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Equal Status: Shifting Scholarship Paradigms To Fully Include Community-Based Research Into Undergraduate Research Programs

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EQUAL STATUS: SHIFTING SCHOLARSHIP PARADIGMS TO FULLY INCLUDE COMMUNITY-BASED RESEARCH INTO UNDERGRADUATE RESEARCH PROGRAMS

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ABSTRACT

Undergraduate research (UR) experiences continue to proliferate across all higher education settings. Yet community-based research (CBR) experiences account for a small percentage of UR opportunities. This paper describes the pilot study results of a summer program that is intentionally expanding the paradigm for UR at a public research university to include CBR as an equally valued form of scholarship. Results indicate that CBR opportunities expand participation by underrepresented students in UR. Dedicated program administration by CBR faculty and unique recruitment, design, and programs contributed to program success.

Keywords: community engagement, underrepresented student participation, summer programs, student success, research self-efficacy

BACKGROUND AND INTRODUCTION

Undergraduate research (UR) experiences, defined as inquiries conducted by an undergraduate student that makes an original intellectual or creative contribution to the discipline, continue to proliferate across all higher education settings. Yet community-based research (CBR) experiences account for a small percentage of UR opportunities even though higher education's overall commitment to CBR continues to expand through CBR centers and networks (Council on Undergraduate Research, 2014; Stoecker et al., 2003). New applications to Carnegie Foundation for the Advancement of Teaching Community Engagement Classification increased by 30% in 2015 alone (New England Resource Center for Higher Education, 2015). Despite national efforts to broaden traditional UR programs beyond campus walls with community-based partners (National Academy of Sciences, National Academy of Engineering, and Institute of Medicine, 2011), most research experiences for undergraduates are located on campuses, concentrated in basic and applied science disciplines, and recruit students with higher-than-average grade point averages (Kinkead, 2012; 2003).

Furthermore, traditional UR programs at research-intensive and predominantly white institutions have failed to attract a diverse representation of student participants. While tremendous effort has been given to encourage UR participation by underrepresented students who are African American, female, or academically average, participation by these students accounts for a small percentage of overall UR (Boyd & Wesemann, 2009; Katkin, 2003). The lack of diversity in traditional UR programs may be a predictable consequence of the lack of enrollment diversity on predominantly white campuses and within some research-intensive science disciplines.

Yet within this small subset of underrepresented students, does the practice of providing UR opportunities that are campus-based and restricted to sciences disciplines limit participation? For example, as African American students are largely attracted to academic programs in human services and community engagement fields because of the alignment with passion and values (Carnevale, Fasules,

Porter, & Landis-Santos, 2016), traditional UR opportunities in basic sciences located on campuses may not appeal to many of these students.

This paper describes the pilot study results of a summer research experience that is intentionally expanding the paradigm for undergraduate research at a public research university to include community-based research as an equally valued form of scholarship with the goal to broaden participation in undergraduate research. Specifically, in this study we describe, compare, and evaluate two new summer UR programs, one that is a traditional campus-based program and one that is a community-based program. The community-based UR program was a strategic element in a larger effort to increase the number and diversity of faculty and students involved in engaged scholarship at our university. Our research questions were:

1. How might best practices in UR inform program design for community-based and traditional UR?
2. What are the benefits of integrating community-based and traditional UR programs rather than operating as discrete initiatives?
3. How do student outcomes compare across programs?
4. How does underrepresented student participation compare across programs?

At our institution, the community-based summer UR program is funded at 25% of the level of the traditional UR program and this funding mismatch is common across research-intensive universities with traditional UR summer programs. The intention of the authors is that this study will serve as a road map for colleges and universities with summer UR programs seeking to expand CBR opportunities or underrepresented participation in ways that provide equal status to basic research and community-based research projects.

CBR and Summer UG Programs: Two High-Impact Educational Practices

CBR is much more than traditional research located in the community. CBR is pedagogy where the university and community engage in collaborative, rigorous inquiry designed to address needs within the community (Paul, 2006). High-quality CBR is defined by three fundamental elements that differentiate CBR from traditional research: (a) comprehensive collaboration with community partners is initiated from research question development through dissemination; (b) community knowledge, research methods, and dissemination formats are equally valued when compared to academic knowledge, methods, and publications with community needs, not faculty agendas, driving the approach; (c) social change, rather than advancement of knowledge in a discipline, is equally valued as an outcome of research (Strand, Marullo, Cutforth, Stoecker, & Donohue, 2003).

CBR brings together under one umbrella two highly effective educational strategies: UR and community-based learning (Kuh, 2008). UR is a pedagogy that actively involves students in the inquiry process, while community-based learning situates the inquiry within actual applications. The latter ensures the relevance of the students' inquiry by linking it to the identification, analysis, and solution of real problems in their own communities. The integration of high-impact pedagogies, such as community-based learning, into UR programs is a best practice advocated by the Council on Undergraduate Research (Hensel, 2012) and in white papers funded by the National Science Foundation (Harkavy, Cantor, & Burnett, 2015).

