

Project COMPASS: Lessons Learned about and from
Implementing an Experimental Study
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Introduction and Background

Wake Technical Community College (Wake Tech) in Raleigh, North Carolina, is a large community college in a large state community college system. The college provides a comprehensive menu of career preparation and transfer programs to the residents of Wake County in the central part of the state, serving approximately 30,000 credit students and 40,000 non-credit students at five campuses, five centers or early college high schools, numerous community sites, and online. Since it opened its doors in 1963, Wake Tech has been an important contributor to the workforce preparation and higher education of its service area. It has grown rapidly during that time, both in number of students served and in number of programs offered. It has been able to respond rapidly to business, industry, and community needs. Some recent examples include developing associate degrees in simulation and game development and business analytics—among the first of their kind in the nation. Wake Tech has also established a large online college recognized nationally for its quality and breadth of offerings. Much slower to develop has been Wake Tech's capacity to do sophisticated research.

Research Challenges for Community Colleges

Conducting research based on rigorous experimental designs, especially randomized controlled trials, presents a number of challenges for researchers in the community college setting. The most significant of these challenges are: (1) community

colleges were not designed to promote research; (2) community colleges developed institutional research as a response to the pressures of compliance and accreditation, not scientific inquiry; (3) many community colleges, including all North Carolina schools, were founded with an open door philosophy, which has made being selective and directive difficult when working with students.

The first challenge relates to the history of community colleges and their place within the American educational landscape. The first generation of community colleges emerged in the early twentieth century. These junior colleges, as they were known then, resulted from long-standing campaigns by academic leaders at universities—including the University of Michigan, University of Chicago, Stanford University, Columbia University, and the University of Missouri—to reform higher education by distinguishing the first two years of college, with their general education focus, from the last two years of college, with their focus on advanced professional training (Brint & Karabel, 1989, p. 24). Some argued that the two years of general education would best be handled by adding two years to the secondary education at high schools; others saw the value of creating a separate branch of higher education, a lower division or “junior college,” observed Brint and Karabel. Wherever it was placed, the junior college served in the reformer’s model to sort those not suited for university from those intellectually prepared. These same reformers agreed that their institutions should focus on the upper division, or “senior college,” to effectively target their resources at the intellectual elite, *and* to provide opportunities to faculty for scholarship and research (Brint & Karabel, 1989, p. 25). These higher education reformers clearly saw research and its methods within the purview of the university, not that of the junior college. One way that this foundational history played out in the regular operation

of the junior college was that, like at the high school, the primary function of faculty was teaching, not research.

Throughout the twentieth century, the purpose of the junior college continued to evolve (Nevarez & Wood, 2010). The most significant change was a shift away from serving as sorting schools for universities toward addressing the needs of their local communities. These “community colleges,” as they became known, came to see their locally focused missions to include providing more workforce development, specifically more occupational/vocational programs. Occupational, vocational, and technical education typically placed more value on teachers who were experienced practitioners as well as on the back-to-industry externships that kept them current in their profession. This job-focused education placed less value on research-oriented endeavors. Although meeting local needs meant a different balance of transfer programs and work-ready programs from community to community, the primary function of community college instructors continued to be teaching, not research.

The second challenge for community college researchers stems from the fact that the capacity for, commitment to, and resources supporting research at these institutions has developed to meet federal, state, and accreditation compliance, and more recently performance reporting. Morest and Jenkins (2007, p. 8) point out in their study *Institutional Research and the Culture of Evidence at Community Colleges* that “while ... examples illustrate that individuals and groups within colleges occasionally utilize IR [institutional research] to carry out small studies about student progress, the majority of IR work relates to compliance reporting and enrollment monitoring. Applied research that is either analytical or evaluative is less common and is considered to be a lower priority.”

Since this 2007 study, colleges have seen an increase in the demand for studies on student progress as federal agencies and regional accreditors have called for a greater focus on student learning outcomes. Even so, outcome assessment has not displaced compliance reporting from its dominance in research; it has just added more strain on already resource-strapped IR staffs. Some community colleges can call on faculty to contribute to student learning outcome assessment; however, as noted above, given that community college instructors are expected to devote most of their effort to teaching, there is limited time and support for faculty-directed research.

Third, community colleges, as “colleges of the people,” have cultivated a strong commitment to eliminating barriers to entry, loosening constraints on progress, and expanding determinants of success for their students. This core commitment, which Nevarez and Wood characterize as “the open access *right to fail* philosophy” (p. 42, their emphasis), means that community colleges have traditionally had little experience with and less appetite for being selective and directive. This philosophy presents a fundamental challenge to inquiry founded on rigorous experimental designs, which requires researchers to be both selective and directive with students, faculty, and staff. In the community college setting, a randomized controlled trial, for instance, is often perceived as a specialized intervention reserved for a select few students, denied to others through no choice of their own. Instructors and support staff are either directed to use an intervention or directed *not* to use the intervention. Depending on the perception of the intervention, one group of students is unfairly treated; one group of faculty is unequally resourced or burdened.

