A new, specially constructed U. of Minnesota program in health sciences will test teaching methods and track student success.

Almost everyone in academe daydreams about scrapping the conventional university model and building something from scratch, but few people actually get the chance to try it.

Stephen W. Lehmkuhle did, when he was hired in 2007 as chancellor of the University of Minnesota's fledgling Rochester campus. He had been told to create a new undergraduate program in health sciences-a natural role for a campus two blocks from the Mayo Clinic.

But Mr. Lehmkuhle fervently wanted to avoid a common academic pathology: an uncoordinated curriculum with few incentives for faculty members to focus on what students actually have learned.

So in Rochester's health-sciences program, which admitted its first students in September, Mr. Lehmkuhle and his colleagues are trying three distinct strategies to improve learning.

First, the faculty has designed a unified curriculum. Every student in the program will take exactly the same sequence of courses during the first four semesters. Those classes will be intertwined-so that, for example, students might learn about organ transplants in biology, sociology, and bioethics courses simultaneously.

Second, the faculty members are organized under a single academic unit, no matter their disciplinary backgrounds. Those faculty members will be rewarded for conducting research on their own students' learning and for continually improving their own courses.
Third, the program plans to collect an enormous amount of data about student performance and to analyze those data in new ways.

With a grant from the Howard Hughes Medical Institute, Mr. Lehmkuhle and the vice chancellor, Claudia Neuhauser, are building an elaborate database that will help them track the success (or lack thereof) of various instructional techniques. "We need to be able to assess students' ability to combine different kinds of knowledge," Ms. Neuhauser says.

Teaching in Harmony

The Rochester campus seems like an unlikely site for the kind of educational revolution that Ms. Neuhauser dreams of. Its classrooms and laboratories have been carved out of what used to be the food court atop a downtown shopping arcade. To get to class, students take escalators through the mall's haze of Muzak. (Most of the mall's customers are family members of patients at the hospitals affiliated with Mayo. The mood is middle-aged anxiety and grief, not adolescent distraction.)

In a Friday-morning humanities class, the instructor-Rebecca Bamford, a British-born assistant professor of philosophy who specializes in bioethics-is leading 20 students through a discussion of "Whither Thou Goest," a short story about organ transplants by Richard Selzer, a physician turned author. Half the class is bleary-eyed from a midnight screening of Where the Wild Things Are, but they are gamely making their way through the conversation.

Ms. Bamford pauses to ask about Selzer's depiction of cold and callous doctors. "That's something you covered in sociology two weeks ago, right?" she asks. "The hidden curriculum of medical school, and the ways in which doctors and nurses are trained to manage their emotions."

Several students chime in with their own thoughts about emotion in medical work-and so does Robert L. Dunbar, the program's biology specialist, who has been sitting unobtrusively in a corner. His presence here is routine. The 11 instructors in the program sit in on one another's classes almost daily. The visits help them manage the integrated curriculum-something that has proved trickier than they had hoped-and also let them give each other tips on instruction.

"The kinds of professional interactions we've had here are much, much more beneficial than what I've experienced at other institutions," Mr. Dunbar says as he shows off the biology lab he designed. "When you have people from other disciplines visiting your classroom, the conversations about teaching get much more interesting. … It's been an adjustment, but I think it's making all of us better. I've learned about new ways of presenting information that I probably wouldn't have seen if I were spending all of my time with biologists."

The biggest headache, Mr. Dunbar says, has been keeping the various elements of the curriculum in harmony. During the summer he and his colleagues drafted a grid in which closely related concepts would be taught simultaneously across five fall-semester courses: chemistry, humanities, sociology, statistics, and a writing seminar. (The biology course will not begin until spring, because faculty members agreed that the students should first be well grounded in chemistry.)
But after a week or two, it became obvious that the plan on the grid was much too tidy. The chemistry course, in particular, needed to slow its pace because students were struggling with certain points.

"Keeping two course syllabi in alignment is very difficult," Mr. Dunbar says. "And when you start talking about three or four or five, it just gets exponentially worse."

Despite that challenge, Mr. Dunbar and his colleagues say they are happy to be in a program where all students will take the same courses in the same sequence for two years. That uniformity, they say, is likely to build student camaraderie and minimize dropouts. And it will also give Mr. Dunbar, for example, the confidence to use certain chemistry concepts in his biology course next spring, because he can be certain that every student will already have mastered them.

A Focus on Students

The health-sciences program did not win approval from Minnesota's Board of Regents until last October, which meant that both faculty members and students had to be recruited on the fly. The first class contains 57 students, whose average high-school grades and standardized-test scores are somewhat higher than those of students at the university's main Twin Cities campus. "Given the late start, I think we did very well," Ms. Neuhauser says. She hopes to eventually admit 250 students each year.

This semester Mr. Dunbar is leading a first-year seminar that covers study habits and the range of health-related careers that the students might eventually want to pursue. In the seminar, Mr. Dunbar is often joined by Parry Telander, the program's student success coach. (Yes, that is his official title.) Mr. Telander, who previously worked in a more orthodox student-affairs center at Minnesota State University's Mankato campus, leads the class at times.