Highly effective UR experiences integrate experiential research activities with an apprenticeship model of student engagement where faculty mentor novice students in the practice of research (Laursen, Seymour, & Hunter, 2012). In these carefully designed experiences, the impact of UR on student learning is profound, especially in terms of advancing students' perceptions of their professional identity and their understanding of the role of research in building new disciplinary knowledge. Through UR, students develop the professional habits and skills of an investigator. The UR experience lifts the veil on the profession of research and reveals the impact of research in deeper ways when compared to traditional classroom-based inquiry (Taraban & Logue, 2012; Russell, 2008; Bauer & Bennett, 2003). Though there is limited research on underrepresented students within UR programs, studies thus far show UR is connected to academic success, retention, and persistence, especially for underrepresented students (Finley & McNair, 2013; Nagda, Gregerman, Jonides, von Hippel,

& Lerner, 1998).

Universities engaging in highly effective UR experiences address the barriers to participation in UR for faculty and students. From the faculty perspective, the Boyer Commission (1998) challenged research universities to address institutional cultures that limit faculty participating in UR programs by implementing promotion and productivity policies supportive of UR and institutional support through extra funding and personnel. Barriers to student participation include lack of awareness of UR opportunities, funding to supplement the need to work, supportive programming that builds a sense of community with peers and faculty, accessible outlets for presentations and publications, and authentic faculty mentoring (Malachowski, Osborn, Karukstis, Ambos, Kincaid, & Weiler, 2015; Laursen et al., 2012; Merkel, 2003).

Mutually Exclusive Paths

While CBR and UR are high-impact educational strategies that support undergraduate success and advance participation in research, the development of these strategies has been largely mutually exclusive in higher education. This may be due, in part, to traditions within disciplines, with the call for expanding UR originating in the basic sciences (Kinkead, 2012) and the methodologies for CBR originating in social sciences (Strand et al., 2003). Some CBR researchers are critical of basic science methodologies involving the studying of the community as a disengaged object and exploiting the community for purposes only relevant to higher education (Stoecker & Tryon, 2009). Similarly, some researchers in basic sciences question the rigor and validity of CBR when community partners are co-creators of knowledge (Cooke & Thorme, 2011), and the time and effort required to integrate the community decision-making into research (Stocking & Cutforth, 2006).

Also contributing to the mutually exclusive development of UR and CBR has been the influence of external funding opportunities of UR in basic research. National Science Foundation (NSF) and National Institutes of Health (NIH) funding of basic research, $7.6 billion and $31 billion respectively in 2014, create significantly more UR opportunities in basic sciences. Almost 80% of NSF funding supports basic research at colleges and universities, engaging over 29,300 undergraduate students in 2014 (American Association for the Advancement of Science, 2013). CBR often is supported through the more than 800 community foundations in the United States. The decentralized and confidential reporting laws surrounding community foundations have made determining the collective level of funding for CBR largely unknown. It is reported that community foundations provide over $5 billion of grants annually and a portion of this supports CBR (Kelly & Duncan, 2014). This funding ambiguity for CBR projects certainly complicates the integration of CBR into UR.

While much of the federally funded UR takes place on campuses in labs, this may change dramatically in the future as NSF now requires research proposals for grants to address the project's societal value under the *Broader Impacts Criterion*. The focus on the broader impact of federally funded research is expected to increase public engagement in research (NSF, 2014). Consequently, we may see greater integration of CBR into UR.

Integration of UR and CBR

On our own campus, the mutually exclusive development of UR and CBR initiatives mirrored the national trend. For example, in 2012 our university initiated an undergraduate summer research program called the Charlotte Research Scholars (Research Scholars), which culminates in a research symposium. Projects largely emanated from faculty in basic and applied sciences. A document analysis of abstracts from 2012, 2013, and 2014 symposia (N=248) indicates that 2% or 6 abstracts described their research as community-based. At the same time, our campus was expanding its commitments to community engagement. A group of CBR faculty had started a separate annual event showcasing service learning and community-based research. There was virtually no overlap between faculty and students at these events. In 2014, faculty leaders from the Research Scholars program and CBR began informal conversations to explore what a more inclusive undergraduate research event might look like. This group believed that each approach, traditional and community-based, would be strengthened and validated by a combined experience.

This desire to more formally integrate UR and CBR efforts was the motivating force and guiding principle behind the development

of the Charlotte Community Scholars (Community Scholars) program, which was piloted in the summers of 2015 and 2016. The mission of the Community Scholars program is:

> to provide students with an immersive civic engagement research experience that strengthens the academic mission of the university, advances the public good, and addresses critical community needs. During the summer, students will engage in community-based learning and professional development opportunities while reflecting on the challenges and rewards of working for the public good. These summer experiences will be supported by intentional program leadership, enthusiastic faculty mentors, and robust community partners. Students will grow in their capacities as engaged scholars, skilled employees, and democratic citizens. The community will benefit from deeper engagement with the university in addressing critical community needs (authors, 2015).

Through this integration, we hoped the Community Scholars program would benefit students through the provision of personal and professional development opportunities, and the findings and insights arising from the inquiry process would benefit our community partners. The campus community would also benefit as the Community Scholars program helps to broaden the campus' definition of research to include CBR, while engaging a larger and more diverse group of students in the UR experience than when narrower definitions of research prevail (O'Donnell, Botelho, Brown, Gonzales, & Head, 2015).