Developing the Capacity to Conduct Experimental Studies at Wake Tech

Despite these challenges, when presented in 2015 with the opportunity to submit a proposal for a First in the World Grant (FITW) from the U.S. Department of Education's Fund for the Improvement of Post-Secondary Education (FIPSE), a cross-functional team at Wake Tech decided that a student success project under development had the potential to meet rigorous experimental design standards. That project became COMPASS—Constructing an Online Model to Promote At-risk Student Success. COMPASS's goal is to improve teaching and learning through the implementation of low-cost high-impact strategies. Specifically, COMPASS set out to implement and test a model for improved online education that increases the success of students of color and other at-risk students. At the time of the FITW request for proposals, Wake Tech was well positioned to reach for an experimental design study. First, the college had begun to develop a track record pursuing increasingly more complex research and assessment through large-scale grant projects, including a Gates Foundation Completion by Design project, a college-funded five-year quality enhancement project, and a U.S. Department of Education Title III project. These projects had helped fund additional research positions to extend the capacity of the compliance-focused IR staff. They also surfaced faculty with the talent, skills, and passion to pursue more sophisticated research. Moreover, these projects provided college faculty and staff with exposure to reform at national, state, and college levels, reform that supported more selective and directive interventions. In piloting developmental education reform, intrusive advising, guided pathways, mandatory orientation for online courses,

online teaching standards, and gateway course redesign, Wake Tech faculty and staff became more comfortable with increasing levels of selectivity and direction.

The COMPASS Project began as many recent change initiatives have at Wake Tech, from a desire to increase student success. In this case, encouraged by Wake Tech's Applied Benchmarking Program—a continuous improvement/innovation process that challenges all employees to identify a problem in their sphere of influence, research best practices, and adapt and apply solutions—a psychology professor and the director of learning support services independently developed plans for improving minority student performance in online classes by using technology to restore the social connection often lacking in distance education. In matching ideas to funding opportunities, a grants development team connected these small-scale efforts with the First in the World FIPSE request for proposals; these proposed interventions were innovative, they could be institutionalized, and they merited dissemination. Furthermore, because of the institutional knowledge and resource development that had occurred during previous grant projects, the design team recognized that these interventions applied in the online setting provided a strong opportunity for a rigorous experimental study. The feature that really opened the door was the online context; without the flexibility of the online delivery method, attempting some of the stricter elements of this research, including a randomized controlled trial, would not have been feasible at Wake Tech. Students and instructors in traditional seated classes require too many time and space accommodations. Freeing learners and teachers from time and place constraints made the experimental design possible.

Finding an Experienced, Collaborative Research Partner

Having established the appropriateness and feasibility of an experimental study, Wake Tech recognized the need to seek out a partner that could maximize its chances of designing and implementing an experiment that would meet the highest standards. Wake Tech's grants office considered a number of external evaluators connected with North Carolina universities. The college found the best fit with SERVE at the University of North Carolina at Greensboro. In essence, establishing the partnership with SERVE significantly accelerated Wake Tech's readiness to pursue this level of experimental design. As the original FITW proposal notes, "SERVE has extensive experience in designing evaluations that meet What Works Clearinghouse standards. They designed and implemented the first large-scale experimental study of the impact of early colleges—a reform model that blends the high school and college experiences. This study has been determined to meet What Works Clearinghouse without reservations. They are also conducting evaluations for four Investing in Innovation (i3) grants—three validation grants and one scale-up grant. Evaluations for these grants must be designed to meet What Works Clearinghouse standards either with or without reservations. The FITW grant competition mirrors the evaluation and evidence expectations of i3 grants; as such, SERVE will be well qualified to meet the evaluation expectations of FITW." SERVE offered experience and performance well suited to this project.

In collaborating with the COMPASS design team, SERVE freed the Wake Tech faculty and student services staff involved to focus on detailing the strategies for improving student success, especially for at-risk students taking online courses. The means—two

high-tech high-touch interventions employed to restore the social component to distance education: (1) readily available communication software for texting, email, and web conferencing; and (2) easy-access easy-to-use self-service video recording resources. In COMPASS's experimental design, instructors in the treatment group follow the established protocols to utilize these interventions; students in the treatment group participate in online courses built around these interventions. Faculty members in the control group follow their usual teaching methods; students in this group learn through what have become standard learning management system tools.

