The theme-based modular approach is focused on changing how students experience instrumental analysis. A more traditional approach might utilize a series of well crafted, faculty-tested laboratory experiments to involve individual students in the use of instrumental techniques. While this method provides breadth of coverage, it is often lacking in important skills such as experiment design, troubleshooting, team work, and communication. Furthermore, students often lack ownership of the work and simply try to complete a procedure with the correct answer so that they can move to the next experiment. The theme-based approach removes the faculty-tested lab experiments and replaces it with a unifying theme under which students can explore and develop their own idea to test. This increases interest and ownership in the lab while providing students with specific tasks to accomplish using specific instrumentation. Students are also working in groups on one unified project (or a small series of projects).

A number of resources champion curriculum reform. The idea that knowledge can be directly transferred from the faculty to the student is proving false and students should instead be active participants in the learning process.\(^1\) As a result of this call to curriculum reform, the NSF sponsored a New Traditions Project that resulted in a report which helped to identify mechanisms for implementing active learning. These elements include interactive lecture, team problem solving, open-ended laboratory experiments, a thematic approach, and formation of learning communities.\(^2\) In addition, NSF-sponsored workshops on curricular developments in the analytical sciences produced a report that recommended context-based curriculum, small group learning, investigative laboratories, case studies, and development of oral and written communication skills.\(^3\) The theme-based modular approach to the instrumental analysis laboratory was developed in response to these documents, making an attempt to put into practice those ideas that the chemical education research demonstrated were necessary to improve the learning environment for the students.