Recognizing that a variety of definitions for community-based research and service learning exist, the Community Scholars program uses the following criteria to select projects for its program. First, there must be a community-based project with a community-based partner who has an ongoing research collaboration with a faculty member. That research collaboration must be characterized by the community-based partner and faculty member as mutually beneficial and with comprehensive engagement where the community partner is involved with all stages of the UR research process including reflection. Second, there must be co-mentoring by the faculty and community-partner of the Community Scholar. Finally, the project must advance the public good by addressing critical community needs.

Integrating Best Practices in UR into the Community Scholars Program

In creating our mission statement for Community Scholars, we were largely influenced by the characteristics of high-quality CBR as described by Stand et al. (2003) of comprehensive community partner collaboration, community needs, and focus on social change. Furthermore, because we wanted a UR research program on equal footing with our traditional UR research program, we intentionally incorporated other best practices of excellence in UR, as recommended by the Council on Undergraduate Research in its *Characteristics of Excellence in Undergraduate Research Report* (Hensel, 2012). The report outlined 12 broad categories of essential characteristics, as well as sub-categories of each characteristic, that can serve as guidelines for practitioners seeking to ensure excellence in UR programming. The following best practices were the most relevant to our goal of creating a new paradigm for UR through the Community Scholars program:

1. A summer research program
2. Professional development opportunities
3. Support and recognition
4. Authentic opportunities to calibrate knowledge (dissemination)
5. Societal relevance and community engagement
6. Integration with other high-impact practices
7. Broad disciplinary participation and wide cross-section of students
8. Integration of best practices in undergraduate education
    a. Early and sustained involvement
    b. Establishing and communicating expectations
    c. Developing a community of student scholars

Practices One through Four: The Foundations of Research

According to the Council on Undergraduate Research Report, "a robust summer research program is essential to a vibrant undergraduate research environment" (Hensel, 2012, p. 16). Our university had already navigated this step in 2012 with its creation of the Research Scholars program, with the mission of engaging "high-achieving undergraduate students in research and professional development in their field of interest" (website). We created the Community Scholars as a Research Scholars "sister" program, designed to leverage the success and resources of the Research Scholars while also expanding the boundaries of the Research Scholars as a highly competitive program focused on traditional disciplinary research.

As shown in Table 1, the Research Scholars program already incorporated many Council on Undergraduate Research recommended best practices, including an immersive, faculty-mentored, summer-long research experience augmented by ongoing professional development opportunities and community-building social events. The Research Scholars program also provided a generous stipend for student scholars and a nominal stipend for faculty mentors, and it required all scholars to participate in the summer research symposium, which was the culminating highlight of the program—all best practices recommended by the Council of Undergraduate Research report.

The Community Scholars and Research Scholars programs were intentionally designed to be extracurricular, recognizing that many

Table 1: Comparison of Charlotte Community Scholars and Charlotte Research Scholars Program Features Using the Council of Undergraduate Research, *Characteristics of Excellence in Undergraduate Research (UR)* Topology.

Characteristic of UR Excellence and Common Program Elements	**Community Scholars**	**Research Scholars**
A summer research program. Common calendar. 10 weeks beginning mid-May and ending late July.	Part-time (20 hours per week, $2000) and full-time (40 hours per week, $4000) stipends paid. Part-time allows for other employment.	Full-time (40 hours per week, $4000) stipends paid. No other outside employment allowed.
Professional development opportunities. Weekly professional development for two hours on campus. Common Topics: Responsible Conduct of Research; Thinking About Graduate School; Three Minute Thesis; Research Posters.	Unique Topics: Scholar Orientation; Engaged Scholarship; Working Across Differences; Reflection In Action.	Unique Topics: Professional Writing; Research Fellowships; Fellowships and Honors Programs; Academic Resumes.
Support and recognition. Program coordinated by experienced faculty member in UR. Supervised by faculty mentor who receives a stipend ($500).	Coordinator is a faculty member with extensive experience in CBR. Supervised by faculty mentor who receives a stipend ($500) and a community mentor.	Coordinator is a faculty member with extensive experience in traditional laboratory research.

Characteristic of UR Excellence and Common Program Elements (con't)	**Community Scholars (con't)**	**Research Scholars (con't)**
Authentic opportunities to calibrate knowledge (dissemination). Common Set of Deliverables: Professional Vitae; Research Abstract; Research Poster; Final Report. Presentation and Competition in the Summer UR symposium.	No unique awards for CBR.	Award criteria designed with traditional research in mind.
Societal relevance and community engagement.	Community Scholars work with community partners to identify community needs and explore potential solutions. Identify this community need is a component of the application process. Community need is explicitly addressed in deliverables.	Research may have social relevance but not explicitly stated in application or deliverables.
Integration with other high-impact practices. Many of the participants have commonly experienced the following high-impact educational strategies (Kuh, 2008) offered at the University: Undergraduate Research; Community-Based Learning; First-Year Seminars; Common Reading Experience; Learning Communities; Writing-Intensive Courses; Collaborative Assignments; Global Learning; Internships; Capstone Courses.	Common High-Impact Strategy: Undergraduate Research Unique High-Impact Practices: Community-Based Learning	Common High-Impact Strategy: Undergraduate Research
Broad disciplinary participation and wide cross-section of students. Open to all majors.	Students with previous community service experience prioritized for acceptance.	Students with high grade point average and disciplinary fit prioritized for acceptance.