In contributing to the final COMPASS design, SERVE provided the expertise needed to include a strong evaluation plan. SERVE's contribution included both an impact evaluation and an implementation evaluation. The impact study would use an experimental design, assigning students randomly to a section of the targeted course taught using the interventions, or to a section of the targeted course taught using the traditional online curriculum and approach. The treatment condition would be the redesigned courses. The control condition would be the same courses as usually taught in the online environment. Students would sign up for a course during a specific term, but would not be allowed to sign up for a specific section or faculty member. The evaluator would work directly with the registrar's office to develop a process of random assignment to treatment or control sections. Treatment sections would be taught by faculty who either participated in the development of the redesigned courses or were trained to implement the redesigned courses. Control sections would be taught by faculty who had not been exposed to the redesigned courses. The COMPASS implementation evaluation would focus on collecting data around fidelity of implementation to the key components and would

provide formative data to improve the program. The evaluators would work with the project staff to identify indicators and threshold levels of implementation for each of the course components.

COMPASS as a Case Study for Community College/Evaluator Collaboration

With the initial implementation and evaluation plans for the project in place, SERVE continued to bring its technical and collaborative experience to bear to help the Wake Tech team after the grant was awarded. SERVE helped the COMPASS implementation team to add detail to the design summary, further refine the implementation plan and time line, clarify and strengthen the experimental elements, finalize the evaluation process, and address the requirements of the FITW program officer and technical assistance team. The minutes of the monthly COMPASS evaluation meetings document SERVE's contributions to strengthening the project. They have asked questions about methodology, appropriate measures, fidelity of implementation, quantitative and qualitative data collection, data transfer and sharing, institutional practices, publicizing results, and other topics. In this way, SERVE has engaged the entire COMPASS team in improving the project implementation and assessment, increasing the likelihood of significant results. Their questions have also developed in the Wake Tech team a greater understanding of research methods and increased the college's capacity for future hard research.

The benefits of the regular communication between the COMPASS implementation team and SERVE related to the wide variety of experiment components mentioned above are too numerous to detail here. So, to give a sense of the rich products of the partnership,

this paper will focus on one key element of the project, random assignment. The COMPASS design team had set expectations high, taking on the gold standard of a randomized controlled trial, to achieve the requirements of What Works Clearinghouse without reservations. Yet, implementing random assignment in a non-selective, non-directive setting necessitated new communication strategies and the adaptation of existing processes and procedures.

System Challenges

As with many large organizations, the functions required in carrying out Wake Tech's mission, goals, and objectives have become increasingly specialized and compartmentalized. These separate institutional systems have evolved their own internal roles, responsibilities, practices, and interaction networks with both written and unwritten rules. Introducing a disruption like the random assignment of students to treatment and control course sections has created a number of challenges for the Wake Tech/SERVE partners to manage. One type of challenge is the system challenge. System challenges occur with the introduction of new processes or practices that involve new relationships or interactions among existing units, or the arrival of new units into an existing, well established environment. They place demands on infrastructure and technology beyond their design parameters. They also expose weaknesses suppressed by system momentum and inertia. These challenges can have serious consequences for a change project, but because they are common and relatively predictable issues in change management, they can usually be addressed through good planning, communication, and monitoring.

The random assignment of students in the COMPASS study necessitated new interactions between academic department heads and the registrar's office staff. It required re-introducing manual processes to automated services. It tested the problem-solving capacity of the units involved. It required the establishment of new tools. Specific system challenges that have emerged during the COMPASS project include:

- The existing course scheduling and registration processes—self-service selection from a list of numerous relatively small sections—give students an expectation of choice and complicate their assignment to treatment and control groups.
- The web-based registration tools, which are fast and efficient, cannot be easily adapted to random assignment. Engaging college personnel in the random assignment process creates greater risk of delay, errors, and privacy concerns.
- Loopholes emerge when established systems are tested in new ways, allowing students and staff to inadvertently circumvent the random assignment process.
- Student enrollment and faculty availability sometimes change the random assignment inputs.
- Common student actions—adding, dropping, failing to pay—make for a constantly changing pool of registrants.
- New opportunities for compromising student privacy require new attention to communication and data exchange.

Unique, Non-Recurring Challenges

Unforeseen, sometimes surprising problems have occurred with each semester's COMPASS random assignment of students. Many of these problems have proven to be unique, non-recurring issues. Examples include:

- After the random assignment was completed one semester, one section was reassigned from a control instructor to a treatment instructor.
- A personal emergency cancelled one batch of allocations.
- Personnel travel put them out of communication during a critical time.
- A software glitch between the learning management system and the student information system interrupted the smooth transfer of data, and went undetected until accidentally discovered by a COMPASS staffer.
- Snow closed the college several days at the beginning of the semester during a critical period of allocation.
- Community college students bring unusual multifaceted personal, educational, and social circumstances that pose novel, complicated challenges to a rigid assignment process.

