What Can Happen When Community College Practitioners Lead Research Projects?

The Case of CUNY

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Abstract

Although the majority of college freshmen enroll at community colleges, very few research studies focus on this context. In addition, what research does exist often overlooks important practitioner concerns, such as instruction. In this article we argue that supporting generalizable education research conducted by community college practitioners can address this gap. We seek to start a conversation about the benefits of such research, to both the education research community and to educational practices at community colleges. We draw on findings from a large community college system where this kind of research has been systematically supported for the last 15 years.

Roughly half of all U.S. undergraduates attend community colleges. These students are more likely to belong to groups that have traditionally been both underrepresented in higher education and at higher risk of college dropout: they are often the first in their families to attend college, they tend to be older, have work and family responsibilities, and have weak pre-college preparation. However, despite the large numbers of students enrolled at community colleges and the pressing need for evidence-based interventions to improve the college outcomes of these students, the overwhelming majority of higher education research to date has focused on the four-year and university contexts. Moreover, current research on community college students' outcomes has primarily been conducted by researchers from outside the community college context, and has primarily focused on factors that are largely unrelated to what happens in the classroom. As a consequence, the existing research can be seen by community college practitioners as irrelevant or inapplicable. In order to ensure that research informs the work of community college practitioners, it is essential for us to reverse this trend. In this essay we present one possible approach: supporting generalizable educational research conducted by community college practitioners. We illustrate how community college practitioners can engage in research that is both grounded in their own practice and generalizable, thus providing significant benefits to both the education research discipline as well as the practitioner-researchers' own institutions.

This article is organized into four sections. In the first section, we illustrate the need for this kind of research by outlining some of the limitations of the current body of education research with respect to community colleges. In the second section, we provide evidence from the City University of New York (CUNY) system to illustrate the potential benefits of supporting generalizable research conducted by community college practitioners and to show how it might

address some of the shortcomings of the existing body of educational research in this context. In the third section of this article we illustrate the feasibility of this kind of research by providing evidence from both CUNY and other sources. In the fourth section, we draw on evidence from CUNY and other sources to describe what factors may be most critical to the success of this kind of research and to use this evidence to make potential recommendations for how this kind of research might be supported at the local, regional, and national levels.

The Need for Community College Practitioner Research

In this section we first outline the conceptual framework that guides our reading of the existing education research literature. Then we use this framework to present evidence that the community college context is underrepresented in the higher education research literature, and that practitioner perspectives are underrepresented in the community college education research literature.

Conceptual Framework

Our conceptual framework classifies educational research along two dimensions (see Figure 1). The first dimension describes who has the primary power to make decisions about the research process ("outsiders" or "insiders"). The second dimension describes the primary aims of the research (generalizability/transferability versus improving local practice). We define these two dimensions as follows:

- **Researcher perspective:** Research can be described as more *etic*[1] or more *emic* along a spectrum. In research at the etic end of the spectrum, decisions about the research process

[1] Classifying research as having an *emic*, or insider, perspective versus an *etic*, or outsider, perspective emerged originally in the field of linguistics (Pike, 1954/1967) and has since became commonly applied to describe larger phenomena in the field of cultural anthropology as well as other areas in the social and behavioral sciences. Authors have used many different interpretations of the terms emic and etic, including some that distinguish between

(including the research questions asked, the way in which research is conducted, and the way in which results are interpreted) are made primarily by researchers who are outsiders[2] to the context being studied. In research at the emic end of the spectrum, decisions about the research process are made primarily by researchers who are insiders to the context being studied.

- **Aims of research:** Research is either conducted primarily with the aim of *generalizability/transferability*[3] beyond the specific research site (e.g., to inform theory or policy) or primarily with the aim of informing or assessing local practice (e.g., to improve local instruction). We use the qualifier "primarily" here because we also see this dimension as a spectrum, with research often having varying degrees of each of these goals.

subjective versus objective viewpoints, quantitative versus qualitative approaches, or even precise versus sloppy research approaches (see e.g., Headland, Pike, & Harris, 1990, for an overview of various uses of these terms), none of which is implied by our use of the terms here.

[2] We note that there are varying degrees of insider and outsider status, and that this distinction can be better seen as a continuum. In the context of this article, we would see community college faculty, staff, administrators, and students as all having some degree of insider status. In contrast, we would see someone who has never attended or worked at a community college as having outsider status. Researchers might have insider status because of prior experiences as students, faculty, or staff at a community college, or because they currently work at a community college, and we might think of some researchers as having stronger insider status than others. For example, if a researcher once took or taught a course at a community college, we would tend to think of their insider status as weaker than a researcher who completed a degree at community college or who taught at a community college for many years.

[3] We note here that both quantitative and qualitative research may be either etic or emic, which is why we employ both the terms generalizable and transferable.

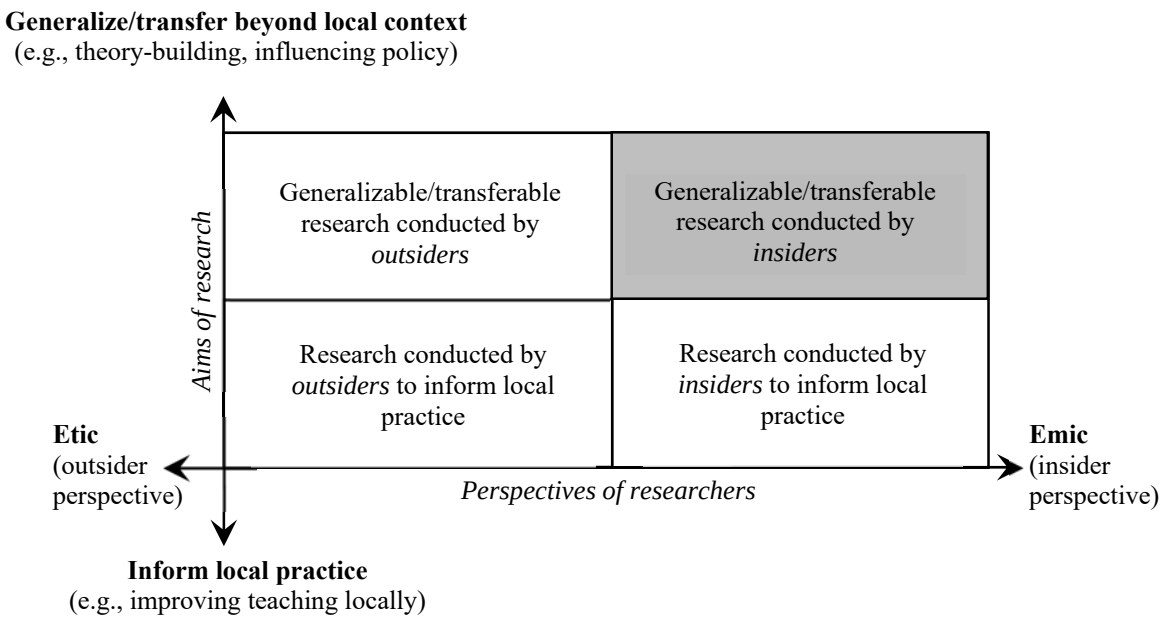

Figure 1. Classification of research on two dimensions. The aims of the research and the perspectives of the researchers leading it[4]. Grey shading indicates the type of research that is the focus of this article.