Characteristic of UR Excellence and Common Program Elements (con't)	Community Scholars (con't)	Research Scholars (con't)
Integration of best-practices in undergraduate education *a. Early and sustained involvement.* *b. Establishing and communicating expectations.* *c. Developing a community of student scholars.* Common Elements include a Program Orientation; Scholar and Mentor Expectations; and Professional Development and Social Events.	Unique elements: Recruitment of sophomores, juniors, and seniors. Guidelines for Community Mentor Expectations.	Recruitment of predominantly seniors and a few juniors.

students did not have access to financial aid in the summer. In fact, the stipends provided a mechanism for providing financial aid to students, as many students use summer employment to subsidize year-round educational expenses.

Building on the infrastructure and success of the Research Scholars, we designed the pilot Community Scholars program to operate according to the same program schedule, from late May to late July. Like the Research Scholars, our scholars were required to meet weekly as a cohort for professional development; half of the sessions embedded Community Scholars with Research Scholars, and half of the sessions were small-group Community Scholars meetings only, led by the Community Scholars coordinator who was intentionally recruited because of her extensive record as a CBR scholar. The integrated professional development covered the following topics: *Responsible Conduct of Research, Research Posters and the 3-Minute Thesis,* and *Thinking About Graduate School.* Topics covered for Community Scholars students only were *Scholar Orientation*, *Engaged Scholarship*, *Working Across Differences*, and *Reflection in Action*. Community Scholars were required to submit the same set of deliverables (professional vitae, research abstract, research poster, and final report) as the Research Scholars students, using the same templates. They also competed with the Research Scholars students for research awards at the summer research symposium. In other words, the Community Scholars had the exact same research expectations as the Research Scholars, which was vital to our goal of bringing engaged scholarship parity with traditional scholarship. By leveraging the existing Research Scholars program, we were thus able to accomplish the first four best practices listed above into our Community Scholars pilot program.

Practices Five through Eight: Innovations for UR

The four remaining best practices required the implementation of innovative elements that would become the foundation for our new undergraduate research paradigm. First, as mentioned above, the Community Scholars program involved the intentional integration of community-based learning, a well-established, high-impact educational practice, into our UR programming. We achieved this integration by funding *only* those research project proposals that fit our definition of community-engaged scholarship (collaboration, community need, social change focus) *and* included a committed community partner. This expanded the relationship of the student scholar from dyadic (student mentee and faculty mentor) in the Research Scholars program, to triadic (student, faculty, and community partner) in the Community Scholars program. The Community Scholars project proposal solicitation form submitted by the faculty mentor required that faculty identify their community partners and describe the comprehensive and mutually beneficial nature of the partnership.

This triadic design principle of the Community Scholars program was also the vehicle through which we achieved the fifth best practice listed above: Social Relevance and Community Engagement. Our projects required

both a research component and a community-learning component, which, as mentioned above, situated the inquiry process in the "real world." For example, scholars worked onsite with community members to identify needs or problems and to explore potential solutions. They then worked with their faculty mentors to develop research questions and assessment plans that they then executed with the entire team. Finally, the results from the research were captured in the student research posters, converted into 3-minute theses, and shared with the campus and community at the summer research symposium.

Ensuring the social relevance of the research is a UR best practice because many studies have shown it enhances the benefits of the experience for all students, and the effects are especially significant for under-represented students (Kuh, 2008; O'Donnell et al., 2015). Students feel more connected to and compassionate about research that has a clear link to the social good and allows them the sense of "giving back" to society. Examples of this connection from our pilot Community Scholars program include students exploring the problem of food insecurity among college students while volunteering at and assessing client intake forms at the on-campus student food pantry; students introducing under-represented middle-school students to the engineering process through the construction of a solar-powered rainwater collection system for a local community garden; and students bridging the digital divide through a technology-training program in a local supportive housing community. Several of these projects had actually begun as community-based learning (or service learning) projects that placed students as volunteers in these sites and lines of inquiry and research dimensions were developed once students came into the Community Scholars program. This was a coincidental observation (not required for funded Community Scholars projects), but it did provide an opportunity for faculty and students who had been working together on service learning projects during the academic year to continue and expand their relationships with their community partners during the summer. Regardless, the design of our Community Scholars projects ensured best practice #6 above—the intentional integration of two proven high-impact educational practices: community-based learning and UR (Kuh, 2008).

These design features of the Community Scholars research experiences also help ensure the remaining best practices: participation of diverse disciplines and students, and the integration of best practices in undergraduate education that ensures the educational impact of the program (Chickering & Gamson, 1999). Regarding the latter, research has identified specific implementation features of pedagogical practices upon which their success is derived. Some of these with direct relevance for UR were identified by the Council on Undergraduate Research, and include early and sustained involvement; clearly communicated expectations; and peer-to-peer interactions that help to build a community of scholars (Hensel, 2012). We built on the efforts and success of the Research Scholars program and adapted their *Scholar and Mentor Expectations* for use with Community Scholars participants; the major addition dealt with issues related to the community partner's role in the relationship. Both sets of expectations were shared with all prospective mentors and scholars who agreed to abide by them throughout the summer program. The Community Scholars coordinator was available to help mediate any problems that arose when expectations of any participants were not upheld, and there was a formal midterm feedback form used to solicit and report any problems or misunderstandings to the coordinator. We also leveraged the existing community-building activities of the Research Scholars program to provide opportunities for our scholars to interact with each other, as well as with the larger community of Research Scholars. The Community Scholars coordinator provided bi-weekly opportunities for Community Scholars students to interact and share challenges unique to their work in the community.

