One Highline professor understands that students need a little TLC.

Dr. Helen Burn, a math professor at Highline, is now also the director of a curriculum research group after she was awarded a grant of $320,742 from the National Science Foundation.

The grant will be used to research strategies to increase the amount of underrepresented students in science and math fields, but mainly focused on calculus, Dr. Burn said.

“The grant is titled Transitioning Learners to Calculus in Community College, or TLC, like tender loving care,” Dr. Burn said.

One of the goals for the grant is to create a network of colleges that are committed to improvement, Dr. Burn said. She hopes to have 50 colleges connected by the end of the three years.

The research-based goal of the project is to develop an institutional self-assessment, commonly referred to as a change tool, she said.

“This grant is about transitioning learners,” Dr. Burn said. “But what we're really focused specifically on students who have been historically under served.”

Students of color and women are among some groups of underrepresented individuals in the math world, said Dr. Burn.

The technical term used to describe these students is URM – underrepresented racial minorities.

“None of us are fond of that because you look around Highline – these students are not under represented,” Dr. Burn said. “They're under served.”

As a student, the transition to calculus can be a long sequence, said Dr. Burn.

The change tool will specifically outline areas where institutions are doing well and areas that could use improvement, and provide strategies to remedy some of the barriers that hinder success in the classroom, Dr. Burn said.

The development of the tool will come from a combination of the data collected via surveys and campus visits to exemplary institutions, she said.

Dr. Burn and her team plan to analyze institutions that are classified as Minority-Serving Institutions. The designations for this include serving certain groups of students, such as Hispanic, Native American, Black, or Asian American.

“We want to connect institutions to each other,” Dr. Burn said. “That [way], the ideas get shared and promoted and built upon…to build momentum.”

“I don't think anyone's ever done something like this,” she said. “I think it’s going to blossom in ways we can't even envision yet.”

Dr. Burn said she would like to see numbers go up in areas such as students graduating in science and math fields.

“If you look at where students start, especially for certain groups, like Latino students, they tend to overwhelmingly start in community colleges,” Dr. Burn said. “If we have any hope of creating more Latino scientists, it has to come through the community colleges. I'm hoping this grant gives ways for faculty to improve the situation without feeling like they're reverse-discriminating.”

Highline has predominantly white faculty and predominantly many students of color, Dr. Burn said.

“I would like to help shift the feel to think about how [faculty] can be more inclusive,” she said. “There’s a discomfort with special programs that needs to be remedied. People need to be thinking about things more comprehensively.”

Students commonly suffer from the “Imposter Syndrome,” where students believe that they don't really belong at college or that they can't graduate with a degree in science or math.  
“There's this idea of 'fake it till you make it',” Dr. Burn said. “You have got to get over it. Everyone is psyched out to be here. Students are pretty close to dropping out of a course in the first two to three weeks. Those are absolutely essential.”

It is crucial for students in the first few days of class to believe that they can do the material, that they're going to be able to connect with the instructor, and that the course has relevance to their future, Dr. Burn said.

“That’s the type of social psychological stuff that needs to be brought into math education so that faculty have other ways to interpret a student’s behavior,” Dr. Burn said. “This will make them want to engage in talent development, rather than gatekeeper.”

Working alongside Dr. Burn is Dr. Vilma Mesa, an associate math professor at the school of education of University of Michigan, Dr. J. Luke Wood, an associate professor of community college leadership at San Diego State University, and Dr. Eboni Zamani-Gallaher, a professor of the department of education policy, organization, and leadership at the University of Illinois at Urbana-Champaign.

“I think what’s special about this grant is our unique research team,” Dr. Burn said. “Vilma [and I] are both in math,” Dr. Burn said. “Luke and Eboni are specialists in community college student success – they're not in math.”

By creating a diverse team of various specialists, she said this will help offer multiple perspectives to solve barriers.

“Eboni studies student transition, so she has many theoretical ideas about transition points and barriers,” Dr. Burn said. “Luke has developed a sociological ecological model based on his work in California, and we're going to extract ideas from that.”

“It's kind of like calling Mick Jagger and asking 'Hey, you want to play in my band?’” Dr. Burn said. “All three of them are rock stars in their field.”

 Dr. Burn has worked at Highline for 22 years and has participated in several smaller grants before. This grant is the first one where she will be the principal investigator.

Due to the data collection, research, and travels, Dr. Burn will not be teaching as much in the next three years, but said she is incredibly thankful for Highline’s support.

“It’s not that unusual for faculty to be involved in national projects,” Dr. Burn said. “We have a history of supporting that and encouraging that, this is just the latest example that's in my area. Highline is a complex organization and it attracts faculty that are talented in many areas in addition to classroom teaching.”