Generalizability/transferability has sometimes been equated with etic perspectives (see e.g., Headland, Pike, & Harris, 1990). In this article we separate them and contend that research can simultaneously be generalizable/transferable and emic (i.e., led primarily by researchers who have insider status). We do not argue that emic research is better than etic research or that generalizable/transferable research is better than research that is conducted to inform local practice. Rather, we begin with the premise that the most robust and useful body of research will emerge from combinations of *all* kinds of research along both of the dimensions (including those that are both strongly emic and generalizable/transferable simultaneously). This equitable representation of different types of research is key to generating a body of research on community college education that is both generalizable/transferable and useful to practitioners.

[4] We note that while we present this figure as having quadrants for the sake of presenting the main ideas simply with clear contrast, we do not intend to suggest that research necessarily falls specifically into these four quadrants—rather, this framework for classifying research should be seen as a two-dimensional continuous plane, in which different types of research may fall anywhere in the plane, at varying degrees along either axis.

Thus, it is important to analyze the existing educational research literature on community colleges with this framework in mind to determine if there are types of research that are particularly underrepresented in the existing body of literature as a whole.

In this article we discuss the potential benefits of supporting generalizable/transferable research that is conducted by community college practitioners. This research falls in the grey, top right shaded quadrant in Figure 1. We can see how this type of research may be different from other existing types of research by looking at where different types of research may fall along these two research dimensions, which we illustrate in Figure 2.

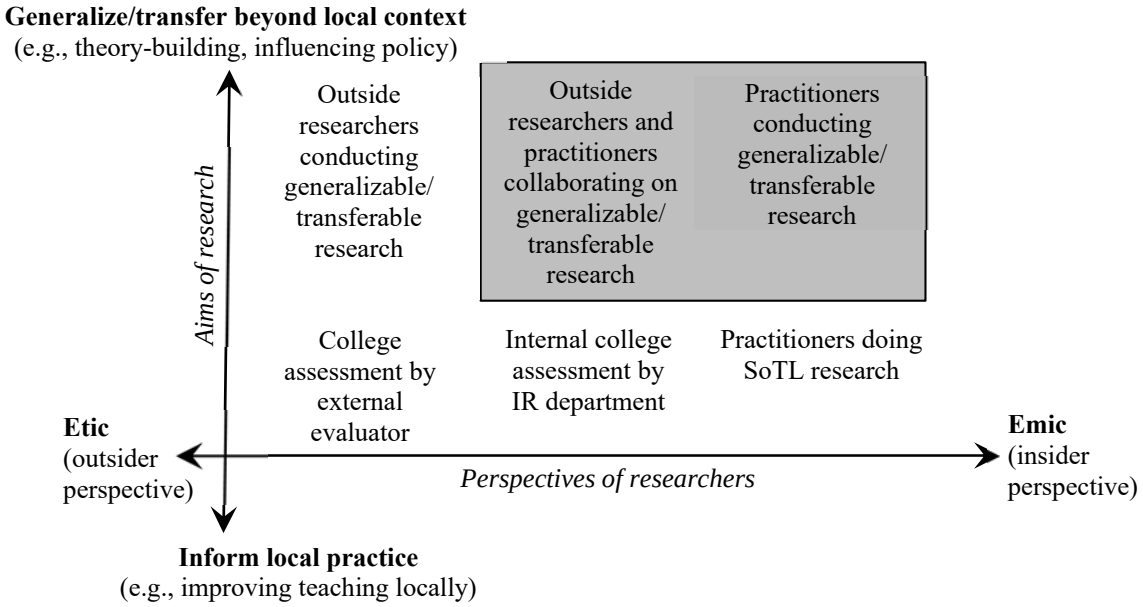

Figure 2. General location of different types of research on the two-dimensional research framework give in Figure 1. Grey shading indicates the type of research that is the focus of this article.

We note that the placement of these various types of research along the two dimensions is a simplification of the richness and diversity that may exist among these different types of research in practice, and specific research projects may deviate significantly from these placements. For example, when research conducted by outsiders involves practitioners in the

research process, it may have varying degrees of emic perspective depending on its design and the success of its implementation. Research conducted by external researchers that effectively integrates community college practitioners throughout the entire research process (including generation of the research questions, selection of the research methods, and interpretation of the results) could result in research that has a very strong emic perspective. However, we note that by our definition the most strongly emic research will always be research that is conducted by practitioner-researchers because this type of research is the only case in which insiders would have complete control over the research process.

We now use this conceptual framework as a lens to analyze the existing body of educational research literature in the community college context.

Underrepresentation of Community College Perspectives in the Existing Literature

In this section we identify three limitations of the existing body of educational research on community colleges: the underrepresentation of community colleges in higher education research as a whole, the underrepresentation of insider perspectives in existing research on community colleges, and the underrepresentation of research perspectives that may be particularly important to practitioners (e.g., classroom instruction).

Figures from the National Center for Education Statistics (NCES) indicate that the total U.S. undergraduate enrollment is almost 17 million, and of those, about 6 million (37%) are enrolled at a community college (Blair, Kirkman, & Maxwell, 2015). The proportion is even higher if we consider only first-time freshmen, 53% of whom are enrolled at two-year colleges (U.S. Census Bureau, 2012). In stark contrast to enrollments, the proportion of higher education research that focuses on community colleges is quite small with only about 8% of higher education research focusing on this context (Townsend, Donaldson, & Wilson, 2005). This trend

appears not to have changed much over the last decade: Considering all 1,290 original research articles published in the five major higher education journals[5] from 2010-2015, only 34 (or 3%) focused specifically on community colleges,[6] and only 101 (or 8%) included community colleges in the sample or population being studied.

In addition to the limited amount of research on the community college context, the majority of generalizable/transferable educational research that is carried out in community colleges tends to be conducted by researchers with no first-hand experience in the community college setting. Only four out of 42 authors (or 10%), who published papers on community colleges in the five major higher education journals since 2010, were affiliated with a community college. Even looking at the two major higher educational journals that focus on community colleges specifically (*Community College Review* or the *Community College Journal of Research and Practice)*, we found that only 18% (41 out of 227) of authors who published in one of these journals over the same period were affiliated with a community college. When we expanded our search beyond authors' current affiliation and searched each author's publicly available CV for evidence of affiliation with a community college, either as current or former faculty/staff, or as a student, we still found that the majority of authors doing research in the community college context have no prior first-hand experience in this setting. Looking at all authors who published in the *Community College Review* in 2016, only 18% had ever worked at a community college, and only 12% had ever attended a community college.[7]

[5] Bray and Major (2011) listed Higher Education, Review of Higher Education, Research in Higher Education, the Journal of College Student Development, and the Journal of Higher Education as the most influential in the field.

[6] Here community colleges were defined as broadly as possible, including any higher educational institutions that were less than a four-year baccalaureate degree. For example, many international higher educational systems do not use the term "community colleges", but instead refer to technical colleges or have other designations for higher education institutions that are similar to US community colleges.

