VCU Acceleration: What We Have Learned About Improving Educational Outcomes for Incoming Pre-health Students from Diverse Backgrounds


Abstract:
Retention and graduation rates have been an area of concern for colleges and universities, as numerous reports have indicated that many students are struggling to remain in college and graduate. These concerns are heightened for pre-health students who are required to take rigorous math and science courses as they transition to college. At Virginia Commonwealth University, the VCU Acceleration program was launched to improve retention and graduation rates among incoming pre-health students from diverse backgrounds. The program combined a summer bridge program and an academic year living-learning community. There is strong empirical evidence that these types of interventions assist with educational outcomes. However, our experiences have shown that there are several additional factors that have played into the success of the program, including institutional support, a sustainable infrastructure, and evaluation of the program. Details of the program and educational outcomes in terms of retention, graduation, and matriculation to health professions programs are presented, followed by lessons we have learned that have contributed to the success of the program.

Introduction
The transition to undergraduate study from high school is often filled with challenges for students, resulting in an alarming number of students that are not retained to their sophomore year of college. Data released in 2011 by American College Testing (ACT) program shows the first to second year retention rates at traditional four-year public institutions at 71.9% (ACT data set, 2011), translating to almost 30% of students entering these four-year programs who do not return for their second year of study. The ACT data show similar results of four-to-six year graduation rates at traditional, public, four-year institutions, with only 46.3% of students completing their degree within this time frame (ACT data set, 2011). The issue of retention and graduation becomes more pronounced for students that are interested in pursuing health careers, as this transitional phase is accompanied by the pressure to perform well in challenging science and math courses.

The VCU Acceleration program began in 2005 as an initiative to prepare students from diverse backgrounds for the rigor of the pre-health curriculum at Virginia Commonwealth University (VCU). The program was designed with a flexible framework that would be advantageous to students interested in a myriad of health careers and from different educational backgrounds. The core components of the program, a summer pre-matriculation program and an academic year living-learning community, are methods that have been repeatedly demonstrated as successful in promoting student success and engagement. We have found success in improving student retention and graduation rates using a combination of these methods,
adjusting the interventions in such a way that benefit a wide array of pre-health students, with potential for replication at other institutions. This report will outline key components of the VCU Acceleration Program, compare retention and graduation rates to overall university rates, and summarize lessons learned.

Virginia Commonwealth University and the VCU Pipeline

Virginia Commonwealth University (VCU) is a state-supported institution of higher education and is comprised of two campuses within Richmond, Virginia. Total University enrollment is over 31,000 full and part-time students with 4,200 enrolled in health science programs. Minority and disadvantaged students comprise approximately 35 percent of the University's student body. This positions VCU as the most diverse higher education institution in the Commonwealth of Virginia.

VCU has an extensive record of commitment to recruiting, admitting, retaining, and graduating a significant number of persons from historically underrepresented populations. The MCV Campus was at the forefront of Health Careers Opportunity Program (HCOP) funding when it received its first grant from the Health Resources and Services Administration (HRSA) in 1979. Health professions pipeline programs have been sustained for individuals from disadvantaged backgrounds since that time, largely with university funding. As a result, 14 new programs were implemented from 1985 to 2005. In that same period, academic assistance was provided to more than 1,675 students at 39 partnering schools. From 1985 to 2005, VA-HCOP participants maintained a 94% retention rate in professional schools. In addition, the previous HCOP efforts provided a myriad of lessons in program implementation and a framework for leveraging resources at VCU and among partners within the surrounding communities.

Subsequent to the dissolution of HCOP funds in 2006, VCU endeavored to create a more coordinated health sciences pipeline model (VCU Pipeline) through the efforts of a cohort of faculty in the VCU Grace E. Harris Leadership Institute. The team codified strategies to centralize recruitment, data management, and evaluation for VCU health sciences and research training programs - developing a highly integrated and sustainable infrastructure. With oversight from a campus-wide advisory committee, the VCU Pipeline grew the number of institutional collaborations and strengthened the partnership between the Office of Pre-health Advising and the MCV health sciences campus. Since the launch of the VCU Pipeline, 91 students have entered a range of health professions degree programs (includes students projected to enter programs during the fall 2013 semester).

Academic and Health Sciences Campus Partnership

“The national and university trends in pre-health sciences advising are complex and have implications for quality undergraduate education and advising as well as recruitment of prospective freshmen, undergraduate, and graduate students into health professional schools” (Brandt & Swan, 2001, p. 6). The VCU Office of Pre-health Advising (OPHA) has operated with relative integration with the health sciences campus largely under the auspices of credentialing services provided to VCU undergraduate students. In 2003, under the direction of Dr. Seth Leibowitz, the OPHA took a more activist approach to student advising and developed structured programs that proactively engaged students in their preparation for admission to a health professions school. Through this new approach, the OPHA and the Division for Health Sciences Diversity (DHSD), under the Office of the Vice President for Health Sciences, combined to launch the VCU Acceleration program. The program received institutional support through the commitment provided by the Associate Vice President for Health Sciences, facilitating the initial collaboration between the two campuses. The two units continue to work collaboratively contributing both staff and financial resources to support all facets of the program.

