



UMASS DONAHUE INSTITUTE • APPLIED RESEARCH & PROGRAM EVALUATION

STEM Starter Academy

Interim Evaluation Summary, June 2014



Introduction

The Massachusetts Department of Higher Education (DHE) created the STEM Starter Academy (SSA) initiative with the goal of building a model for student success in community college Science, Technology, Engineering, and Math (STEM) programs. The initial award to the 15 Massachusetts public community colleges supports those colleges in their efforts to build upon, codify, and extend system-wide best practices that undergird student progress through and completion of STEM curricular pathways. The initial grant includes funding and technical assistance from January through December of 2014.

The UMass Donahue Institute (UMDI) is conducting the STEM Starter Academy evaluation. This document is a brief summary of the data gathered from interviews with key program personnel at each community college. These interviews were the first of six evaluation activities planned for the period of the grant. In the spring, UMDI also collected supplemental student data about individual participants in SSA-funded programs and will collect similar data again in the summer and in the fall. This summer, UMDI will conduct selected site visits and will collect further implementation data from all sites via an online survey. In the fall, UMDI will use a qualitative instrument to collect reflective data about the summer and spring program implementation.

Methods

UMDI conducted interviews with 1-2 individuals at each site from mid-March to mid-April 2014, predominantly with the individuals who hold the primary responsibility for overseeing the project at their site. The interview protocol was developed in conjunction with DHE and focused on program start-up activities, awareness, outreach, and recruiting activities, and programmatic plans for the summer. At the time of the interviews, the main forms of program implementation were recruiting, and most sites were primarily focused on planning for summer program implementation.

Findings - Highlights

By mid-spring semester, all of the sites had begun their recruitment for SSA programming and were engaged with planning the details of their summer academies and bridge programs. Although there are many broad areas of overlap in the colleges' planned strategies for recruiting, retaining, and supporting students, those strategies also have many differences at a more detailed level. Some of these differences reflect the varied circumstances in which each site is embedded – from the colleges' existing programmatic strengths to the particular needs of their target populations – and some differences simply reflect alternative means to similar ends. As the initiative and the evaluation continue and student-level data become available, these differences will offer opportunities for the sites to learn from each other and refine their programs to best serve Massachusetts' community college students.

Highlights from the data:

- Awareness, outreach, and recruiting efforts – Most sites were holding outreach events at their campuses or were making visits or otherwise building relationships with high schools. About half mentioned engaging faculty in these activities or collaborating closely with their admissions offices. A few were developing new marketing materials, either print or online, marketing to parents and families, or working on reaching students farther down the K-12 pipeline.
- Target populations - Sites recruited from a variety of student populations. All but one site primarily recruited high school students for their summer programming. The site that was the exception recruited only current students who were perceived as “wallowing” in developmental math. Most sites targeted their summer programming to graduating high school seniors, but a few sites will run their summer programming in part as dual enrollment programs for high school juniors. In addition to high school students, most sites will allow their current community college students (usually those in their first year)



to participate in SSA summer programming. Four sites planned to work with middle school students to build their interest in STEM and their relationship with the colleges as part of extending a K-12 STEM pipeline.