[7] We were able to find publicly available CVs for all but six of the authors. For those six, we relied instead on detailed online biographies that listed work and educational history (several of these were high-profile researchers

Another worrisome trend in educational research in the community college context (perhaps as a consequence of the lack of emic research in this setting) is that perspectives that are important to practitioners are often overlooked or under-researched. Mesa (2017)'s literature review of mathematics education research at community colleges identified that: 1) most of the scholarship conducted in this setting has focused on questions that do not address classroom instruction; and 2) the scholarship uses a limited conceptualization of student success, based on grades rather than on learning. Indeed, many studies have examined student developmental mathematics course-taking patterns and subsequent college completion, but these studies have almost never explored how classroom interactions influence these patterns nor what students have learned in those courses. While this kind of research may be critical to decision-making at the policy level (e.g., setting placement policies), it does not provide the information needed to inform teaching practices. In fact, Mesa's (2017) literature review, which included 77 articles from 1970 to 2014, yielded only 12 studies (about 16%) that focused on classroom instruction, arguably the most central element of students' experience that contributes to their success in college.

This may explain to some extent why community college faculty reported that many existing professional development opportunities fail to provide relevant and practical activities that are grounded in research evidence (see e.g., Hardré, 2012; Lian, 2014). It may also help to explain why community college faculty typically do not use education research to inform their teaching but rather develop their teaching skills through trial and error (see e.g., Sperling, 2003;

for whom extensive public information is available). We note, however, that it is possible that some of the authors for whom we found no community college affiliation may have had some shorter-term experiences at community colleges that they left off their public CVs and bios, so these statistics may exclude a few authors with weaker insider status at community colleges. However, we note that it is unlikely that any such authors would have had strong insider status at community colleges because more extensive experience (e.g., teaching full-time at a community college for many years) would likely have been included in CVs and public bios.

Van Ast, 1999). We cannot be certain of this link because we could not find any existing studies that explore *why* community college faculty do not use educational research more often to inform their practice. The lack of research in this area is yet another illustration of why increased educational research in the community college context is needed.

For the remainder of this article, we illustrate how supporting generalizable/transferable education research conducted by community college practitioners (who have insider status) might help to address many of the limitations of existing research in this context, and we describe how this kind of research can be successfully supported. We begin by presenting some evidence from CUNY, a university system that includes both two- and four-year colleges and which has been systematically increasing supports for community college faculty research over the past 15 years.

Potential Benefits of Community College Practitioner Research: Evidence from CUNY

In this section we describe two education research studies that the first author has conducted at CUNY in order to illustrate the possibilities of engaging in generalizable practitioner research at community colleges. We use various types of records: institutional documents, research publications, interviews with faculty at her institution who engage in research regularly, and memos about her personal experience as a community college faculty researcher at this institution. These records constitute materials for an autoethnographic study that accounts for experiences and practices of a community college faculty researcher. Before delving into the details of these studies, we first provide some background information about CUNY and about the first author, to provide a context for the analysis to follow.

The Context

CUNY is the public university of New York City. It is comprised of 24 campuses that include community colleges, four-year colleges, and graduate institutions. With a combination of degree and continuing education programs, CUNY serves approximately 500,000 students, roughly 40% of whom are enrolled at community colleges. The community college population at CUNY is 57% female and 85% students of color. Two-thirds are Pell grant recipients, half are first-generation college students, half are non-native English speakers, and 40% attend part-time. The faculty at CUNY community colleges is roughly 38% full-time, 52% of which are tenured. For the last 15 years, CUNY has been pursuing a plan to systematically support research conducted by its full-time community college faculty in professorial lines. For example, CUNY has provided its full-time, professorial faculty some reassigned time for research, small internal funding opportunities and some research resources. In addition, CUNY has gradually changed the faculty evaluation process for research-active faculty at community colleges to assess research in addition to teaching and service.

The first author of this article has been a faculty member at one of the CUNY community colleges for the past 15 years. She began briefly as an adjunct, worked as a full-time instructor throughout her graduate studies, converted to a tenure-track line upon graduation, and is now a tenured full-professor with a dual appointment at both a community college in the CUNY system and the CUNY Graduate Center. In addition to teaching in the community college context, she has also previously taught at the high school and university levels and has served in various administrative capacities on her community college campus. Originally a mathematician, she gradually shifted her focus to educational research starting around 2009.

We now describe two studies conducted by the first author, using as sources memos that she wrote about her personal experience as a community college faculty researcher. These studies were chosen to illustrate how generalizable/transferable practitioner research conducted in this context can have a significant positive impact on the local institution as well as contribute to larger scale theory-building and policies that extend beyond the local context.

Study 1

This study focused on investigating which student-level characteristics predict which students are at higher risk of course and college dropout after enrolling in online courses. At the time that this research project started in 2009, some research showed that students who took courses online dropped out of courses and college at higher rates than comparable peers who enrolled face-to-face. However, there was little research on the community college context, and it was unclear the extent to which differences in outcomes might be due to self-selection, since students who elect to take courses online tend to be significantly different from those who only enroll face-to-face.

The impetus for this study emerged from the researchers' insider status as faculty at a community college. The first author of this article, along with two other faculty members in other departments, served on a taskforce to assess the college's online learning program. The taskforce reviewed scholarship on online learning in order to make recommendations to the college administration and discovered that, for many of the specific questions that needed to be addressed in the report, existing research was limited, contradictory, or simply non-existent. Because of this, the three faculty members formed a research partnership to investigate some of these questions. Based on the report generated by that taskforce, the college received a U.S. Department of Education grant for $2.9 million to improve and expand their online learning

program, and the three community college faculty members established their own research program on online learning. First, they investigated smaller locally-specific questions to inform policies at the college. Then gradually over time, they expanded this work to a larger and more sophisticated research program that has been published in major educational research journals, attracted larger external research funding, and impacted local practice at CUNY.

Between 2011 and 2014, the three-member research group received various small internal CUNY grants, then an American Educational Research Association (AERA) research grant, and then a $719,000 National Science Foundation (NSF) research grant. The NSF grant was designed to be synergistic with work directly relevant to the college: the college provided reassigned time for some steps that laid the groundwork for the NSF research so that assessment of the college's eLearning program could be based on research-evidence. This long-term research project was the first of its kind at the college, and therefore, its evolution was not smooth. The faculty researchers and the college administration had to repeatedly discuss expectations and renegotiate roles. However, despite potential growing pains, the overall structure of this work is a good example of how research conducted by community college faculty can serve the interests of the larger educational research community and those of their own institutions simultaneously. This structure combined both institutional support and independent faculty-researcher initiative to investigate local and global research questions as a part of the same integrated project. At present, these researchers have submitted further federal grant proposals to fund a multi-million-dollar follow-up study which will build on the results of the previous NSF-funded work and will further investigate how online course offerings may impact access and persistence in higher education.

The researchers' insider status has positively impacted the research in three ways. First it has led directly to changes in practice and college policies; second, it has impacted the practical implementation of the research and the research design; and third, it has increased dissemination of relevant findings to both researchers and practitioners. We elaborate on these using this study as an example.

Change in practice. A number of studies led directly to changes to college policies because the research questions were motivated by a specific need identified on the ground at the college. For example, the college was considering restricting online enrollment to students with higher GPAs in order to reduce attrition rates in these courses; however, results from this research project showed that the change would not reduce attrition rates (Hachey, Wladis, & Conway, 2013), and as a result the college abandoned its plan to pursue this policy. In another study, the researchers showed that the college's online readiness survey instrument had no predictive validity for identifying students at higher risk of dropping out of online classes, and that it instead likely discouraged a significant number of students who would have done well in online courses from enrolling in these courses altogether (Wladis & Samuels, 2016). As a result, the college discontinued the use of the readiness survey instrument as a mandatory screening tool and instead switched focus to piloting interventions targeted at students at risk of dropping out of online classes.