Diversity: The Benefit of our Flexible and Inclusive Approach to CBR Program Design

There were also aspects unique to the Community Scholars (i.e., not in common with the Research Scholars) that, as a result, attracted a diverse pool of student applicants and enhanced student satisfaction in our program. First, we provided the option of having two (part-time, 20 hours per week) scholars work together on one project (both mentored by the same faculty member and working at the same community site) instead of the sole option for the Research Scholars of one full-time, 40-hours-per-week student per project. This carried

several benefits, including allowing more students to participate in the program, ensuring that students had ongoing peer-to-peer interactions, and allowing students who must continue working during the summer to participate as part-time scholars. Over the course of the two-year pilot, 62% of students (N=39) worked as a two-person team and the part-time option turned out to be anecdotally one of the most popular aspects of our program, from the perspectives of mentors, scholars, and community partners.

Another unique aspect of the Community Scholars program that we think contributed to best practices was our use of scholar selection criteria that differed from the Research Scholars in several ways. First, the Research Scholars program was limited to rising juniors or seniors and its selection decisions were based primarily on grade point average (GPA) and disciplinary fit with faculty projects. In order to attract a more diverse group of students we opened the Community Scholars program to rising sophomores and above, and we placed more weight on past community service experience than on student GPA. Besides producing a very diverse pool of scholars, as described below, this also allows us to offer earlier and sustained engagement experiences, which is a best practice for any high-impact educational pedagogy and a desired feature of our UR program (Kuh, 2008).

METHODOLOGY

The Application Process

Faculty Application. A request for proposals for Community Scholars pilot projects was sent via a targeted email to university faculty and professional staff during Spring 2015 and 2016 connected to CBR or service-learning groups. During the pilot years, we made the intentional decision to seek community-based projects primarily from experienced CBR faculty, rather than students or community partners as a way to keep the pilot small and prioritize experienced faculty mentors in CBR. As discussed in the literature review, much of the success of the UR experience is derived from the depth of the faculty mentorship. It is the faculty mentor and community partner who are supervising the daily activity and learning of the Community Scholars student and these responsibilities are clearly articulated in the application request for project proposals sent to faculty. As shown in Table 2, 11 projects and community partners, submitted by 13 faculty mentors from a diverse range of academic units, were funded for the 2015 pilot program. In the 2016 pilot program year, there were 16 projects and community partners, submitted by 20 faculty mentors. Community partners included both governmental agencies and non-profit organizations.

Table 2: Charlotte Community Scholars: Project Titles Pilot Years 2015 and 2016

Project Titles	Faculty Disciplines	Community Partners
What are the Safety Concerns of Enderly Park Residents? Understanding the Problem and Identifying Solutions (2015)	Geography and Urban Planning	Greater Enderly Park Neighborhood Association
Scrabble Club: Enhancing Word Learning through Engagement (2015)	Reading and Elementary Education	Communities in Schools and Charlotte-Mecklenburg School System
Bridge to Engineering: STEM Service Learning (2015)	Civil Engineering and Education	Friendship Gardens
Methods of Internal Evaluation Used by Non-profits to Explore the Juvenile Court System and Measure Parent Satisfaction on Trainings(2015)	Psychology	Council for Children's Rights

Project Titles (con't)	Faculty Disciplines (con't)	Community Partners (con't)
Connections through Technology: Bridging the Digital Divide for Men in the Supportive Housing Community (2015)	Social Work and Sociology	McCreesh Place, Supportive Housing Community
Community Stakeholders' Understanding of and Experience with Race and Racism (2015)	Social Work	Race Matters for Juvenile Justice and Mecklenburg County Courthouse Services
Meeting the Needs of Youth Entering Protective Custody: Examining Utilization of Strengths within Assessments (2015)	Psychology	Teen Health Connection
Serving Students Facing Food Insecurity (2015)	Psychology	UNC Charlotte Student Food Pantry
State of the Plate Research (2015)	Anthropology	Charlotte Mecklenburg Food Policy Council
Learning Lab (2015)	Gender Studies	Women & Girls Research Alliance
Cotton & Collards: Unearthing Stories of Home Through Kitchens and Closets (2015)	Theatre Education	Sow Much Good
Girls Data Portal Project (2016)	Gender Studies	Women & Girls Research Alliance
Reduce Recidivism Using Human-Centered Design Methods (2016)	Graphic Design	Changed Choices
REACH Farmers' Market Evaluation (2016)	Public Health	Cabarrus County Health Alliance
Refugee Resettlement in the Charlotte Area (2016)	Political Science	Catholic Charities Diocese of Charlotte
Education Affairs in the Hispanic Community in Charlotte (2016)	Languages and Cultural Studies	Latin American Coalition
Using Media Literacy Training to Promote Violence Free Dating Among African American Youth (2016)	Social Work	I AM not the Media
Evaluation of the Involuntary Commitment Population in Mecklenburg County (2016)	Psychology	Mecklenburg County Public Defenders Office
Evaluation Exploring Empowerment, Usefulness, and Retention (2016)	Education	Charlotte Teachers Institute
Applying Outcomes of the Regional Sustainability Program CONNECT Our Future at the Local Level (2016)	Public Administration	Centralina Council of Governments

