



Aligning key strategic university blueprints with institutional assessment data helped narrow our focus for the QEP. For example, to ensure that every student at UNC-Chapel Hill would have a transformational academic experience, we sought out data that highlighted inequities among distinct student populations. Additionally, alumni surveys underscored the value of specific experiences, such as undergraduate research. Because of the institutional capacity, built partly by our previous QEP, we were well positioned to focus on a few specific high impact experiences, such as undergraduate research, first year seminars, and collaborative projects.

“LEARNING BY CONNECTING, DOING, AND MAKING” promotes a mindset focused on experiential learning, through its use of many action verbs.

CONNECTING refers to our goal to be more explicit in merging ideas and skills from the arts and humanities with science.

DOING emphasizes that students will go beyond reading about the process of science and research; they will experience the messy, complicated, uncertain, and rewarding process themselves.

MAKING refers to the synthesis of novel ideas and emphasizes how the scientific process often leads to tangible objects.

Our 2017 Quality Enhancement Plan, “Creating Scientists: Learning by Connecting, Doing, and Making,” aims to align the University with a contemporary model of the process of science. This non-linear model depicts a more authentic, iterative, and complex process than one previously taught to students. It also supports research in many disciplines and underscores the connection between science and the humanities. Our QEP has two broad student learning outcomes across four programs.

Students will:

- Demonstrate improved communication and collaboration skills as a member of scientific inquiry teams
- Be able to describe what it means to engage in research and be a member of a community of researchers

THE PROGRAMS:

Each program has a program leader and team, a robust professional development plan for faculty, and a rigorous assessment plan. The assessment team has created novel surveys and rubrics to measure learning across the four programs and track data that immediately informs implementation. Because of our novel approach to assessing our programs, we expect to contribute a great deal to the scholarship of teaching and learning. Below are short descriptions and a few of the student learning outcomes for each program.

INTEGRATED CURRICULA:

Develop co-taught first year seminars that integrate the arts and humanities with the sciences and support other interdisciplinary connections across campus. Students will:

- Increase their ability to explain the relationship between science and broad social, cultural, political, historical, and ideological forces
- Increase their ability to synthesize diverse inputs – data, observation, opinion, emotion – to answer research questions and identify solutions to problems

COURSE-BASED UNDERGRADUATE RESEARCH EXPERIENCES

Develop course-based undergraduate research experiences (CUREs) across all disciplines with a particular focus on Chemistry and Biology. The courses will focus on semester long research that allow for students to fail and try again, take ownership of their project, engage in meaningful collaboration with peers, and communicate their findings outside the classroom. Students will:

- Demonstrate a greater understanding of the importance of collaboration, discovery, and iteration than their counterparts who enrolled in a matched regular, non-CURE section
- Produce research work that meets or exceeds targets on the dimensions of innovation, quality of research idea, problem development, methodological choices, data collection and quality, data analysis, presentation of findings, technical writing, poster quality, and oral presentation to a broader audience in an open forum

RESEARCH EXPOSURE OPPORTUNITIES:

Increase infrastructure to support undergraduate research, including a strong departmental faculty liaison program. Develop courses that support research skills related to written and oral communication. Initiate a week-long celebration of research, “University Research Week”. Students will:

- Make novel discoveries, objects, or other contributions that advance the research programs of faculty
- Demonstrate writing in a scientific manner, critically analyzing and evaluating primary scientific literature, and presenting research to peers and non-science audiences

MAKERSPACE:

Establish our campus’s robust makerspace program throughout the undergraduate curriculum via the development of courses that support semester-long makerspace projects. Students will:

- Be able to apply design-thinking and/or iterative processes to developing ideas related to course concepts
- Be able to effectively critique others’ work and use critiques of their own work for improvement
- Recognize the importance of collaboration, discovery, and iteration