Research implementation. The researchers' insider status was key for the practical implementation and the design of the research; specifically with respect to the formulation of research questions, the selection of conceptual frameworks, and the choice of research instruments. Because of their affiliation with CUNY, the researchers were able to gain access to de-identified institutional research data across the CUNY system and to link these data to survey

responses collected throughout the research process. Being affiliated with CUNY made access to data easier for the researchers which made it possible for them to pursue generalizable research questions. This access was critical to the design of the research; faculty at the college did not require special permissions beyond a standard IRB approval, and as faculty, they were able to work with the Institutional Research (IR) department to prioritize data collection and merge IR data with survey data collected by the researchers. Such processes would likely have been more difficult for researchers not affiliated with CUNY.

In addition, the researchers' insider status was critical when working on aspects of the research design where previous research was scarce. Drawing on practitioner expertise to generate potential hypotheses or to propose potential theoretical or conceptual frameworks for testing can be critical when there is little existing research to guide these decisions initially. For example, it is well-established in the research literature that students who enroll in online courses are significantly more likely to be parents, and that student parents have significantly worse outcomes in college despite having higher GPAs on average than their childless peers. However, no previous studies have directly analyzed whether time poverty, defined as a lack of available time for college studies, may explain these trends. Because of their experiences as online instructors and advisors, the researchers had observed a clear pattern of time poverty among online students, particularly those with young children. This observation led the research team to consult the literature in a variety of different disciplines, including education, economics, sociology, and psychology; they looked for literature that addressed the time-use and time resources of students and parents, and that explained how time-use in college may impact academic outcomes. The literature search showed that parents had less discretionary time and less satisfaction with work-life balance, and that time-use was correlated with academic

outcomes for college students. However, no rigorous research existed to connect the time poverty of student parents with their college outcomes. To address this gap, the researchers developed a conceptual model, motivated largely by their experience as practitioners, which was also grounded in the research literature. The model theorized that student parents have lower quantity and quality of time for their studies, and that this would directly explain the differences in outcomes between students with young children and those without, even after controlling for economic and other demographic factors. Subsequent analysis using linear and logistic regression, as well as the KHB decomposition method (Kohler, Karlson, & Holm, 2011), validated this model by showing that childcare and (to a lesser extent) time spent working to pay for living expenses largely explained the time poverty of student parents and, by extension, their poorer college outcomes (Wladis, Hachey, & Conway, 2018). Data also showed that students who elected to take a course online were significantly more time poor than their peers who took the same courses face-to-face. Subsequent analysis is ongoing to determine the relationship between time poverty, online enrollment, and subsequent college outcomes. In this case, the very generation of the research questions and the conceptual framework depended on the researchers' experiences as instructors. This in turn strongly influenced the resulting contributions to theory-building that emerged from the research.

In addition, the researchers' insider status impacted the research instruments they used to conduct surveys and interviews. As community college faculty, the researchers had already heard hundreds of stories from community college students with children, and this impacted their decisions in crafting survey and interview protocols. For example, several questions on survey instruments regarding time use were taken from the American Time Use Survey (ATUS), but the

researchers' experience as instructors helped them to hypothesize which questions would be pertinent given the student population they were studying.

Dissemination. The researchers' dual position as both researchers and practitioners also facilitated wide dissemination of results in both researcher and practitioner venues. As of early 2018, they had published 22 papers with five additional papers under consideration by journals. The faculty members published in journals that were aimed at the education research community (e.g., *Journal of Higher Education*), at community college practitioners (e.g., *Community College Journal of Research and Practice*), and in publications that are frequently read by both groups (e.g., *Computers & Education*). The researchers also presented at dozens of conferences including those aimed at education scholars (e.g., AERA Annual Conference, MAA Research in Undergraduate Mathematics Education Conference) and those aimed at community college administrators and instructors (e.g., Council for the Study of Community Colleges Annual Meeting, American Mathematical Association of Two-Year Colleges Annual Conference). In addition, the researchers regularly presented results at CUNY (e.g., through a presentation to all CUNY eLearning directors on the various college campuses), and summarized research results for practitioners and policymakers on an open access website . And finally, the researchers shared their results with the public and policymakers through an opinion piece relating the results of their research in the *Heckinger Report*, and through news coverage of their research results, which included an interview with National Public Radio and media coverage in several online news outlets. Because of their dual position as both researchers and practitioners, the researchers were able to capitalize on their connections within and proximity to both researchers and practitioners in order to successfully communicate results to both groups. These

interconnections were critical to producing research that could inform both future research and local practice.

Study 2

A second more recent study involved the development and validation of a concept inventory for algebra at community colleges. This study was made possible through reassigned time and other research support provided by small internal CUNY grants. Algebra has been identified as a major barrier to college completion (see e.g., Bailey, Jeong, & Cho, 2010). While much recent research has focused on alternatives to the algebra sequence, little research has focused on how the curricula and teaching approaches in this class could be adapted to improve student outcomes. Current research on elementary algebra at community colleges suggests that many of these classes focus on procedural skills in isolation (Goldrick-Rab, 2007; Hammerman & Goldberg, 2003), and that this focus contributes to students' struggles to succeed at algebra (see e.g., Hiebert & Grouws, 2007). The motivation for this study grew out of practitioner experience. As an instructor who taught both elementary algebra and many higher-level math classes in which students often struggled to use elementary algebra concepts correctly, the first author of this article experimented extensively with different teaching approaches and curricula. However, it was difficult to assess the success of various approaches without any validated way to measure college student growth in algebraic conceptual understanding. This led the researcher to collaborate with four other elementary algebra instructors to create and validate an elementary algebra concept inventory in the community college context. The researchers conducted an extensive literature review of the scholarship on algebraic learning and drew on their own combined 80 plus years of experience teaching students in the community college classroom to, first, devise a framework of concepts central to elementary algebra in the community college

context and second, develop initial questions for the inventory. Questions and the inventory itself were then subjected to qualitative and quantitative analysis, including cognitive interviews, reviews by experts from across the country (mathematicians, elementary algebra instructors, mathematics education researchers), classical test-theory approaches, item response theory analysis, and latent class analysis. The instrument was found to have good evidence of construct validity, and to be able to distinguish various groups of students with different types and levels of conceptual understanding. The instrument is currently undergoing further testing, and the researchers are collaborating with psychometricians at CUNYto expand the inventory into an item pool of several hundred questions that could be used by researchers or practitioners to diagnose student conceptual understanding in specific subtopics. The item pool could eventually be used to target instruction, to improve placement procedures, and to measure the effectiveness of instruction and various interventions on improving student conceptual understanding. The NSF has recently funded a $1.5 million grant to continue this work over the next five years.

Results from this study have been presented at annual conferences hosted by the Congress of European Research in Mathematics Education (CERME), the Mathematical Association of America (MAA) Research in Undergraduate Mathematics Education (RUME) special interest group, the Council for the Study of Community Colleges, the American Mathematical Association of Two-Year Colleges, and the National Council on Measurement in Education (NCME; Burn, Duranczyk, Watkins, & Wladis, 2017; Wladis, Offenholley, Lee, Dawes, & Licwinko, 2017; Wladis, Offenholley, Licwinko, Dawes, & Lee, 2017a; Wladis, Offenholley, Licwinko, Dawes, & Lee, 2017b; Wladis, Offenholley, Licwinko, Dawes, & Lee, 2017c; Wladis, Offenholley, Licwinko, Dawes, & Lee, 2018; Wladis, Verkuilen, & McCluskey, 2018). In addition, four papers are currently under preparation for submission at mathematics

education research journals and a policy brief and sample questions from the inventory are also being prepared. Results from this research have also been presented locally at a number of conferences and departmental meetings at the researchers' institution and across CUNY. The researchers are also currently developing an alternative elementary algebra curriculum and course sequence that is organized around the framework developed during this research. These developments have the support of their department, which has been developing plans to offer this alternate course sequence in the future. The researchers also plan to use the inventory to investigate the effectiveness of this new curriculum.