Project Titles (con't)	Faculty Disciplines (con't)	Community Partners (con't)
Connecting Past and Present in NoDa: Mill Village, Arts District, and Neighborhood Future (2016)	History	NoDa Neighborhood and Business Association
Race Matters for Juvenile Justice: The History of Structural and Racial Exclusion (2016)	Social Work	Race Matters for Juvenile Justice
West Boulevard Neighborhood Coalition Food Security Initiative (2016)	Sustainability	Institute for Social Capital
Stand-Alone Cost Effective PV Lighting (2016)	Electrical and Computer Engineering	Simmons YMCA
Owned and Operated Grocers and the Seeds for Change Project (2016)	Sustainability	Institute for Social Capital
How Can Geographic Information System Technology be used to Help Facilitate Change and Organize Sustainable Planning Practices in Communities?(2016)	Geography and Earth Sciences	Enderly Park Community
Trickster's Tale (2016)	Theatre	ImaginOn
2016 CTI Summer Research Experience for Teachers: Connecting K-12 Teaching and the Study of Nanoscale Science (2016)	Education	Charlotte Teachers Institute
Court Camp: Real Life Myth Busters (2016)	Criminal Justice	Mecklenburg County Trial Court Administrator's Office

Student Application. Students applied for specific projects using an online application asking them to explain their previous research and community-based experience, as well as their future plans for graduate study and careers. Because of the newness of the program, most student applicants were referred by faculty mentors who wanted a specific student working on the project. In general, Community Scholars were more diverse, from more disciplines, and had a significantly lower average GPA than their Research Scholars counterparts as shown in Table 3. (Please see next page.) The data reported for enrollment status and grade point average is frequency, while ethnicity and gender data is percentage.

Keeping Collaboration and a Community Focus

In the application process, faculty mentors had to identify a community partner and a potential research question or concept for a student-led project. Faculty selected in the pilot years had longstanding CBR partnerships as articulated in the application and demonstrated shared leadership with community partners in the research agenda and Community Scholars student supervision.

The Curriculum

Weekly program meetings comprised most of the formal curriculum of the program. The purpose of the program meetings was threefold: 1) to build relationships between students, faculty, and community partners within the context of research, 2) to teach the foundational skills of UR from the perspective of CBR, and 3) to showcase the outcomes of the CBR projects. The Community Scholars coordinator held orientation sessions for scholars and faculty mentors. In each session, the coordinator reviewed the program expectations, dates, and requirements, and emphasized the unique aspects of the new Community Scholars program, in contrast to the existing Research Scholars program. This included information and as-

signed readings on the purpose, goals, and methods of CBR and engaged scholarship. As shown in the Summer Program Schedule (Table 4), Community Scholars were required to attend professional development sessions with the larger group of UR program participants including the Research Scholars and alternating Community Scholars meetings with the scholars and the Community Scholars coordinator. The combined workshops focused on research skills relevant to traditional and CBR approaches.

For example, the Community Scholars coordinator conducted workshops on the critical role of the community partner in CBR, the importance of reflection, and implicit biases and strategies for working across difference. These workshops focused on the best practices of CBR are intentionally developed to articulate a clear curricular distinction between CBR and traditional research. As noted previously, high-quality CBR is community co-created, collaborative, grounded, and socially changing (Strand, Marullo, Cutforth, Stoecker, & Donohue, 2003). Therefore, high-quality CBR is not traditional research co-located in the community.

Faculty mentors and community partners are fundamentally responsible for coaching the Community Scholars student through the CBR project. It was the responsibility of the students, faculty mentors, and community partners, with guidance from the Community Scholars coordinator, to develop work and research schedules and to plan the completion of all program deliverables, which included an abstract, poster, and final report. Two social events were scheduled as opportunities for relationship building between students, faculty, and community partners within the Community Scholars program and across programs with the Research Scholars students and faculty. Scholars participated in the Summer Research Symposium, which included Community Scholars and Research Scholars students during the eighth week of the program, and in the ninth week, scholars submitted a final report to the Community Scholars coordinator.

Table 3: Charlotte Community Scholars and Charlotte Research Scholars Characteristics

	2015		2016	
	CCS[2]	CRS[3]	CCS	CRS
Student Status				
Full-time Students (40 hours per week)	6	54	9	58
Part-time Students (20 hours per week)	10	0	14	0
Avg. GPA	3.1	3.7	3.29	3.7
Ethnicity[1]				
African American			16%	11%
Asian			0%	5%
Caucasian			56%	65%
Hispanic			16%	8%
Multi-ethnic			5%	6%
No response given			7%	5%
Gender[1]				
Female			56%	54%
Male			44%	46%

[1] Incomplete data for 2015 on racial/ethnic diversity and gender. Demographic information collected from post-program surveys.