In fact, Mr. Telander sits in on classes every day. "The student-development component and the academic component here are much more deeply connected than they typically are," he says.

When he is not in class, he spends much of his time in an open student lounge near the escalators to the mall. "I like to say that the lounge is my second office," Mr. Telander says.

In lounge consultations, Mr. Telander gives advice on note taking, test preparation, and other study skills. He is attached to the Class of 2013; a second coach will be hired for next year's entering class. Among other things, Mr. Telander will help his crop of students design their senior-year capstone projects, which in some cases might involve specialized training at the Mayo Clinic. (The health-sciences program has no formal relationship with the clinic, but the two organizations are planning several kinds of collaboration.)

If a student needs technical help with chemistry or statistics that goes beyond Mr. Telander's expertise, he can point them to an academic-support center 20 yards from his perch in the lounge.
At the support center, which looks a bit like a hotel-registration desk, three faculty members sit for several hours each day. They are known in the local jargon as "student-based faculty." They do not lead courses, and they are not on the tenure track.

The desk is much more clamorous than a typical one-on-one meeting in a professor's office. The idea is partly to allow the three instructors to simultaneously help a student with an assignment that involves, say, chemistry and writing. Another reason for the odd design is to make it seem routine for students to ask for help. Students must walk by the desk in order to get from their classrooms to the escalator, and some of them stop for advice almost every day.

One of the student-based faculty members is Peter L. Larsen, who holds a Ph.D. in chemistry and who, until recently, worked at the Mayo Clinic. (In addition to his hours at the support desk, Mr. Larsen supervises the chemistry laboratory and grades students' lab assignments.)

"For me, this is really preferable to a research job," Mr. Larsen says. "I enjoy research, but I'm much more keen on student interaction and teaching."

In a sense, Mr. Larsen has the opposite of the stereotypical adjunct job: He does not teach classes, but he does have a lot of time to spend counseling students. In the next few years, as the program grows, Ms. Neuhauser plans to hire nine or 10 more student-based faculty members. But is this a role people will want?

"I think this will be attractive to quite a few people," Ms. Neuhauser says. "It's a unique kind of experience to have on your CV. If you have a master's degree, being in one of our student-based positions for a few years might put you in a good position to get a tenured faculty job at a community college."

Research in the Classroom

The program's assistant professor of chemistry is Rajeev S. Muthyala, who until last year taught at Queens College of the City University of New York. Mr. Muthyala says he was immediately intrigued when he saw the job announcement. "When I was told that I would have to prepare a lecture on my philosophy of undergraduate education, I knew this would be a good fit," he says.

The biggest personal hurdle, he adds, will be finding a way to continue his own mainline research in chemistry. "There is no research chemistry lab here as yet," he says. For the next year or two, he says, he will probably have to focus on his educational-research projects and leave aside the chemistry research that he had done in New York.

And what are those first educational-research projects likely to be? Mr. Muthyala and his colleagues are preparing a grant proposal for an experiment that would assess how to make classroom-based group work as effective as possible. Every course in the program leans heavily on "project-based learning," in which students are expected to develop hypotheses and test them in groups. In the program's classrooms, which Ms. Neuhauser prefers to call "learning studios," the instructor typically lectures on a concept for 10 or 15 minutes, and then immediately asks the students to apply the concept in groups.
Molly J. Dingel, an assistant professor who teaches the program's sociology course, says she looks forward to opening up the program to researchers from outside the campus. "Some of what we do here will be unique, and not easily transferable to other universities," she says. "But there may be pieces of it that can be used elsewhere." Both Ms. Dingel and Mr. Muthyala say they want to avoid any perception of bias that might come from instructors studying their own curricula.

"We want to get good, strong, reliable measures of student learning," says Erin L. O'Connor, a postdoctoral fellow who came here after earning a psychology degree at the Queensland University of Technology, in Australia. "I feel like all of the staff here are critically engaged with what's happening in the classroom. This is completely different from the one-day, one-credit kind of teaching training that you sometimes get in graduate school."

Tracking the Data

In this inaugural semester, while faculty members refine teaching, students are digesting the grades they received on their first tests. That process is not too different from what happens at any other college. "Most of the students here were in the top third of their high-school graduating class," says Kendra A. Weber, the campus's assistant vice chancellor for student affairs. "And of course it's statistically impossible for all of them to be in the top third here. So that's always a hard adjustment."

Those tests, however, will be some of the earliest pieces of information to enter the grand database of student-learning outcomes that Ms. Neuhauser plans to build. The database will not require tests to be in quantitative or multiple-choice form; on the contrary, she would prefer to see essays and laboratory exercises, which can be graded according to a common rubric of learning objectives. That kind of grading is labor-intensive, but Ms. Neuhauser says it will be worth it.

"We want to build a system that can map each course's learning objectives to the program's overall learning goals," she says, "so that we track these objectives and see how our students actually fare over time."

Placing their classroom work under that kind of microscope might feel daunting—but the instructors here say they look forward to the process.

"It's not just the students' behavior that's on the table," says Ms. Bamford, the humanities professor. "It's ours, too."