There are several ways in which the researchers' insider status has benefited the research. First, the initial research question arose from the first author's own practice, and came out of a need to have a validated assessment that could guide her own instructional and curricular choices. Second, her position as a practitioner led to a quick turn-around time from completion of the research to implementation of the results in practice, at least within her own department (where roughly 6,000 students take elementary algebra each year). As a consequence, new curricula were being developed while the research was being published. Third, the researcher's position as both a practitioner and researcher led to dissemination of the results through outlets that target other scholars as well as those that primarily target practitioners. Fourth, the researchers, as community college faculty, facilitated recruitment of community college colleagues from other institutions who gave feedback on the instrument and CUNY community college students who participated in cognitive interviews to validate the instrument. Finally, the researchers were able to recruit other instructors to take part in the testing of the instrument, partly because they were the researchers' peers and partly because results of the study were made

immediately available. In total, roughly 100 instructors and 3,000 students participated over four semesters in the instrument validation process (Wladis, Verkuilen, & McCluskey, 2018).

The researchers' insider status also influenced the development of the instrument. Almost all of the research literature on algebraic thinking to date has been conducted in the K-12 setting. In this context, algebra is often conceptualized as generalized arithmetic in which functions model specific processes and variables take on the role of a fixed unknown or of a true variable that varies (see e.g., Carraher, Schliemann, Brizuela, & Earnest, 2006). In the postsecondary context, however, algebra is often conceptualized as a study of structure, in which functions are more about generalization than joint variation, and variables are viewed as arbitrary objects that are related by certain properties (see e.g., Novotná, Stehlíková, & Hoch, 2006). The practitioner-researchers in this study noticed that much of the prior work on conceptual understanding in algebra overlooked the importance of more complex algebraic structure, and that the difficulties that many students in their classes were having were rooted in a weak grasp of structure in algebra. Thus, the generation of the elementary algebra concept inventory required investigating how different types of complex algebraic structure sense may relate to one another and how these different conceptions may relate to various algebraic tasks that are common in the college curriculum. This is a perspective that was missing in the prior research literature, which had predominantly been carried out by educational researchers in the K-12 context, where algebraic structure sense was typically interpreted differently. This illustrates how insider status can be beneficial not only to practical applications of the results of the research, but how it can also contribute to more robust and complete theory-building in education research.

Thus far we have presented evidence that illustrates some of the potential benefits to both local institutions and the research field as a whole when community college practitioners, who

have insider status, conduct generalizable/transferable research. However, some readers may still question the broader feasibility of having practitioners lead educational research projects in the community college context. We address these concerns in the following section.

The Feasibility of Community College Practitioner Research

While writing this article, we have discussed the idea of community college faculty-practitioner research with a number of different educational researchers and community college practitioners. Those who have not had any personal experience conducting the kind of research described in this article have often had questions about the feasibility of this work. These misgivings are often grounded in reasonable concerns about the challenges that exist in conducting research in this context and the importance of prioritizing teaching at community colleges. However, as the examples presented above illustrate, with the right support, generalizable/transferable practitioner-research is feasible and can improve instruction and policies both locally and beyond the institutional context in which the research takes place.

We group concerns about the feasibility of this kind of research into three categories: 1) Concerns about whether this kind of research is compatible with the traditional community college mission; 2) Concerns about whether supporting this kind of research might divert resources away from instruction; and 3) Concerns about whether community college instructors are qualified to conduct this kind of research.

Is Producing Research Compatible with the Community College Mission?

One of the objections to providing support for community college faculty to conduct research is that it may be perceived to detract from the mission of providing access to educational opportunity. We suggest that supporting generalizable/transferable educational

research conducted by community college faculty is an essential and overlooked component of this mission. There can be no true access to educational opportunity if community colleges are largely overlooked in the education research literature or if the research on this context overlooks topics and perspectives that are relevant to practitioners. Community colleges will struggle to effectively serve their students if the dialog about what is best for their students continues to be based on research generated outside the community college setting. Current practice at community colleges is often driven by research that has been primarily conducted in other contexts, or by educational theories and policies that have been largely generated by researchers with little first-hand experience in this setting.

Some readers might argue that instead of supporting community college faculty who pursue generalizable or transferrable educational research we should focus on supporting community college faculty to be critical consumers of research or to be scholarly practitioners. We believe that these are two important and interrelated goals. Supporting community college practitioners in becoming critical consumers of research is difficult when instructors do not see existing research as relevant. For example, research shows that community college instructors often choose not to participate in professional development opportunities because they feel that professional development fails to provide information that is both relevant to their practice and grounded in research evidence (see e.g., Hardré, 2012; Lian, 2014). If supporting community college practitioner research can increase the proportion of education research that community college practitioners find relevant to their practice, then this could directly improve our ability to train these instructors to be critical consumers of research.

Some readers might argue that the time community college faculty spend on research detracts from their teaching. However, teaching and research need not be mutually exclusive

goals. Community college practitioner-researchers often describe teaching as their primary priority and research as a symbiotic pursuit that supports and improves their teaching (see e.g., Hardré, 2012) and can, in some cases, contribute to larger-scale instructional improvements at the college (as we see in the examples described in the previous section of this article). In fact, much of the educational research that has been conducted at CUNY community colleges has led directly to practical applications of the research results, such as institutional policy changes or changes to instructional practice, which support the larger community college mission of providing access to education (see e.g., Kok, Hoffmann, Flyr, & Robbins, 2011; Krauss, Weiner, Salame, & Borman, 2011; Offenholley, Wei, & Crocco, 2015; Scal, Stoffer, Shekoyan, Rance, & Bluestone, 2014; Shad & Lewis, 2015; Wei, Chen, Mathews-Salazar, & Anderson, 2011; Winkler, Schulman, & Troudt, 2012).

Can Community Colleges Afford to Support Faculty Research?

Another objection to providing support for community college faculty research may be a concern that this would divert significant resources away from instruction. Evidence from CUNY suggests that this is not the case. Certainly, providing support for community college faculty research in the form of reassigned time for research and other research resources (e.g., conference travel, research supplies) requires funding designated to this purpose. However, the CUNY community colleges spent an average of only $54 per full-time-equivalent (FTE) student in 2014-2015 on research (U.S. Department of Education, 2014). This figure was less than one-fifth (19%) the amount the colleges spent on public service, accounted for less than one-half of one percent (0.4%) of total core expenditures (U.S. Department of Education, 2015), and was roughly equivalent to the amount the community colleges received in total research awards ($51 per FTE; The City University of New York [CUNY], 2014). These figures suggest that CUNY's

increased support of community college faculty research did not require a reassignment of resources from instruction or student support, and that supporting community college faculty research can be relatively cost-neutral.