[2] CCS = Charlotte Community Scholars Student Participants

[3] CRS = Charlotte Research Scholars Student Participants

Table 4: Bi-monthly Professional Development and Meeting Schedule

Meeting	Topic	Participants
1	Scholar and Faculty Orientation – Foundations of Community-Based Research	CCS[1]
2	Responsible Conduct of Research	CCS and CRS[2]
3	Creating Research Posters and Abstracts	CCS and CRS
4	Reflection in Action	CCS
5	Thinking About Graduate School	CCS and CRS
6	Cookout	CCS and CRS; Faculty, Students, and Community Partners
7	Working Across Difference	CCS
8	Preparation for Symposium	CCS
9	Ice Cream Social	CCS and CRS; Faculty, Students, and Community Partners
10	Practice "Elevator Pitch" for Symposium	CCS and CRS
11	Research Symposium	CCS and CRS; Faculty, Students, and Community Partners
12	Program Wrap Up and Submission of Final Report	CCS

[1] CCS = Charlotte Community Scholars Student Participants

[2] CRS = Charlotte Research Scholars Student Participants

Evaluation and Results

The Office of Educational Innovations within the College of Computing and Informatics conducts an evaluation of all summer UR programs, including the Community Scholars and Research Scholars programs. The evaluation consists of a nationally validated survey designed to evaluate the program effectiveness for a specific subset of Research Scholars participants, the Computing and Information Sciences and Engineering Research Experience for Undergraduates (CISE REU), a UR program funded through the National Science Foundation (Rorrer, 2016). The survey consists of measures for the following outcomes: 1) research self-efficacy, 2) intentions to attend graduate school, 3) attitudes toward discipline of UR project, 4) help-seeking and coping behaviors, 5) grit, 6) research skills and knowledge, 7) leadership teamwork, and 8) professional identity as a scientist. The post-survey also includes a mentoring satisfaction scale and a general program satisfaction scale. The Community Scholars program decided to use this instrument for evaluation purposes during the 2016 pilot year, the second year of the pilot, to allow for program comparisons between Research Scholars and Community Scholars. We believe that using the evaluation instrument developed for a traditional UR experience would provide data in our efforts to seek equal status and institutional support.

Students were invited by direct email invitation to participate in a pre- and post-assessment. Participation in the survey was voluntary and confidential. Students provided informed consent before responding. Community Scholar participants were asked to self-evaluate and rate the degree to which the Community Scholars program strengthened each dimension.

The items asked were questions on a Likert scale with 5 being the most positive response and 1 being the least positive response.

Positive Attitudes Regarding Research Skills and Knowledge

As shown in Table 5, mean scores on the post-program survey for Community Scholars and Research Scholars respondents indicated high positive responses on a five-point Likert scale ranging from 1 (nothing at all) to 5 (a great deal) regarding how confident participants are in their research skills and knowledge after completing the program. When compared to Research Scholars means, Community Scholars students generally expressed higher responses on variables that were socially interactive, like collaboration. Research Scholars students generally expressed more confidence regarding formal research skills like proposal writing. This result makes sense given that prior community engagement experience was prioritized over academic credentials for Community Scholars students, compounded by the collaborative nature of the Community Scholars projects. Overall, the range of mean scores of Community Scholars and Research Scholars indicates positive attitudes regarding their research skills and knowledge.

Table 5: Percent and Standard Deviation of Post-Program Participant Survey: Research Skills and Knowledge

	Charlotte Community Scholars (n=7)		Charlotte Research Scholars (n=25)	
	Mean	SD	Mean	SD
Working collaboratively with others	4.43	.79	4.20	.96
The nature of the job of a researcher	4.00	1.16	3.92	.86
Relate results to the "bigger picture"	4.29	.76	3.92	.86
Explaining my project to people outside my field	4.14	.69	4.08	.70
Problem-solving in general	4.43	.54	4.40	.65
Application of the scientific method	4.29	.76	3.84	1.14
Understanding and summarizing journal articles	4.14	.69	4.00	.76
Research proposal write up	2.71	1.25	3.24	1.09
Research presentation preparation	3.71	1.11	4.12	.73
Research presentation	3.71	1.11	4.20	.65
Application to graduate school	3.57	1.51	3.52	1.08

Practical Significance of Research Self-efficacy and Help Seeking / Coping Outcomes

Nonparametric statistical tests indicated no significant variation between pre-test and post-test program survey Community Scholars responses. However, Cohen's effect size value (Cohen, 1977) suggests a moderate effect (criteria is d=.50) for the difference between pre -test and post-test responses for Research Self-efficacy (d=.49) and Grit (d = .29), and a moderate to large effect (criteria is d = .80) for Help Seeking and Coping (d=.65) responses as shown in Table 6. The remainder of the indicators, intentions to attend graduate school, attitudes toward discipline of UR project, research skills and knowledge, leadership teamwork, and professional identity as a scientist, all had a small effect of .20 or less.

Satisfaction with Mentoring and Intention to Maintain Mentoring Relationships

As shown in Table 7, when asked to report their satisfaction with faculty and community mentorship on a scale from 1 (Strongly Disagree) to 5 (Strongly Agree), Community Scholars program participants were very satisfied with the faculty and community mentorship, with means ranging from 4.57 to 5.00. In addition to the post-program survey, the Community Scholars coordinator collected the following information from scholars during the last week of class: Did they plan to continue working with their faculty mentor after the end of the Community Scholars program? One hundred percent of scholars said yes. Likewise, 100% of the scholars indicated their intention to continue working with their community partner after the end of the Community Scholars program.

