

Fixing Wiki: Wikipedia revision project teaches teamwork, communication, chemistry

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University of Michigan graduate student Cheryl Moy (left) and assistant professor Anne McNeil (right) visited Wikimedia Foundation headquarters in San Francisco to discuss a class project in which teams of students revised Wikipedia entries on chemistry topics. Credit: Anne McNeil

Halogen bonding, hyperconjugation, electroactive polymers—such subjects are typical fare in graduate-level chemistry courses. But how many classes challenge students to explain the concepts to the whole world?

That's essentially the assignment in Anne McNeil's courses at the University of Michigan, where teams of [students](#) are given the task of revising a [Wikipedia](#) entry on an esoteric subject, making it understandable not only to fellow scientists but also to general readers.

In the process, students learn teamwork and improve their communication skills while mastering chemistry, said McNeil, who recently was invited to make a presentation at the [Wikimedia Foundation](#) headquarters in San Francisco. McNeil and three U-M colleagues also describe the teaching technique, its challenges and successes, in a paper published online in the *Journal of Chemical Education*.

McNeil, assistant professor of chemistry and of [macromolecular science](#) and engineering, had two main objectives in mind when she came up with the Wikipedia project. One was a general desire to improve public understanding of science by training young scientists to clearly communicate advanced concepts; the other was the necessity of unifying a class that was split right down the middle.

"The first class I tried it in was physical organic chemistry, which is required for both medicinal chemistry and organic chemistry grad students," McNeil said. "The two groups want different things from the course, and they don't often find much common ground for interaction."

Revising Wikipedia entries seemed an ideal way to get the class working together. There was just one problem: McNeil had never revised an entry herself and had no idea what the rules and style conventions were. So she and graduate student instructor Jonas Locke took on the task themselves before trying it out on the class.

In the course, students were split into small groups, each of which submitted suggestions of three topics that related to the course material and weren't already adequately described in Wikipedia—a free, online encyclopedia that anyone can edit. McNeil and Locke selected the final topics from the list, considering their importance and relevance to chemistry and giving highest priority to subjects for which there was little or no information on Wikipedia.

Right from the start, students were on board with the project, in part because their work would remain on Wikipedia after the course ended.

"The visibility appealed to them," McNeil said. "Instead of doing a class presentation, where only the class benefits, everybody was excited that other people would see the results of their hard work, and that seemed to motivate them to work even harder to make sure their entries were accurate, well-written and understandable."

Graduate student Lindsay Amos hopes to reach not only the millions of anonymous Wikipedia users out there, but also people in her own inner circle.

"When you start studying more advanced topics in chemistry, it gets harder to explain them to your family and friends," Amos said. "It's nice to show them something you did that they can understand."

Since the first experience in 2008, McNeil and other chemistry faculty have used the Wikipedia project in five other courses, and the approach itself has gone through some revisions. For example, students now provide "peer review" feedback to one another at the outline and draft stages, pointing out problems with repetition, structure and flow. And, at the suggestion of one class member, McNeil and her graduate student instructor Cheryl Moy created a handbook that offers guidance in editing chemistry entries. Moy also is creating online video tutorials on editing Wikipedia.

To evaluate the project's success, co-author Brian Coppola, who is the Arthur F. Thurnau Professor of Chemistry, helped design and administer a survey to students that asked how the Wikipedia project compared with other classroom activities, such as lectures and problem sets, in achieving specific course learning goals. The results showed that the Wikipedia project contributed more than other activities to the goals of

communicating science to a diverse and general audience, working collaboratively, and identifying appropriate references and other resources for building an argument.

The educators also enlisted a specialist in writing and rhetoric, professor Anne Gere, who holds joint appointments in the Department of English Language and Literature and the School of Education and directs the Sweetland Writing Center. Gere compared Wikipedia entries before and after student editing and concluded that the revised versions were much more engaging and accessible to nonspecialists, thanks to clear explanations and the inclusion of real-world examples, historical contexts and illustrations.

In early May, McNeil and Moy traveled to San Francisco to discuss the project at a meeting on using Wikipedia as a teaching tool.

"We were very excited about the work Anne McNeil has been doing with Wikipedia in her chemistry classes, so when we decided to bring together a small group of professors to the Wikimedia Foundation office to present and discuss their work with Wikipedia, Anne was the natural choice," said Rod Dunican, the foundation's education programs manager. "Anne and her graduate student Cheryl Moy shared with us their keen insights and the pitfalls and successes of using Wikipedia as a teaching tool. Through Anne's classes, students at the University of Michigan greatly enhance the chemistry body of knowledge on Wikipedia."

McNeil plans to try the Wikipedia assignment in an undergraduate honors course, where instead of advanced concepts in chemistry, students will work on entries about famous chemists and chemical reactions named for scientists.

By writing the article and creating the handbook, she hopes to encourage

other chemistry professors to use Wikipedia projects in their classes.

"It's a truly educational endeavor," McNeil said. "The students learn a lot and they're really proud of what they produce, but in the process they're also improving the chemistry knowledge that's out there in the world, which benefits the chemists who rely on these sites, as well as general readers seeking to broaden their knowledge."

More information: *Journal of Chemical Education:*
pubs.acs.org/journal/jceda8

Provided by University of Michigan

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