 31 2011.
* The WCQI expenses were part of the fiscal year (FY) 2010-2011 budget, but the expenses were paid in this 6 month FY.
* The FTC meetings and hospitality expense is from the 2010 FTC, and it was part of the FY 2010-2011 budget. There will be an additional meetings and hospitality expense for the 2011 FTC.
* The FTC student grant expenses include the students' registrations from the 2010 and 2011 FTC.
The *ASQ Statistics Division Newsletter* is published three times a year by the Statistics Division of the American Society for Quality.

All communications regarding this publication, EXCLUDING CHANGE OF ADDRESS, should be addressed to:

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*Division Chair*  
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Cincinnati, OH 45241  
email: brenneman.wa@pg.com

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ASQ  
P.O. Box 3005  
Milwaukee, WI 53201-3005

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### Upcoming Newsletter Deadlines for Submissions

<table>
<thead>
<tr>
<th>Issue</th>
<th>Vol.</th>
<th>No.</th>
<th>Due Date</th>
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<tbody>
<tr>
<td>May</td>
<td>31</td>
<td>2</td>
<td>4/1/2012</td>
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**VISIT THE STATISTICS DIVISION WEBSITE:**

[www.asqstatdiv.org](http://www.asqstatdiv.org)

**ASQ Periodicals with Applied Statistics content**

- **Journal of Quality Technology**  

- **Quality Engineering**  

- **Six Sigma Forum**  

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- **LinkedIn Statistics Division Group**  
  [http://www.linkedin.com/groups?grid=21151908&about=](http://www.linkedin.com/groups?grid=21151908&about=)

  Scan this to visit our LinkedIn group!

- **Statistical Thinking Blog**  
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- **External Website**  

- **Internal Website**  

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