In the long term, external research funding may exceed initial investments in research. For the online learning research project described in the previous section of this article, the first large external research grant received was roughly 2.5 times the total amount of funds that CUNY had invested in any research conducted by the three faculty researchers including all totals for competitive internal grants received, fellowship leave, contractual reassigned time, and college-funded travel expenditures as well as funding for research projects unrelated to the NSF-funded research. The indirect costs associated with this grant, which flowed directly to the college as discretionary funds, were roughly equal to these previous research expenditures.

Can Community College Faculty Conduct Research?

Another objection to supporting community college faculty research may be a perception that these faculty members do not have the skills or the interest necessary to conduct generalizable educational research even when the right support is provided. Before we proceed to address this concern, it is important that we clarify one important point. In this article, we are *not* arguing that *all* (or even *most*) community college faculty should conduct educational research. It may not be feasible for many part-time faculty to conduct research, and it would be very problematic to require all full-time faculty to conduct research as a condition of their employment. Rather, we argue that there is a sizable minority of community college faculty who already have the interest and qualifications to conduct this kind of research, and that this group should be supported because their work can positively impact both the research discipline and local practice.

Evidence at CUNY suggests that there are many community college faculty members who do have the skills and interest necessary to conduct generalizable/transferable research, and that supporting the work of these faculty can have concrete results. Since CUNY put in place systematic supports for research conducted by community college faculty, the rates of community college faculty scholarship have increased dramatically. In 2012 alone, community college faculty in professorial lines produced roughly one-third of the number of pieces of scholarship[8] of their counterparts at the four-year colleges or the Graduate Center (CUNY, 2014). Moreover, roughly 12% of community college faculty in professorial lines past the first five years of their appointment received outside funding to support their research from organizations such as the National Science Foundation, AERA, Fulbright, the German Academic Exchange Service (DAAD), and the U.S. and New York State Departments of Education (CUNY, 2014). Naturally, these are rough indicators of quantity or quality of research conducted at the CUNY community colleges, but they suggest that the efforts made to support this research are generating outcomes that have been validated by the research community.

There is also evidence that a sizable minority of faculty members at community colleges outside CUNY is qualified to conduct research. Eighteen percent of all full-time U.S. community college faculty and 25% in education and social sciences have doctorates (American Association of Community Colleges [AACC], 2014). Furthermore, 16% of the doctorates of faculty in non-education departments at community colleges are in education (U.S. Department of Education, 2004). Many professors who choose to work at community colleges have experience and interest in conducting research (Hardré, 2012) but choose the community college setting for other

[8] Scholarship is defined as books authored, book chapters, conference presentations published as proceedings, peer reviewed journal articles, exhibits at curated art shows, direction/choreography/dramaturgy/design, music composition published/performed, and plays produced/performed.

reasons such as family, geographic location, an interest in teaching, or a desire to serve the particular population of students who attend two-year colleges (Fugate & Amey, 2000; Mason, Goulden, & Frasch, 2009; Wolf-Wendel, Ward, & Twombly, 2007).

Thus far we have presented evidence that generalizable/transferable educational research conducted by community college practitioners is feasible and has benefits. However, this evidence is based on the premise that such research is deliberately and systematically supported in some way. In the following section, we explore which factors may be particularly important in determining the success of this kind of research in order to form a basis for recommendations on how this kind of research can be supported.

How Can Community College Practitioner Research Be Supported?

In this section, we first briefly describe the supports that CUNY provides to community college faculty. Then, we present evidence from CUNY about which of these supports may be most critical to the success of community college practitioner research. Finally, we present suggestions for how these supports could be adapted in other contexts at the local, state and national levels.

Support for Community College Faculty Research at the CUNY Community Colleges

CUNY has put specific structures in place to support community college faculty research by providing reassigned time for research, small internal funding opportunities, and research resources (e.g., journal access, research seminars, grant guidance). All community college faculty in professorial lines receive the equivalent of eight three-credit course releases in the first five years of their appointment, in order to provide time to build a research program. In addition, faculty have access to several small competitive internal funding opportunities, funding that can

be used to provide a single course release, research sabbaticals, research supplies, or travel funding. CUNY community college faculty also have access to university resources that support research such as library resources (e.g., journals), research seminars at the CUNY Graduate Center, and university offices that can provide basic support and guidance on external grants and research with human subjects.

Faculty assessment has also evolved at the CUNY community colleges to reflect CUNY's increasing support for research. While teaching is still given the greatest weight in faculty assessment, full-time CUNY community college faculty are assessed on a combination of their research, service, and teaching. Research is required for tenure and promotion for faculty in professorial lines (in contrast to faculty hired in instructor/lecturer lines), but the way in which research is evaluated differs somewhat from typical practice at four-year schools. Because community college faculty are not given the same amount of time for research as their counterparts at four-year institutions at CUNY, they are not expected to have the same rate of productivity or number of publications as their four-year counterparts. In addition, while measures of research quality are important in assessment (e.g., peer-review, journal or conference prestige), papers or presentations aimed at researchers are not necessarily given more weight than those aimed at practitioners, which is different from the approach typically taken at four-year colleges.

In the next section, we explore how practitioner-researchers at CUNY community colleges view the utility of these research structures and what supports and obstacles practitioner-researchers see as being most critical to the success of their research in this context.

Which Factors Are Important for the Success of Community College Practitioner Research?

In this section, we use survey and interview data collected at the largest CUNY community college to investigate which research supports (and which research obstacles) faculty rated as the most critical to the success of their research. Results from an online survey of 156 full-time faculty (out of 456)[9] and interviews with 49 former and current research-active faculty provide the bulk of the data for this section. Participating faculty were asked about which supports at the college were most critical to the success of their research and about which obstacles they had encountered while conducting research. Using a thematic analysis methodology, three independent researchers coded the qualitative responses from both the surveys and interviews. Three themes emerged regarding factors that are important for research (Wladis, Amaral, & Conway, in preparation). These factors were cited as both positive impacts on their research when addressed effectively and as obstacles to their research when implemented ineffectively:

1. **Time for research:** Faculty reported that time to conduct research that they received from the university (or through internal/external grants) was the single most important positive factor impacting their ability to do research (75%, 77% of which reported it to be the most important factor). At the same time, faculty cited a lack of time for research as the biggest obstacle to conducting research at the college (89%, 68% of which reported it to be the most important factor). The following quote reveals this issue:

[9] We note that roughly one-fourth of the full-time faculty was hired before CUNY began systematically supporting or encouraging faculty research, and more than one-eighth of faculty are in non-professorial positions in which many research supports are not available and research is not expected—as a result, a significant minority of the full-time faculty do not currently engage in research and were not the target population of the survey; however, because of limitations in the existing computerized faculty data, it was not possible to determine the exact number of current research-active faculty at the college or to target survey recruitment to this group specifically.

The contractual reassigned time for untenured faculty combined with the wide array of internal funding opportunities at CUNY have really been crucial to my research success—because of these initiatives I have been able to build up a large educational research program that has brought in external funding and influenced teaching and policy here at the college. But it is really critical that this reassigned time continue for faculty, including tenured faculty, who have built up research programs, because time is the most critical factor in determining how much research I can do. If I don't have the time I need to do the research, everything else is irrelevant.