A Community Scholars Project Wins Honorable Mention in 2015 and 2016

The culminating integrated research symposia showcased all of the UR projects (97, 106) from the Community Scholars (11, 23) and Research Scholars (86, 83) scholars. Seven awards were given: three in the categories of Social Sciences, Humanities, Education, Business, and Arts; Natural Sciences and Public Health; and Engineering, Nanomaterials, and Computing. Four honorable mentions were awarded drawing from all categories. The criterion for judging the posters was the same for Research Scholars and Community Scholars participants. Two Community Scholars students received an honorable mention, one in each pilot year, a rate that approximates the proportion of awards given to Research Scholars students. Given the newness of the Community Scholars program, disproportionality of projects when compared to the Research Scholars program, and the few awards given, we were pleased with this outcome and interpreted this as recognition of the vigor and acceptance of the approach.

Table 6: Mean, Standard Deviation, and Cohen's d Effect Size for Pre- and Post-test Surveys, Charlotte Community Scholars

	Pre		Post		
	Mean	SD	Mean	SD	Cohen's d
Research self-efficacy	52.4	7.2	61.0	7.4	.49
Intentions toward graduate school	34.6	10.9	32.3	13.9	.18
Attitudes toward discipline of UR project	39.4	1.9	39.9	3.1	.19
Help seeking and coping	12.9	1.8	11.9	1.2	.65
Grit	25.3	1.7	25.9	2.4	.29
Research skills and knowledge	85.5	17.2	89.0	20.4	.18
Leadership and teamwork	40.4	3.9	39.7	4.3	.17
Professional identity as a scientist	14.9	8.6	14.5	8.6	.05

Table 7: Mean and Standard Deviation of Charlotte Community Scholars Post-Program Survey, Satisfaction with Mentor

My mentor:	Mean	SD
was accessible	4.71	.49
demonstrated professional integrity	5.00	0
demonstrated content expertise in my area of need	5.00	0
was approachable	4.86	.38
was supportive and encouraging	4.71	.49
provided constructive and useful critiques of my work	4.71	.49
was helpful in providing direction and guidance on research project issues	4.57	.54
answered my questions satisfactorily	4.71	.49
acknowledged my contributions appropriately	4.86	.38
suggested appropriate resources	4.86	.38
challenged me to extend my abilities	4.71	.49

Discussion

There are different strategies for gaining equal status. Rather than building a discrete summer undergraduate community-based research program, our approach was to join forces with the traditional UR program that was currently in place and supplement with unique professional development focused on CBR best practices. This inclusive approach, rather than mutually exclusive paths, was built on the idea that our programs, community-based and traditional, would be strengthened as a result of integration especially as it relates to engaging a larger and more diverse group of students. Our intention was to address the irony that in spite of research showing that women, students of color, first-generation, and other at-risk groups of students benefit the most from UR experiences, they are the very students often excluded from highly competitive traditional UR programs (Kuh, 2008; Malachowski, Osborn, Karukstis, & Ambos, 2015).

The results of our pilot program indicate the Community Scholars outcomes are on par or slightly better on some measures than the outcomes for the Research Scholars program. From an outcomes perspective, this positions our program well as we seek equal funding support. Furthermore, although there were not control groups of mutually exclusive programs, the strategy of integrating summer UR and CBR programs, rather than operating them as mutually exclusive efforts, appears to be a promising approach to bring a greater proportion of underrepresented students into the high-profile research arena.

As campuses consider designing summer undergraduate CBR programs, using the best practices frameworks used broadly in the highly established field of UR is transferrable and useful, whether considering a stand-alone CBR program or a combined CBR and traditional research program. In addition, for traditional UR programs expanding into CBR, we recommend customizing the programmatic elements of the program, like ensuring CBR expertise of the coordinator and faculty mentors, using recruitment criteria that emphasize community-engagement experience rather than GPA, including flexible program design that allowed for part-time employment, and adding professional development focused on CBR methodologies. As a result of this pilot, the university has decided to increase Community Scholars funding by 30%.

Limitations and Recommendations for Future Research

Future areas of research will include an exploration of the ways in which the traditional student researchers in the Research Scholars program benefitted from the integration of programmatic elements with the Community Scholars program. For example, does integration provide a learning opportunity to understand design and measurement of broader impacts?

This study also highlighted some weaknesses in the UR programs. For example, while we felt like the Community Scholars program and CBR methods had achieved a measure of equal status having won an award based on traditional research standards, we also felt like the unique aspects of the program and exemplary demonstrations of CBR were not specifically articulated in the traditional award criteria, so therefore could go unrecognized. As a way to ensure that CBR best practices were fully appreciated, it was recommended that new awards be created in subsequent years and funded by the Community Scholars program recognizing excellent CBR in each discipline category. All UR research participants in the summer symposium would be eligible for the awards as a way to encourage broader enthusiasm among traditional UR faculty and students to embrace CBR approaches.

We also recognize that during the pilot years, the Community Scholars program evaluation was insufficient. Instruments were selected based on what was currently in place for the Research Scholars program and the assessment is a single group pre-/post-design. Future studies should include a control group. We were not able to obtain feedback from our community partners during the pilot or data regarding student civic learning outcomes, a problem we intend to address during our 2017 program.

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