The partnership between the two units had residual effects as it opened avenues to partner with the VCU Office of Undergraduate Admissions to recruit incoming students and the Division of Community Engagement and the development of a Health Sciences Academy program targeting high school students. The relationship also provided a platform to host workshops for pre-health advisors within the southern and northern regions of the country.

VCU Acceleration

Planning for VCU Acceleration began in 2004. Support grew from different interests with compatible goals, coming together from the two campuses. Interest from the Division for Health Sciences Diversity on the MCV campus was formulated out of a desire to centralize and expand efforts to recruit students from diverse backgrounds into professional level training programs on the MCV Campus. On the undergraduate campus, pre-health programs were realigned under a central ad-
vising structure, the University College, as a means to focus on the retention of students through developing and nurturing college success skills in students as part of first-year programming.

The first cohort of 23 students entered the VCU Acceleration program in summer 2005. Starting in 2007, the cohort size expanded to 38 students, so the program could occupy an entire floor in the residence hall where the Acceleration program is housed. The shared academic experiences infused into the student's residence hall was engineered so students could transition from high to college in an environment that values a strong work ethic and peer support for learning.

Students participating in the VCU Acceleration program are incoming traditional freshmen that are eligible for standard first year math and science courses, and have committed to VCU for the upcoming fall semester. Participants mirror the traditional freshman for the large, state funded institution. The program is pitched toward students from a wide array of academic and socioeconomic background who on paper present with promising academic credentials. As such, students enter the program with a wide range of academic ability.

A Unique Learning Community

The key goals for learning communities are to encourage integration of learning across courses and to involve students with “big questions” that matter beyond the classroom. Learning communities take different forms, but one format includes a set of linked courses that focus around a central theme that allows for shared learning to occur (Tinto, 1998). This shared learning allows for continued learning and impact outside of the classroom and often leads to more enriching learning experiences (Tinto, 1998). Learning communities have taken many different forms, from specific interventions designed to assist conditionally admitted students (Heaney & Fisher, 2011), as a way to create engaged and cohesive groups of students that do not have important ties to the university community, such as commuter students (Wathington, Pretlow, & Mitchell, 2010), to communities designed as interventions to promote success in targeted courses (deProphetis Driscoll, Gelabert, & Richardson, 2010). Learning communities allow for an environment where both social integration and academic support are central to the overall learning experience.

The VCU Acceleration learning community promotes excellence both inside and outside of the classroom. While promoting the need for college environments that allow students to connect both academically and socially, Vincent Tinto (1997, 1998) has cited the importance of involvement at multiple levels. Additionally, in the college and university setting, the individual differences among students is evident, making it necessary to look at strategies that promote success for all students, regardless of individual backgrounds (Copeland & Levesque-Bristol, 2011). Therefore, a central component to the admissions process to the program is previous involvement in their school and community, demonstrating their ability to function as a member of a team. The program also requires a personal statement in which students articulate their goals. In this way, the incoming cohort is not only includes a variety of personal demographic profiles, as well as a range of academic ability and health career interest. This has allowed learning experiences to occur outside of the traditional classroom, in more of an unstructured social environment, as students are often excited to learn about the experiences of others in the cohort.

The wide range of high school GPA and college entrance exam scores results in students having varied scores on math and science placement exams when they enter VCU. While the pre-health theme is maintained throughout the entire learning community, the courses that link all of the students together are not science courses. The central courses of the Acceleration learning community are “Introduction to the University” and a core university education requirement known as “Focused Inquiry.” Once students are registered for these classes, they then are placed into an appropriate level Introductory Biology course. This leads to one of the unique aspects of the VCU Acceleration learning community.

The option between two separate Introductory Biology courses creates two learning community options within the overall VCU Acceleration program. Placement into the appropriate level of Biology is dependent upon several factors, including placement exam scores, SAT scores, and health career interest. The Introductory Biology courses, which are distinguished by their larger enrollments, are paired with “focused learning” courses that enroll smaller numbers of Acceleration students. Focused learning courses, coordinated by the Campus Learning Center, capitalize on the strong group dynamic and facilitate students working collectively to develop effective learning strategies to organize and synthesize large volumes of material.