2. **A culture that values research:** Faculty rated research groups/seminars and collaborators at CUNY as the second most critical positive factor in helping them to do research (53%, 26% of which reported it to be the most important factor). At the same time, faculty cited negative experiences with colleagues, administrators, or chairs that made them feel that their research was not valued or supported to be one of the biggest obstacles to research at the college (51%, 21% of which reported it to be the most important factor). Faculty experiences with chairs were a good example, because faculty reported both strongly positive and negative interactions. Thirteen percent of faculty rated their chair as having a positive impact on their research whereas 18% rated their chair as an obstacle to research. Research-active faculty also stressed the importance of clear and consistent policies related to research. They cited a need for policies that clearly outline how and when they can take reassigned time for research, apply for external research funding, participate in external partnerships, or purchase research supplies:

   I have heard someone say in the past, "Oh, this person just doesn't want to teach in front of the classroom". This is a misconception that people who are doing research

have to deal with. Some people may not see the value in it and you may not be able to change their perception. But as long as the school sees the value in it, that is more important than your peers in the department, as long as the chair sees the value in it, and anyone else who decides schedules or gives approval.

Having a larger college community that values this kind of work is really important. I have co-authored publications with about a dozen other CUNY faculty in at least 3 or 4 different departments, most of them here at the [community] college. These kinds of collaborations just spring up naturally because we start talking about our experiences as teachers and we build on that. Because I have several colleagues who, like me, are really passionate about educational research and tying that research into their own teaching, it becomes easy to come up with compelling and relevant research questions. I actually end up with many more research projects that I'd really like to work on than I possibly have time to pursue.

3. **Availability and Access to Resources:** Resources such as internal grants, library services, and research support offices were also critical factors in determining the success of faculty research. Eighteen percent of faculty rated the availability of resources and/or facilities necessary for their research as having a positive impact (13% of which rated it as the most important factor). In comparison, 37% of faculty rated resource availability as an obstacle to research (with 18% of these rating it as the most important obstacle). At the same time, supports from offices such as the Research Office, the Grants Office, the Teaching and Learning Center, and the Institutional Research Office were rated by 25% of faculty as

having a positive impact on their research (with 11% of these reporting it to be the most important factor).

> *The IR office is helpful… in letting me know what kind of data is useful and what it would take to get it. Before my first IRB we actually sat down and talked about it– different approaches and different types of research, even beyond human subjects.*

> *The grant office was helpful when I was new to the grant process. I would bring them an idea and they might help frame it as a fundable project and help identify a funding source. This is no longer necessary given my experience [applying for funding].*

> *Internal funding at CUNY has been really critical to my ability to do research initially, and to my ability to leverage the preliminary results and publications from that research into larger external grants to fund my research. I also think the experience of writing and having success obtaining smaller grants better equipped me to have both the confidence and skills to write larger external grants later, and better prepared me to be successful getting those.*

These three themes reflect patterns found in other research on community college faculty research. The only other article that we were able to find that has investigated which factors impact community college faculty members' ability to conduct research (Hardré, 2012) found that faculty cited the following five factors as barriers to research, which closely mirror the findings at CUNY: (a) lack of time; (b) lack of value in the college and department for research; (c-e) lack of funding; lack of support; limited experience and lack of professional development in

research. Other research on community college faculty suggests that the time-intensive nature of many community college teaching loads can negatively impact faculty involvement in other professional activities (e.g., professional development, administrative service; Murray, 2004; Sperling, 2003), reinforcing the finding at CUNY that time may be the most important factor that determines the success of community college practitioner research. There is also research that suggests community college instructors who engage in SoTL research or scholarly teaching rarely publish or otherwise attempt to disseminate their findings because of a lack of time (Hardré, 2012). Thus, providing reassigned time is likely an important support not only for community college faculty doing generalizable/transferable educational research, but also for faculty who are pursuing SoTL work.

Using these three themes as a framework, and using the CUNY system of supports for community college faculty research as a model, we next present some potential recommendations for colleges, states, and national funding agencies that could be used as a basis for instituting more systematic supports for community college faculty research. We acknowledge that the CUNY community colleges may differ from other community college settings, and so we attempt to address some of these possible differences by presenting suggestions for how the research support identified as critical by CUNY faculty could be adapted to other contexts. However, we note that these are only suggestions of potential approaches that other community colleges might try; to provide evidence of whether these approaches are actually effective in other contexts, further research is needed.

Recommendations for Community Colleges

The initial analysis of the surveys and interviews with practitioner-researchers at CUNY revealed that we need to attend to three major areas: time, culture, and resources.

Time. The factor most commonly cited by faculty at CUNY community colleges as critical to the success of research was time in the form of reassigned time from teaching. At CUNY, community college faculty are expected to teach the equivalent of nine three-credit courses per year. However, in the first five years of their appointment, CUNY community college faculty in professorial lines are guaranteed the equivalent of just under two three-credit course releases per year for research, and additional reassigned time is possible through a number of competitive internal awards. We note that this system of reassigned time for research at CUNY is still in development. At the moment of this writing, there is not yet a structure for research-active faculty at community colleges to obtain consistent reassigned time for research *after* their first five years, and this has been raised as an issue going forward (CUNY Office of Institutional Research and Assessment, 2015)—one that many CUNY community college campuses are currently negotiating to address. Evidence at CUNY suggests that research-active lines at community colleges must provide consistent and predictable time for research. If they do not, colleges risk squandering the investment in research altogether when faculty researchers either abandon their research program for lack of time or seek jobs at other institutions where time for research is more consistent and predictable (Borough of Manhattan Community College at the City University of New York [BMCC], 2016).

Community colleges already have traditions of releasing faculty from some teaching when they have other important responsibilities at the college: Deans and department chairs, project coordinators (e.g., writing across the curriculum, e-learning, developmental learning, testing, etc.), designated student advisors/mentors, laboratory tutors or technicians, or faculty who take on other administrative or advisory roles typically receive partial (or even full) course release. While the types of roles can vary from one institution to another, all community colleges

already recognize that it can be beneficial to their mission for some faculty to take on dual roles, in which they split their time between teaching and other tasks that benefit the college and its students. Existing models that are already used at community colleges to exchange faculty work for course reassigned time could be extended to provide research reassigned time for research-active faculty at these colleges as well.

A community college interested in supporting generalizable/transferable practitioner-research might, therefore, begin by setting up a small subset of research-active lines in which faculty teach three courses per semester and also conduct research. These faculty could then be assessed on a combination of teaching, service, and research (whereas their peers teaching four or five classes per semester would not be expected to do generalizable research).

Culture. We use the term culture here to denote a combination of attributes: access to collaborators and mentors who have experience conducting research as well as policies and structures that value and support research. At CUNY, the supportiveness of this type of culture was the second most critical factor that faculty cited as impacting the success of their research.

CUNY community college researchers cited repeatedly that establishing clear, consistent, and predictable policies related to research and the assessment of research-active faculty was critical to their success (BMCC, 2016). Policies related to research need to be clear so that faculty researchers can make long-term research plans. For example, it is important for faculty to know when and how they can take reassigned time for research, when they can apply for external funding, and what can be included in grant budgets (e.g., course release, payments to other participating faculty, etc.).

Likewise redefining evaluation policies to include research-active faculty is critical. Evaluation needs to be carried out by peers who have experience with both research and

community colleges and should reflect institutional priorities. For community college faculty conducting the kind of research we advocate here, appropriate evaluation would mean assessment of both the quality of the research (e.g., funding, publications) and the researcher's contribution to practical applications (e.g., publication in practitioner journals, faculty development, policy changes, impact on student outcomes, etc.). The current CUNY assessment practice at community colleges recognizes that publications in journals and presentations at conferences aimed at practitioners are valuable research contributions and not necessarily less important than publication in journals that are primarily read by researchers.