- Summer programming – The majority of sites (11 of 15 sites) have planned a math intensive focus for their summer programming (although math is part of SSA programming at all sites). Every school is offering financial assistance to students participating in SSA programming. Fourteen of the 15 schools are helping students pay for summer programming itself. The remaining school is asking students to pay for the summer session, and their participation enters them into a lottery for an SSA-supported scholarship in the fall. The length of summer programs varies by site. Of the 11 sites that reported on length, five will run programs that last from 2-5 weeks, four will run programs that last from 6-10 weeks, and two are planning summer programs that will run longer than 10 weeks. After math, the next most common disciplinary focuses for summer SSA programs are engineering and biotechnology, followed by computer science and lab sciences (e.g., biology and chemistry).
- Student support services – Almost all of the sites planned to offer some kind of enhanced advising services. About 2/3 mentioned engaging faculty in advising or making advising discipline-specific, and about 1/3 explicitly mentioned using “intrusive” advising strategies. About 1/2 of sites mentioned increased tutoring, career planning, cohort-based activities, or technology tools (such as advising software or e-portfolios). About 1/3 of sites mentioned creating a physical space for studying or student support, new mentorship strategies, having a STEM coach, or making some support services mandatory or “strongly recommended.”
- Curriculum development – Most sites are focused on contextualizing their math or college skills curriculum for STEM, or on revising their developmental math pathways. About 1/3 of sites are using computer-aided “self-paced” math courses. Six sites mentioned running dual-enrollment programs through SSA. Half of those sites will include dual-enrollment as part of their summer SSA programming.
- Faculty engagement – All sites discussed faculty engagement in SSA in some way. The most common ways in which sites planned to engage faculty in SSA included advising, outreach and recruitment, program planning, as study facilitators, and in curriculum development and alignment.
- Cohort grouping – Eleven sites explicitly mentioned working to build a sense of cohort among their SSA students. The most common strategies for this are 1) building cohort connections through coursework – for example, using group work in classes, creating “learning communities” of students in the same classes, or block scheduling to allow students to move through a sequence of classes together; and 2) creating group-based support activities – for example study groups, regular meetings for enrichment activities, group based advising, a central “go-to person” for a whole cohort, or a physical space for studying, advising, and enrichment.
- Career awareness – Every site will emphasize career awareness/preparedness as part of their SSA programming. The most common strategies for incorporating career awareness are 1) building career exploration into summer bridge programs, 2) using a focus on careers as a recruitment tool, 3) explicitly connecting programs of study with career opportunities, and 4) enhancing or expanding career advising.

Common successes

Four general categories of success were frequently mentioned by the sites (each by about 1/3 of the sites):

- Internal collaboration – Sites mentioned positive collaboration fostered by SSA across divisions, between disciplines, and between administrative staff and faculty.
- Expansion of existing programs – Several sites expanded or enhanced features of existing programs with SSA funding. These included tutoring services, a faculty-facilitated math studio study space, ongoing curriculum development, sending students to STEM-focused conferences, providing professional development for faculty, and replacing ageing lab equipment.



- Recruitment activities – several sites reported a positive response to outreach and recruitment activities. Some reported that local high schools had been very receptive and excited about SSA. Others noted prospective student interest, both from high school and current community college students. A few sites noted high levels of engagement among parents, local industry representatives, and other community members.
- Hiring or staffing – some sites were pleased by the quality of candidates they were able to recruit for SSA staff positions (some of whom already had established relationships with faculty and students), and others welcomed the additional support and programmatic capacity provided by SSA-supported staff.

Common challenges

Several common challenges in SSA implementation emerged from the interviews and fell broadly into two categories: time challenges and coordination challenges. The most common challenges in each category are summarized below.

- Challenges related to time:
 - The quick turnaround from grant initiation to implementation.
 - A large planning/implementation burden coming in the middle of an “already busy semester” with often overbooked administrators.
 - The timing of funding availability came late in the recruitment season to capture the interest of graduating high school seniors, many of whom had already made plans for their summer and fall.
 - Administrative delays in hiring were a problem for some sites, as was attracting qualified candidates to a position with a short and uncertain timeline.
- Challenges related to coordination:
 - Managing many grants with overlapping demands.
 - Collaboratively designing and managing the logistic details of summer programming under tight timelines.
 - Navigating relationships with campus offices and other disciplines engaged in similar activities or interested in similar resources.

Best Practices

Many of the practices contained in the in the “highlights” section of this report reflect “best practices” identified in the literature on increasing community college student success in STEM fields. These include increasing faculty engagement in advising and programming, enhancing or expanding support services, connecting careers and academics, cohort solidification, targeted financial aid, curriculum contextualization for STEM, and discipline specific and/or “intrusive” advising models. In addition to these practices, many schools (1/2 to 2/3) also engaged with these “best practices” in a variety of ways and to different extents:

- Involving industry and alumni to build career awareness and mentorship and
- Creating clearly articulated pathways and criteria for progress in and completion of STEM degrees.