Equally critical to the design of the learning community is the central role that faculty play in the program.
Previous research findings have indicated that students’ greatest perceived gains in learning communities derived from the time, effort, and interactions the students had with faculty members (Rocconi, 2011). All students in the VCU Acceleration program have the same academic advisor, who also serves as the instructor for the Introduction to the University course that all students take their first semester. With this coordination of courses and advisor, students are connected to their advisor on a weekly basis during the transition to college, facilitating informal check-ins throughout the first semester in addition to individual, planned meetings. Additionally, the pre-health advising process begins during the summer as part of the pre-matriculation workshop and is coordinated with faculty in the learning community so timely interventions can be made for students who show early signs they are struggling academically. Learning community faculty are familiar with the program structure and content, providing an added layer of support in working with students and capitalizing on opportunities to synchronize delivery of curriculum.

The Inclusion of a Summer Pre-Matriculation Program

The summer pre-matriculation portion of the Acceleration program was specifically designed to provide students with an in-depth look at the demands of the first-year math and science curriculum at VCU. In our experience, many students that performed well or enjoyed math and science courses in high school come into college with a sense of confidence they will be able to perform well in college level math and science courses. Program leadership have seen many students create extensive and demanding schedules for themselves, without fully understanding potential negative consequences if they are not adequately prepared for these courses.

This lack of understanding becomes more of a concern as recent research has indicated even “academically successful” college students may not enter college with successful study skills or have had to make significant changes to their study habits in order to be successful (Yazedjian, Toews, Sevin, & Purswell, 2008). If this is the case, students may actually be attempting to learn to study while also learning large volumes of new content, making the transition from high school science and math courses to college level even more difficult.

Part of the reason the learning community has been a positive experience for Acceleration students, despite a challenging first year curriculum, is the peer support for learning and strong social network built in during the pre-matriculation workshop and early orientation to college. The pre-matriculation program, although heavily concentrated on adjustment to the university community and academic demands, also provides students with an opportunity to understand and learn about their peers in the program. Students are also given projects to complete over the summer, which fosters teamwork and communication. Pre-health students have expressed to us that they sometimes see their peers as their competition for a seat in medical, dental, or other health professional programs. For students in our program, cultivating an environment of teamwork over the summer promotes an environment that promotes collaborative learning that extends into the academic year.

Program Results

Early results of the VCU Acceleration program have been positive. The goals of the program included increasing retention and graduation rates of pre-health students at VCU. First year retention and four-to-six year graduation rates of students in the VCU Acceleration program are presented in Table 1. Beyond standard university reporting measures, several students have successfully applied and matriculated into health professions programs, ranging from bachelor degree programs to first health professions training programs. Additionally, many students selected VCU as their institution of choice to receive their health professions training. Student data regarding

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*Note. Cohort indicates the year that student entered VCU; VCU retention rates for 2005-2009 averaged 83.6% (Chmura Economics & Analytics, 2011); VCU six-year graduation rate for students entering 2004 were 50.7% (Chmura Economics & Analytics, 2011); * = 4-5 year graduation rates. Students from this cohort still currently enrolled at VCU; ** Includes 2005 and 2006 cohort only.
health career training programs are provided in Table 2.

Lessons Learned/Key Considerations for Health Professions Advisors

Program leadership has learned several valuable lessons while implementing the VCU Acceleration program over the past seven years. There have been several adjustments to the program during this time, as the program’s curriculum has adapted to address student needs. Practical experience and research have driven both the design of the original program and adjustments. A central focus of efforts to improve and change the program has been built around the goal of student success, keeping in mind that students do not always define “success” in the same way (Yazedjian et al., 2008). Several other key factors, such as collaboration between campuses, institutional support, and flexibility in the learning communities play a central role in the success of the Acceleration program, as identified below.

Rigor in the Pre-matriculation Program

One of the strongest components of the summer portion of the program is how accurately the summer curriculum mirrors the level and content of work students will encounter during the academic year. This level of coursework sets the tone for the academic year, exposing students to the content and pace of a first-year student course load. Several students have indicated that they were prepared for the increase in difficulty, but were not prepared for the amount of content they would receive in the same time. In addition, as students understand the rigors that they will encounter during the first-year science and math curriculum, adjustments can be made to their schedules before the semester starts if necessary. This has been especially helpful in courses such as math, chemistry, and biology.

Currently, chemistry placement is based on previous attainment, including high school chemistry grade, overall high school GPA, and math SAT scores. The decision to base chemistry placement on these factors is certainly merited, as research has consistently demonstrated that math ability is correlated with previous success in chemistry courses (Nicoll & Francisco, 2001; Spencer, 1996; Xu, Villafane, & Lewis, 2013). However, prior achievement in math does not completely explain success in chemistry (Spencer, 1996), and therefore alternatives to placement into chemistry courses is often sought out. The summer pre-matriculation program not only provides students with insight regarding the rigor of pre-health programs, but also allows faculty members to provide students with an evaluation of their skills before their performance is
tied to grades and becomes documented on permanent transcripts.