The assessment process at CUNY is still evolving because the systematic expectation and support for research at community colleges is still relatively new. This evolution has not always been smooth because there are traditions, cultures, and structures within every community college that can dis-incentivize community college faculty from conducting educational research. When colleagues, administrators, and staff fail to recognize the value of community college faculty research, research-active faculty can be penalized or criticized for the time that they spend on research. For this reason, the evaluation of the work of research-active faculty needs to be led by other faculty members who also actively conduct research in a similar field. Expectations for both non-research-active faculty and research-active faculty at community colleges need to be clearly spelled out prior to evaluations, with assessment parameters carefully aligned to the distinct goals of each type of faculty and as comparable as possible (e.g., by including equivalent measures in areas that are relevant to both groups).

Resources. CUNY community college faculty also cited various kinds of both tangible and intangible resources as impacting the success of their research. For example, colleges that wish to support a limited number of research-active faculty lines might want to consider offering

faculty in these research lines $1,000-3,000 per year for research and travel expenditures. At CUNY, small amounts of travel funding are available each year ($500-1,000), and a number of small competitive internal awards (roughly $2,000-25,000) are available and can be used to pay for research expenses. Often the research begun with small internal grants has led to community college faculty successfully receiving larger externally-funded grants.

Colleges might also consider collaborating with other community colleges or with local universities to create a network of resources for grant-writing, research journal access, and larger research communities. At CUNY, faculty on each campus have access to the CUNY Research Foundation (which administers all external grants on CUNY campuses), offices for grant and research administration, and a human research protection coordinator. For community colleges that do not have their own offices to support grant submission or IRB applications, there are other ways in which this support could be provided. For example, multiple community colleges could collaborate to provide such support for their faculty, or community colleges could establish agreements with universities that involve shared use of university offices, perhaps in exchange for access to community college institutional research data that university faculty could use for research purposes. Such support need not be local and could also be provided remotely via phone or electronically.

Recommendations at the State Level

There are also ways in which state and local policies on higher education can support community college faculty research. Evaluation systems used to assess community colleges may need to be considered for possible barriers to faculty research. For example, in the past at CUNY, colleges were assessed on the number of hours full-time faculty members spent teaching; as a result, college presidents and provosts could be pressured to limit research reassigned time

even when it was funded by outside grants and in the best interests of the college. This can be strongly detrimental to the institutional mission in cases where the grant-funded work is not possible without faculty reassigned time, and the research funded by the grant is relevant to institutional priorities. Because of these issues, CUNY has revised these metrics in an attempt to better reflect true institutional priorities (CUNY, 2014). If research conducted by community college faculty on community college students were to be supported, state metrics measuring college faculty productivity would need to assess not just hours spent in the classroom but rather a combination of the quality of teaching and research productivity. Such productivity could be tied to the impact that educational research has on practice and policy at the local college and beyond. Assessing the extent to which community colleges develop, implement, and successfully sustain new evidence-based policies, programs, or structures that improve student outcomes over the long term could be part of how colleges are assessed.

In addition, taskforces, commissions, and other formal groups that make recommendations and decisions about community college educational reforms, funding, and structures could include community college faculty researchers, who can provide key local information about the benefits of specific structures that affect their work as well as community-college-specific research expertise about potential reforms and educational interventions.

Recommendations at the National Level

If community college faculty research of the kind we advocate here is to increase on a larger scale, action by federal agencies and non-profits will likely be needed, particularly because some community colleges may not have the resources to provide time and other research resources on their own. Federal and non-profit funding sources could make a significant difference in several areas.

Time. One way that funding agencies could support increased time for community college faculty research is to create grants that incentivize community colleges to establish research faculty lines that provide some time allocated to generalizable educational research, in which qualified faculty both teach and conduct research relevant to community college students. Funding agencies can also provide funds for reassigned time to community college faculty researchers as a part of the normal award funding process; however, this would only increase support for this kind of research if agencies were to increase the number of community college faculty researchers that they support. One approach to address this could be to increase the availability of research funding that supports: 1) research on community college education; 2) educational research conducted by community college faculty specifically; or 3) education research projects with strong integration between research and practice. These kinds of funding opportunities could increase research on education at community colleges both among community college faculty and elsewhere. In addition, funding agencies could call on more community college faculty researchers to serve on panels that make funding recommendations about proposals that are sent under these calls, in order to ensure that applications by community college faculty are judged appropriately in context.[10]

Culture: Funding agencies could also provide funds for annual conferences in important subfields related to community college education, with travel and lodging costs supplied for community college researchers who do not have access to their own research funds. This support

[10] There is evidence that some faculty at four-year colleges and universities have negative biases about community college faculty in general (see e.g., Twombly & Townsend, 2008), which likely stem in large part from lack of experience as students or faculty or as collaborators with community college faculty in doing research. Such attitudes have negative implications for fair evaluations of community college faculty engaged in research. But as more community college faculty enter the education research community, interact regularly with their peers on matters that pertain their work, and collaborate with researchers from other institutions, these attitudes are likely to shift.

could be an important step towards fostering community college education research communities by linking researchers in different subfields (e.g., higher education, mathematics education, SoTL), and towards connecting community college faculty researchers who are more isolated. This type of conference funding structure already exists in other disciplines. For example, the Conference Board of the Mathematical Sciences hosts a longstanding series of conferences each year that provides intensive experiences in different research areas at various colleges across the country, and they supply travel stipends to students and junior faculty to allow them to participate.

Resources. Small educational research grants (e.g., $1,000-20,000 per year) aimed specifically at community college researchers could be particularly crucial for community college faculty who do not have access to their own research funds. These grants could have a streamlined application process that is less time-intensive and requires less grant-writing expertise than existing federal grant applications. The small budgets and a streamlined application process would make these grants accessible to community college researchers who do not have grant offices or other similar resources at their campus, or who may have less experience writing federal grant applications. Added support (e.g., mentoring, grant-writing conferences) could also be provided to faculty who win these awards to support them in turning the results of these smaller funded research projects into larger funded grant proposals. Smaller federal grants with less time-intensive applications processes and added follow-up mentoring to prepare researchers for preparation of larger federal awards would be very similar to the internal funding and research support structures that CUNY provides to its community college faculty. Federal agencies may be better positioned than individual community colleges to provide these supports, particularly in cases where colleges are geographically far away from research

universities. Having this kind of support housed in a federal agency would also allow for community college practitioner-researchers from a more diverse group of institutions to participate in generalizable education research projects.

Conclusion

The case of CUNY suggests that it is possible for community college practitioners to conduct rigorous generalizable and transferable research, and that this kind of research can positively influence both the larger educational research community and local institutions through changes to policy or instruction. It also suggests that such research need not divert significant resources from instruction, and that it can in fact help to support the traditional community college mission of providing access to educational opportunity by improving educational effectiveness on the ground. The success of this approach requires specific concrete supports (i.e. reassigned time from teaching, a supportive research culture, research resources). However, evidence from CUNY suggests that investments in these supports can be relatively cost-neutral and can lead to significant benefits in the long run. Thus, supporting generalizable/transferable community college practitioner-research on a larger scale is one promising potential approach to addressing the underrepresentation of community colleges in the education research literature and to increasing the relevance of this body of research to practitioners.

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