Successful Strategies for Addressing Challenges and Key Lessons Learned

The most important strategies for addressing both the predictable and unpredictable challenges created at Wake Tech by the random assignment of students in the COMPASS courses have been (1) the establishment of effective communication channels among all the stakeholder groups affected by the random assignments; (2) the

designation of a point person from each stakeholder group responsible for the logistics of the allocations; and (3) the phased implementation of the new steps required by random assignment.

The first strategy is simple, but has proven extremely effective in assessing and addressing challenges associated with student assignment. Regular bi-weekly meetings of the COMPASS implementation team, monthly meetings of the COMPASS/SERVE partners, and advisory committee meetings every other month have helped create an active, engaged community able to effectively monitor the project progress and act when needed. The weekly COMPASS meetings have fostered a shared understanding of the project and its challenges and has contributed to a cohesive problem-solving unit. The monthly COMPASS/SERVE meetings have strengthened the partnership, developing in the Wake Tech participants a deeper understanding of and experience with research practices and tools. Yet, perhaps the most important group has been the advisory committee. Because the academic deans and department heads are not as involved in the day-to-day operations of the project, they can easily lose sight of the requirements of the grant, the expectations of the experimental design, and the purpose for some of the implementation actions. Keeping them informed and engaged has helped these managers make decisions that take into account project requirements, especially decisions that might affect random assignment. One example noted above—the reassignment of a course from a control instructor to a treatment instructor—was brought to the advisory committee and it took steps to prevent future similar situations.

In the second strategy, a designated member of the COMPASS implementation team works directly with a designated SERVE partner, a staff member in the registrar's office,

and with the lead treatment instructors to manage the logistics of the assignment process. This core group has been able to work together to schedule allocation batching, data transfer, randomization, student reassignment to treatment and control sections, and the numerous other details that must be considered in completing this special manual process. They are also on alert during the allocation period to be the first line of action when problems come up. With each new semester allocation, these experts have streamlined the process and significantly reduced issues.

Because of the uncertainties associated with introducing the random assignment process into Wake Tech's long established registration process, because of justifiable anxiety expressed by leaders from both academic affairs and student services, and because of the importance of this component to the results of the experiment, the COMPASS/SERVE partners considered a variety of options and decided to take a phased implementation approach for random assignment: first (1) a stress test, then (2) a pilot, and finally (3) formal implementation that affects experimental results. The key to this phased approach is that it allowed the core group described above to practice the allocation steps and various scenarios in a low-stakes stress test, assess the positives and negatives, and devise modifications. The modified approach could then be further tested in a pilot implementation. By the time the allocation steps were needed for the formal experimental implementation, the staff, partners, and faculty affected had already become familiar with the steps in the process and how to make them work.

This phased implementation approach helped the COMPASS/SERVE partners develop a workable solution for the registration, allocation, and reassignment of students to their treatment and control sections. In the initial stress tests, the college posted on its

web-based registration tool visible to students a very large “dummy” section for each targeted course. These courses served as buckets for collecting the batches of students for regular randomization by the designated SERVE researcher. Once labeled either treatment or control, each student was reassigned to a corresponding treatment or control section. The stress test revealed that students tended to avoid the large dummy sections, presumably out of a preference for small class sizes. In the subsequent pilot phase, the college explored offering several smaller dummy sections, and found that students responded more positively to this approach. Other elements of the random assignment that worked were repeated in the next phase; those that did not work were discarded.

Conclusion and Next Steps

Wake Tech, like most community colleges, does not have a long history of conducting experimental studies. Its mission does not include research. The research that it conducts primarily serves the need for compliance reporting and enrollment tracking. Its strong commitment to equity in access and opportunity makes it uncomfortable with being selective and directive with its students, even when attempting to prove the effectiveness of its interventions.

Yet, because its president Dr. Stephen C. Scott has challenged every employee to improve and innovate, Wake Tech has taken on big issues in higher education, engaging in more and more national initiatives, requiring the institution to change, adapt, and develop new solutions, to assess performance, and to extend its research capacity. The student success initiative COMPASS is the most recent of these innovation projects. And, because

proving the effectiveness of the COMPASS interventions through a rigorous experimental study was the logical next step in its institutional development, the college committed to the challenge of successfully conducting a randomized controlled trial.

The larger lessons learned pursuing this experimental design have been: (1) develop the capacity for increasingly sophisticated research through engagement with peers in national reform initiatives; (2) invite talent from all areas of the college to participate in college-wide change projects, and (3) find an experienced collaborative partner that fills the gaps in institutional experience and challenges the college to reach stretch goals.

Now that Wake Tech has experience with the design and processes required of rigorous experimental studies, has developed people who can use experimental design strategies, and has tools and partners who can help manage the needed processes, the college has a greater pool of possible initiatives and funding sources. Even before they have proven the effectiveness of the COMPASS interventions, and even if these interventions do not work, the COMPASS veterans are already looking for other research opportunities.

References

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