Bridging the Gaps for New Water Professionals

When we arrived at our first jobs after graduating from college, we quickly realized there was much to learn from the senior engineers. We had absorbed a lot from our engineering courses at school, but it was time to begin the next phase of our education. Also, time was of the essence because several senior-level engineers were planning to retire, and we needed to be brought up to speed—fast.

Facing a similar learning curve in 2014, a group of our predecessors at Burns & McDonnell had developed a program to promote knowledge transfer from senior engineers to the quickly growing group of new professionals. The Water New Professionals Program (NP Program) was created to provide technical instruction to new engineers starting their careers in the water group, but it also makes tools available to promote the development of personal skills. In addition to providing the latest information about technologies, systems, and other aspects of advanced water treatment, senior personnel were asked to help new staff through career mentorship and guidance.

HISTORY OF THE PROGRAM

Mechanical engineer Jessica Borries, one of the founders of the NP Program, recalls the sense of urgency behind the need for knowledge transfer from senior to junior engineers. “Our company was entering a period of rapid growth and the number of new professionals coming in far exceeded the ability of senior people to train and mentor them effectively,” Borries said. “The old system of one-on-one and project-to-project training wasn’t working anymore. We needed a more efficient way to disseminate consistent information to a large group of people. The system also needed to be sustainable for the years to come.

“In addition to that, we faced another challenge,” she said. “Our organization was expanding geographically, so we were all becoming disconnected from the people and skills that resided in different regional offices around the country.”

The program started out simply: Every two weeks, Borries and her team invited senior engineers to present on various topics that new team members needed to know. It was an opportunity to learn and ask questions related to current and future projects. Topics ranged from sizing a pump to the basics of biological treatment to the design of a chemical feed system—topics that junior engineers were likely to face.

LEADERSHIP TEAM

While upper management fully supports the NP Program, NP leaders handle the day-to-day tasks of the program’s organization. The NP leadership team typically
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—Mechanical engineer Jessica Borries, a founder of the NP Program

KEYS TO ENGAGEMENT

With programs like this, it’s imperative to keep the audience engaged, but that can be challenging when many of the class participants are listening via webcast from remote locations. The following tips help engage remote audience members.

Encourage each presenter to explain how their topic will be relevant to the various engineering disciplines attending. For example, Drain recently presented a technical class covering the design of chemical feed systems. She began by highlighting the structural engineering needed for storage tanks and containment walls. Then she moved to the mechanical engineering needed for heating, ventilation, and air conditioning; emergency eyewash stations and showers; and fire suppression systems.

Next, she covered the process engineering needed for chemical dosing rates, storage tank volumes, and overall system design. She also addressed the electrical engineering needed for controls and instrumentation, as well as the civil engineering needed for delivery vehicle access and site grading. Using this approach, all disciplines were engaged; the engineers could relate to the presentation, keeping current and future projects in mind.

Sprinkle “hot-seat questions” throughout the presentations. At various points, audience members are hit with game-show-style questions to open a dialogue between the audience and the presenter. It’s also a proven technique to ensure people are paying attention. After all, who wants to be embarrassed in front of their colleagues?

At the end of every class, send a survey to attendees to gauge their interest and ask follow-up questions. This helps the organizers better understand how the class was perceived and gather suggestions to make the class better. Future class topics and possible presenters have been proposed through these surveys, as well as suggestions on alternative formats such as roundtable discussions.

In one survey, an attendee requested a class on what millennials (i.e., our group) and nonmillennials (i.e., our managers) should know to effectively work with each other. In response, one of our
department managers developed a class titled “Managing Millennials.” She explained what our managers are learning about us, what values we bring to the team, and how managers should engage us. The presentation highlighted the differences between generations and the positive skills and attributes each brings to the team. The NPs expressed that this session helped them navigate working with different generations and better understand each other; the class was informative and entertaining for both the NPs and the managers in attendance.

BUILDING RELATIONSHIPS

After the first year of biweekly technical classes, Borries, Drain, and their leadership team identified another gap the program might be able to fill: facilitating the creation of personal relationships among NPs working in different offices. It is often necessary for employees from multiple offices to work together on projects; forming these relationships early can streamline project execution.

After completing the two-year NP Program technical curriculum, our entire group of NPs congregated at our headquarters in Kansas City, Mo., for three days of networking, hands-on workshops, and presentations from senior leaders. The first summit in the fall of 2015 was organized by Drain, Borries, and their leadership team. Then, in September 2017, the authors and company leaders organized the second NP summit, which had three areas of focus:

- Career development
- Water issues from local, national, and international perspectives
- Soft skills development

We kicked off the 2017 summit with a networking event downtown. NPs from across the country mingled, played games, and got to know each other in a relaxed atmosphere.

Notecards placed on tables around the venue had conversation-starting questions to facilitate easy interactions in case attendees needed help getting out of their shells. Laughter can be the best icebreaker, and many of the attendees relayed that this meeting was the catalyst for friendships that are still building to this day. Presentations over the next day covered career development and water issues, and several managers presented overviews of their own careers.

Many of us at the summit felt reassured that senior staff had experienced the same issues we were facing. It was clear that the typical career in our industry is not linear and predictable—instead, it’s more commonly full of surprises and opportunities.

A CALL TO ACTION

At the end of 2017, the NP Program co-chairs met with upper management to discuss their ideas for the program’s future, including both short- and long-term goals. By the end of 2017, there had been almost 70 classes, and approximately 65 colleagues from across the United States had finished the NP Program.

The fifth group of new professionals is now leading the NP Program, learning from and improving on what the previous group did. The 2018 NP leaders have included field trips to tour treatment facilities and a pump manufacturing plant; a group of us even visited our congressional representatives working on water-related legislation in Colorado.

Senior leaders at the company have made it clear that the NP Program is our tool. It’s in our hands to make of it what we will, but we’ve been assured we have the full support of management as we proceed. This kind of ownership is imperative for young leaders and future decision-makers, because water and wastewater professionals must empower themselves to take on the growing issues of tomorrow. It’s up to us to ensure that knowledge is not lost through the inevitable “brain drain” as senior professionals retire.

Perhaps Drain said it best: “It is amazing to see group after group step up and make the program their own [and] make it what they think it needs to be to best serve our company and clients. This is the spirit of employee-ownership that our company thrives on. And it’s what motivates us to grow, evolve, and get better.”

—Alex Ferrara is a staff structural engineer at Burns & McDonnell’s water practice in Kansas City, Mo. Since joining the company in 2015, he has gained experience in the design of municipal water and wastewater treatment plants, industrial wastewater plants, and municipal water program management. He received BS and MS degrees in civil engineering with focuses in structural engineering from the University of Tennessee-Knoxville. Andrew Toth is a staff environmental engineer at Burns & McDonnell’s water practice in Kansas City. Since joining the company in 2015, he has worked on a variety of projects designing municipal and industrial wastewater treatment facilities. He received a BS degree in civil engineering from the University of Kansas, Lawrence, Kan., where he focused on water and wastewater engineering. He earned an MSc degree in environmental engineering from Hamburg University of Technology, Hamburg, Germany, and a master’s degree in technology management from the Northern Institute of Technology Management, Hamburg. Suzanne DeLorenzo (column coordinator, to whom correspondence may be addressed) is the water quality manager at Clackamas River Water, 16770 SE 82nd Dr., Clackamas, OR 97015 USA; sdelorenzo@crwater.com.

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