Introduction to the University Course

We have found that the “Introduction to the University” course that students take during their first semester has been a successful strategy for staying connected with our pre-health students. A central component to this is the fact that this course is taught by the pre-health advisor assigned to the program. Several students over the course of the past several years have noted they enjoy being able to see their pre-health advisor every week, as they realize they will likely not have to wait more than a week to have any important questions answered. In addition, a course that focuses on academic success skills and the continuation of acclimating students to the university helps students to set realistic goals and understand the “big picture” of how to ultimately reach those goals.

Flexibility in Learning Communities

The flexibility of the learning communities was the result of two factors: the different needs of students in various pre-health concentrations, and logistical factors of students being selected into the program before advisors are aware of individual academic aptitude. Focusing the learning communities around the Introduction to the University course and then allowing options based on the needs of the students has truly allowed for a “student-centered” learning community environment, where students feel as though their needs are being met by the program.

Institutional Support

An effort this extensive requires institutional commitment to support a core infrastructure that can sustain engagement with program participants over the course of their academic tenure. This has been essential for the OPHA to take a proactive outreach and programmatic approach to advising students. The support needed was in the form of dedicated staff to provide focused advising with program participants throughout the year and faculty to teach the Introduction to the University courses.

Connection and Collaboration Among Campuses

At VCU, the Acceleration program is more than just collaboration among two separate campuses; it is a connection of the undergraduate pre-health office and the graduate level health sciences programs. It is common for admissions representatives to visit graduate school fairs or serve as guest speakers regarding admissions requirements or pathways into healthcare. Acceleration takes a comprehensive approach to introducing admissions requirements, immersing students into the health sciences campus and providing informational sessions from both faculty and students. This requires several programming aspects to occur on the MCV Campus, allowing students to observe professional level students and standards of conduct expected from these students.

An added benefit of the VCU Acceleration partnership is the increased interest from other partners, with a template provided by the existing one. Of note is the work with the Office of Undergraduate Admissions (OUA) and Residential Life and Housing. The OUA provides a culled list of students accepted to VCU who are interested in pursuing a health profession or related science career. Targeted recruitment is of tremendous value and a better alternative to targeting an entire cohort of prospective students. Residential Life and Housing has provided tremendous assistance to the program by designating a learning community floor for the VCU Acceleration Program.

Attention to Building a Stable Operational Infrastructure

The ability to revise, reinvent, or remove ineffective program components is critical (possibly unavoidable) to the student-centered approach employed in the program. The multitude of needs that each student cohort brings to the program demands a commensurate degree of adaptation of both strategic and operational objectives. More primal to achieving this is having a stable decision-making and advising mechanism to effectively evaluate and recommend programmatic changes. Having a clear evaluation strategy provides an evidentiary base to make the correct adjustments without inadvertently disrupting the effective elements of the program. As the program and partnership have evolved, this evaluative rubric has been paramount to sustaining and ensuring the Acceleration program is able to deliver state of the art, high impact learning practices.

Ongoing Programmatic Evaluation

Central to the success of our program is the ongoing program evaluation not only in terms of student academic achievement outcomes, but also satisfaction and perception surveys that are sent out to participants an-
nually. Although the central purpose and goals may have remained the same, the delivery of services central to the program has changed in many meaningful ways since the program began in 2005. The rigor of the summer program has increased, the courses offered during the summer have undergone significant changes, academic year workshops and trainings have expanded, among many other changes. These changes were made through ongoing evaluative efforts aimed at understanding the impact these services are having on our students.

A Pre-health Program

A final lesson of note is the importance that we have placed on making this a pre-health program, allowing early interaction and collaboration among students that have expressed an interest in various pre-health disciplines. This allows for students to learn more about other areas of healthcare not only through the presentations that they receive, but also from their peers that may have had personal experiences either as a patient or volunteer in varied healthcare settings. This aspect of the program has been successful in promoting powerful, outside of the classroom learning experiences.

This collaboration among students in a pre-health setting could also have implications for their long-term education and learning experiences. The importance of interprofessional education has been identified by the Institute of Medicine’s National Academies Press (2001 & 2003) as a method to ensure a competent health workforce in the future that is focused on increasing the quality of patient care. Interprofessional learning opportunities, no matter how small, may make students more receptive to this type of education when it is introduced in their professional health training programs. We also believe it to be a central piece to the success of the VCU Acceleration program.

References


