



Needs Analysis Plan for the Bridges to the Baccalaureate Course Design

By Dawn A. Delfin, Ph.D.

September 2020

Institutional / Programmatic Background

The Bridges to Baccalaureate program is a National Institutes of Health (NIH)-funded initiative to help bridge the gaps that students face when transferring from a community college to a 4-year institution. This program's goal is to encourage community college students to get their Bachelor's degree in a science, technology, engineering, or math (STEM) field, then go onto graduate school and take on a research career in STEM. The program strongly emphasizes supporting students who are underrepresented minorities and/or come from low socioeconomic status backgrounds. This program provides many levels of support for these students including pre-transfer research experience at the 4-year institution, academic advising before and after transferring, carrying out a research project at the 4-year institution, career development, and community support, all to help prevent the typical high rates of transfer student dropout. A key component of this program is to offer students a multi-year course that helps address issues of research ethics, research methods, community support, and career development. This Needs Analysis will determine what is needed for preparing such a course in order to design a useful learning and supportive experience for the students.

The institutions that will be involved in the Bridges to Baccalaureate Program are:

- University of New Mexico (UNM) as the 4-year degree institution
 - o Health Sciences Center Rio Rancho Campus
 - o College of Pharmacy
 - o School of Medicine
 - o School of Nursing
 - o College of Engineering / Biomedical Engineering Program
- Southwestern Indian Polytechnic Institute (SIPI) as a community college partner
 - o Pre-Engineering Department
 - o Vision Care Technology Department
- Central New Mexico (CNM) College as a community college partner
 - o Health, Wellness, and Public Safety Department
 - o Math, Science, and Engineering Department

UNM is New Mexico's flagship university with its Main Campus located in Albuquerque. It offers bachelor's, master's, and doctoral degrees (philosophical and professional). The College of Engineering is located on the Main Campus. The Health Sciences Center is also mainly located in Albuquerque, and houses the College of Pharmacy, College of Nursing, and School of Medicine. The Health Sciences Center has an extension location, called the Rio Rancho Campus, which is located in the Albuquerque suburb of Rio Rancho. Of special note, Rio Rancho is located in Sandoval County. Sandoval County has the largest number of Native American tribal communities in the state of New Mexico. This site is in closer physical proximity to many tribal communities than Albuquerque. Given that the main outreach of this grant will be to Native American students, the

Rio Rancho site will be the main hub of the Bridges to Baccalaureate program. Overall, UNM is a Hispanic-serving institution, with a number of underrepresented minority and low socioeconomic status students that attend or hope to attend UNM. UNM has 17,859 undergraduates currently enrolled (2020), and it admitted 936 transfer students for the 2020-2021 school year.

SIPI is a Native-American serving community college located in Albuquerque. It has a typical enrollment of 800 students. SIPI offers associate's degrees and professional certificates. CNM is an open-enrollment community college with nine campuses and centers in Albuquerque and Rio Rancho. It has a 2020 enrollment of 26,771 students. It is a Hispanic-serving institution. CNM offers associate's degrees and professional certificates.

Purpose of the Needs Assessment

The Bridges to Baccalaureate program requires that the students enrolled in the program take a course to address topics such as research ethics, research methods, career development, and provide community support. Thus, this needs assessment will not assess whether the training is necessary or not, but how best to design the mandated training opportunity to maximize effectiveness and usefulness for the students, while considering other factors like the skills and availabilities of instructors, facilitators, many operational sites, students' needs, students' desires, etc. Furthermore, COVID-19 considerations have forced us to consider the feasibility of creating online instruction for this course. Thus, this needs assessment will also analyze factors important to online instructional design.

Stakeholders and Data Collection Methods

Stakeholder Group	Special Considerations	Data Collection Methods
2-year to 4-year transfer students in STEM, esp. underrepresented minorities and Low SES students	This program will have a strong underrepresented minority focus (primarily Hispanic and Native American), so cultural sensitivity is key	Informational interviews about experiences with transferring from 2-year to 4-year college and pursuing a STEM major
UNM Rio Rancho Campus administrator	Will be the lead administrator of the Bridges Program	Information interviews about what infrastructures and support the campus could offer, including hosting an online course
UNM department chairs	Department faculty will mentor the students' research projects before and after transferring to UNM	Surveys to assess: number of available faculty research mentors and their research areas, number of students that can join the department, preferred approach to teaching research ethics and methods, whether faculty are

		available to guest-lecture in the course
UNM academic advisors	Will advise students after transfer to UNM	Survey to assess challenges that transfer students and underrepresented minority students face at UNM, in STEM majors, and doing research, especially with respect to retention
CNM and SIPI department chairs and academic advisors	Will prepare students for transfer to UNM	Surveys (with possible follow-up interviews) to assess challenges of students pre-transfer and their assessment of students' readiness for success post-transfer
Director of the Biomedical Sciences Graduate Program	Potential graduate school for Bridges Program graduates	Informational interview for the characteristics of a successful graduate student and how students can prepare for STEM grad school during undergrad
Group leader at Sandia National Labs	Potential employer of Bridges Program graduates	Informational interview for the characteristics of a successful employee and how students can prepare for STEM employment during undergrad
NIH Program Officer	Representative of the funding agency	Pitch a rough idea of the course to see whether NIH is likely to deem it a strong candidate for support

Needs Analysis Process Plan

The first task will be to create the survey instruments that I will send to UNM department chairs and academic advisors, and CNM and SIPI department chairs and academic advisors. I will next identify the individuals to whom I need to either send surveys or set up interviews. I will start with a search online for the names and contact information of the appropriate individuals. After I identify and interview academic advisors, I will ask if they could recommend a few qualified transfer students that might be willing to speak to me to conduct an interview of their transfer experience. I will prepare a list of interview questions for the student representatives to guide the discussion and allow free-form expression. I will attempt to meet with more than one interviewee at once since I have found that group discussions about potentially difficult experiences empowers the participants to speak more freely. I will use personal connections to Sandia to identify a research manager for an interview.

After conducting the interviews and surveys, I will compile the data to determine gaps, stakeholder preferences, and overall themes to get a final analysis of the instructional needs. I will identify

common themes in the surveys and interviews and categorize them as “must haves” in the instructional design. I will categorize specific or unique issues as potentially “must haves” or “nice to haves” using my judgment or advice from others, and categorize truly niche concerns as “nice to haves.” I will use the aggregated information to begin to design the course. With a rough idea for the course in mind, I will then contact the NIH representative (Program Officer) to learn whether the overall course plan is in line with plans they are willing to fund long-term as part of the larger Bridges to Baccalaureate program. If the Program Officer has additional ideas to increase fundability, I will incorporate those into the instructional design as well.

Potential Constraints and Issues to Consider

A major potential constraint is time. There are many stakeholders that I have determined are essential from whom to gather data, but it may be a great challenge to actually conduct all of the interviews and design, solicit, and assess the various surveys within an acceptable time frame. Therefore, I may need to pare down the number of stakeholders whom I interview, even if I must lose an “essential” perspective.

It is also quite possible that I will have a low response rate to the surveys and requests for interviews I send out. In that case, I will rely more heavily on a literature review of best practices for a similar type of course.

It is not possible, within the constraints of time and scope, to survey and interview enough individuals for a statistically-strong assessment. Therefore, this assessment will necessarily be qualitative and anecdotal. This may be sufficient to design the initial iteration of the course, but I expect that it may need to be heavily refined upon evaluating it after its first roll-out.