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The Choice

Demystifying College Admissions and Aid

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Community Colleges Cannot Be Overlooked in America's Quest for New Scientists

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The United States needs to grow and diversify its science and engineering work force to be competitive in the new global economy - and community colleges play an increasingly important role in this process.

More than 50 percent of lower-income and [racial-minority](#) students, and 40 percent of all students, start off at community colleges. However, not many students enter community colleges thinking they will become scientists, engineers or mathematicians. [Only about 10 percent](#) even consider this pathway. And the [majority of those](#) will pursue a different field as their studies progress.

The situation is even more severe [for women](#). Of the 500,000 associate's degrees earned each year by women at community colleges, only 5 percent are in STEM fields - science, technology, engineering and mathematics. A [recent report](#) from the United States Department of Commerce found that, over all, women with STEM jobs earned one-third more than women with comparable educations in non-STEM jobs.

Even with community colleges in the national spotlight (increasing the numbers of students enrolled), far too often this discussion focuses on short-term, one-year training programs. These are not equivalent to an associate's degree or to a transfer-based program that leads to a four-year degree. The majority of [new job openings](#) are in STEM fields, and these careers require four-year degrees.

There is clearly a need to demonstrate to community college students, especially women, that studying science disciplines is a viable academic or career path. The community college transfer pathway can take them to four-year degree programs, where they will gain the further knowledge and skills they need to enter the work force as trained professionals or go on to graduate studies.

But, transferring from a community college to a four-year school is not happening as often or quickly as it could. And the United States needs that talent now.

We're taking a closer look at this at Mount Holyoke College. With funding from the National Science Foundation, we studied the community college transfer pathway in science and

engineering. We followed about 200 students in Massachusetts, observing their progress and the directions they have taken. We also spoke to professors, deans, employers and families. We looked at course catalogs, program descriptions and transfer policies.

Among the questions we asked: How do students get on track to transfer? How do they persist in their science and engineering goals after transfer?

We've learned that students are working many hours to make ends meet. Finances really matter. Students need flexible workplaces and colleges to make it work. Four-year institutions in particular have not fully recognized the changing demographics of students.

Community college faculty members are caring, invested teachers who launch their students into science and engineering. But if students don't get early advising about transfer options and opportunities, they are likely to take the wrong classes, and then a science or engineering major may view that path as impossible, because of the burden of extra time and cost. This happens more often than one might think.

Successful transfer depends on alignment between the community colleges and the four-year college. Currently, that type of alignment is the exception rather than the rule. Too often, students who are promising future scientists leave their major because particular credits did not transfer, or because they do not feel invited into the science community at four-year institutions, not because they don't have the talent.

The next step is doing something with these findings. At Mount Holyoke, we have launched a [National Science Foundation-financed initiative](#) that will provide women from community colleges with a path into our college's science programs. We have built a [program](#) heavy on advising, peer networks and coursework designed to get students up to speed quickly and excited about studying science. We would like to use the model we are building to help other four-year colleges and universities do this effectively, particularly for young female scientists.

While there are similar programs around the country helping community colleges, few are STEM-specific. The [University of North Carolina at Chapel Hill](#) runs the [Carolina Student Transfer Excellence Program](#), which enables community college students to transfer into and graduate from U.N.C. And the [University of Michigan-Ann Arbor](#) has organized a program in which new transfer students are eligible to have a transfer mentor to help smooth their transition into the university.

By working with community colleges and understanding the needs of the students who want to pursue studies in science disciplines, four-year institutions can improve transfer experiences and help grow the nation's science and engineering work force.